CEDRA

Climate change and
Environmental
Degradation
Risk and adaptation
Assessment

SECOND EDITION

A strategic environmental risk assessment process for agencies in developing countries

tearfund

CEDRA

Climate change and Environmental Degradation Risk and adaptation Assessment

by Mike Wiggins

With contributions from Mari Williams

This second edition builds on the original 2009 version
written by Sarah Wiggins and Mike Wiggins

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

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NOTE ON THE SECOND EDITION

The CEDRA process was first launched within a written guide in 2009. This first guide to the CEDRA process was for field-testing. The aim was that we should learn together how to assess whether our development or humanitarian assistance work is strong or vulnerable to current and projected changes in the climate and environment.

We have now completed CEDRA strategic risk assessments across more than 15 countries and have undertaken a thorough learning evaluation of the process, which can be found on the accompanying CD-Rom or at www.tearfund.org/CEDRA/Evaluation

As expected, this review has given us a wealth of learning from our partners, communities, colleagues, governments and others. We are very grateful for this feedback and have drawn deeply on it in this updated guide to the CEDRA process.

If you would like help in carrying out CEDRA, please visit our website at: www.tearfund.org/CEDRA – further queries can be sent to cedra@tearfund.org

A CD-Rom accompanies this document and can be found on the inside back cover. It includes many resources, including forms, workshop materials, examples of CEDRA Assessment Reports and Action Plans, case studies and much more.

This document also contains the following forms within the back cover:

- Impacts and Options Checklist
- Community and Stakeholder Questions
- CEDRA Assessment template
- Action Plan template

If any of these are missing, or you need more copies, they can all be found on the CD-Rom or downloaded from www.tearfund.org/CEDRA/Forms

Contents

Overview of the CEDRA process

0.1 Introduction

Climate change and environmental degradation are two of the biggest threats our world is facing. The pace of climate change is quickening and the poorest and most vulnerable communities are being hit the hardest. The CEDRA process is designed to help local humanitarian and development agencies (NGOs) take a structured approach to identifying possible impacts of climate and environmental change. It helps you access and understand climate and environmental science and compare this with communities' experience. You will learn about the past, present and projected impacts of climate and environmental change where you work. You will assess the likelihood of these impacts occurring and their likely scale of impact. CEDRA will help you prioritise which impacts you can respond to, and how. You will also assess which impacts you want to make others aware of and encourage them to respond. This is all done with input from stakeholders and communities. The final stage is carrying out your planned responses and ensuring that your learning from the process informs your future work.

CEDRA's purpose is to help organisations integrate adaptation into development and disaster risk reduction (DRR) work, moving towards an approach which sees projects intentionally designed to ensure that development, adaptation to climate and environmental change and resilience to disasters are addressed together – something we're calling ***adaptive resilient development*** (see page 51 for a longer explanation of this term). It is intended to make existing work stronger and able to withstand environmental and climate change. It is a strategic tool, to be used across the whole of an organisation's work rather than in specific projects or sectors. It is aimed at NGOs in developing countries, but may also be useful for other bodies such as national or local government.

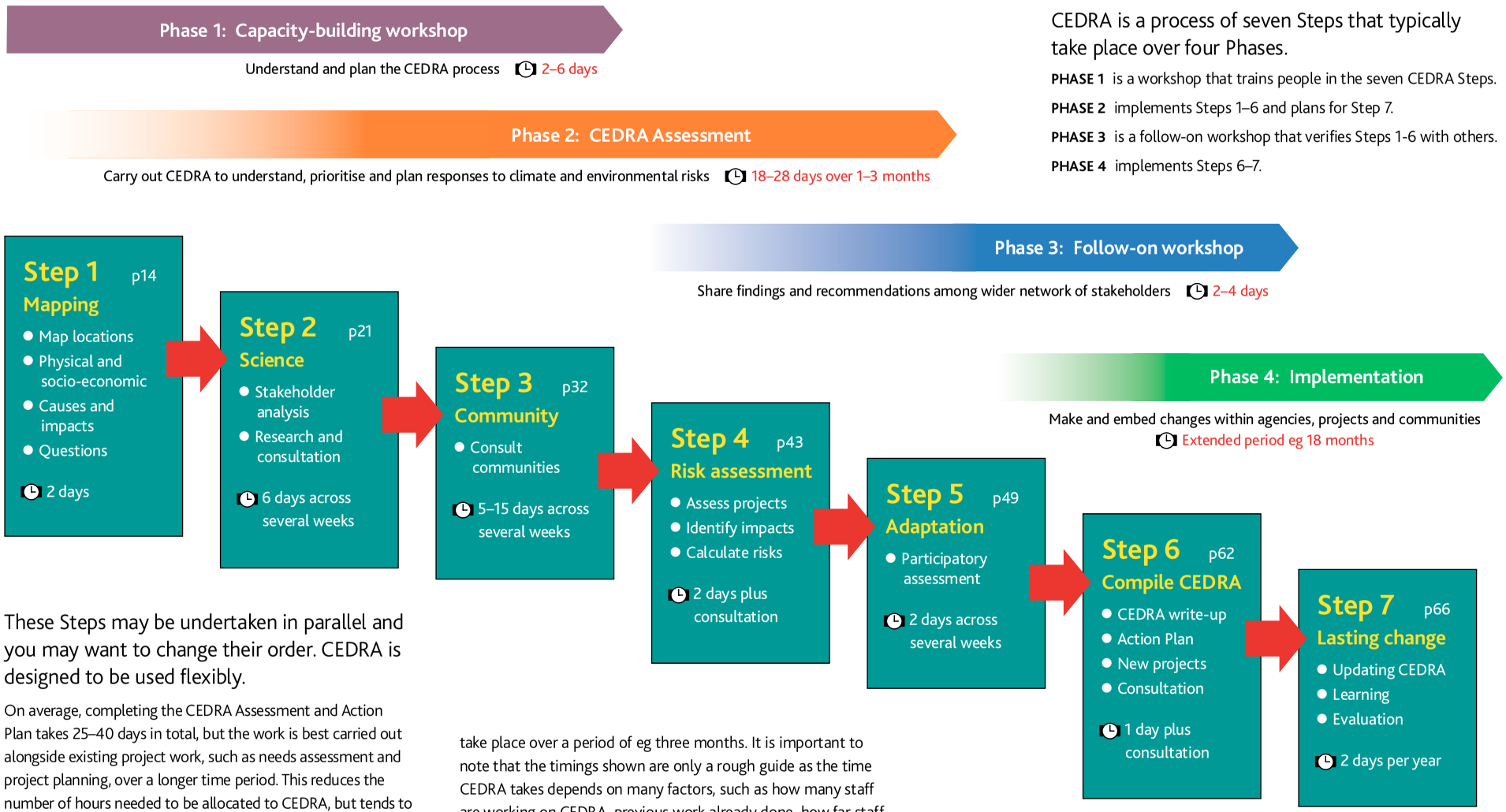
CEDRA is designed to be approached flexibly. It involves seven different Steps and it is usually carried out in a number of Phases, beginning with a workshop. The diagram on the following page illustrates these Steps and Phases. You should adapt CEDRA to fit your context and requirements – which may mean that you do not follow these Phases or all seven Steps, or that you follow them in a different order or with a different emphasis.

At the end of CEDRA, you will produce a CEDRA Assessment and an Action Plan:

CEDRA Assessment This document will:

- record current and projected climate and environmental changes in the places where you work
- summarise communities' views and an assessment of their 'adaptive capacity' (their ability and resources to cope with future impacts)
- assess the likely climate and environmental impacts on communities and your projects
- rank and prioritise these impacts according to how important they are and how likely they are to happen
- identify ways to adapt your projects and, in some cases, identify new projects needed.

Diagram of the typical CEDRA Phases and Steps



CEDRA is a process of seven Steps that typically take place over four Phases.

PHASE 1 is a workshop that trains people in the seven CEDRA Steps.

PHASE 2 implements Steps 1–6 and plans for Step 7.

PHASE 3 is a follow-on workshop that verifies Steps 1-6 with others.

PHASE 4 implements Steps 6–7.

These Steps may be undertaken in parallel and you may want to change their order. CEDRA is designed to be used flexibly.

On average, completing the CEDRA Assessment and Action Plan takes 25–40 days in total, but the work is best carried out alongside existing project work, such as needs assessment and project planning, over a longer time period. This reduces the number of hours needed to be allocated to CEDRA, but tends to extend the period over which the CEDRA process is undertaken.

The work is expected to be shared between members of staff, and preferably between a number of different agencies, and to take place over a period of eg three months. It is important to note that the timings shown are only a rough guide as the time CEDRA takes depends on many factors, such as how many staff are working on CEDRA, previous work already done, how far staff need to travel to consult communities, the depth of relationship already established with communities and other stakeholders, and how accessible scientific information is, etc.

CEDRA Action Plan This document will:

- record the actions you decide to take in response to the findings of your CEDRA Assessment
- record the actions you would like to encourage others to take.

We hope, however, that CEDRA will contribute to outcomes far beyond these two documents as organisations understand the impacts and risks posed by climate change and environmental degradation, and choose a better strategic direction for their work.

This document includes a series of exercises, examples and case studies to help you complete the CEDRA Steps and the resulting CEDRA Assessment and Action Plan. Before you start CEDRA, please look through this whole document because you may well find that you have already completed some of the stages in your existing project work.

0.2 Why use CEDRA?

See Appendix A for a list of Tearfund's other resources.

CEDRA helps local NGOs in developing countries to work out whether their projects are strong or need to be strengthened to cope with the impacts of climate and environmental change. It can be used to inform an agency's overall planning process – or to review the sustainability of existing projects – across all the locations and sectors worked in. Tearfund has produced several other resources that have different but related uses. These are listed and described in Appendix A. We encourage you to read through this list to check whether you think CEDRA is the right tool for you to be using at this time. You may also find that, if you do decide to do a CEDRA Assessment, these are useful resources to help you in that process.

Climate change cannot be addressed in isolation from environmental degradation as the two are closely interlinked. If risks from climate change and environmental degradation are not fully considered, there may be serious consequences for NGOs' work:

- Development work may fail as communities are impacted by more severe storms, floods, drought or disease.
- Development work may prove less effective due to factors such as soil degradation and crop failures, mudslides, pollution, forced migration or conflict over natural resources.
- Development costs may increase as climate change and environmental degradation harm projects and programmes.
- Development work may unintentionally increase communities' exposure to sudden disasters resulting from climate change and environmental degradation.
- Disaster risk reduction (DRR) responses may be ineffective if they do not recognise that environmental change can increase the intensity and frequency of disasters over time.
- Communities may lose confidence in an NGO that does not recognise the importance of the environment to their lives.

CEDRA helps NGOs understand and prioritise which environmental hazards may pose a risk to existing projects and project locations. The process enables them to make informed decisions about strengthening (adapting), initiating or even stopping projects.

A CEDRA Assessment can be undertaken at any time. However, assessing risks from and to the environment is not something to be done as an afterthought in development planning; it needs to be an integral part of project cycle management. Without it, development projects may fail.

0.3 Who should use CEDRA?

CEDRA can be used by anyone who wants to understand and respond to climate and environmental change, from the local to national level. CEDRA is designed to be used by local NGO practitioners. However, it has also been used (in part or in full) by local and national governments, communities, INGOs and academic institutions. Feedback suggests that this is because CEDRA is designed to be used by people who are not experts as well as by those with expertise. However, CEDRA normally begins with a facilitated capacity building workshop. The CEDRA website and the CD-Rom accompanying this book contain suggested timetables and materials for this workshop.

A CEDRA Assessment can be undertaken by consultants. However, it will be far more effective when skills are developed within local organisations. This is important because the risks from climate and environmental change are increasing rapidly, so we should not risk losing skills when consultants leave.

CASE STUDY
Uganda

Following CEDRA training, the National Development Secretariat of PAG (Pentecostal Assemblies of God) Uganda organised a 'climate change sensitisation' session for the national committee of bishops. As a direct result of this, climate change awareness is now being promoted through up to 5,000 churches across Uganda. The bishops identified many possible interventions with PAG for both disaster risk reduction and climate change adaptation, including: setting up kitchen gardens; water harvesting; alternative sources of fuel; production and use of Bio-gas; planting drought- and flood-resistant crops; and monitoring rain patterns to help communities forecast rain and adjust to ever-changing rainfall patterns.

Tearfund partner PAG Uganda

0.4 How do people use CEDRA?

We have received reports of CEDRA being used in the following ways:

- as a strategic assessment to inform annual or three- to five-year planning cycles
- as a risk assessment to review the sustainability of new or existing programmes
- as one piece of evidence for a National Adaptation Plan of Action (NAPA)
- to inform advocacy plans
- as an aid to help make all work resilient to climate and environmental change
- parts of CEDRA have been used to inform (I)NGOs' own corporate-level and community-level climate change assessments

- findings of CEDRA Assessments have been used to inform community participatory assessments – both in development and DRR.

CEDRA is a highly participatory, flexible process that you should adapt and change to suit your location or requirements. This document provides a structure; some users adapt it, whilst some follow the written guidance very closely.

This guide contains exercises to help you draw up your own CEDRA Assessment and a blank template is provided, along with other forms, as loose pages inside the back cover. Extracts of a real CEDRA Assessment, completed by Tearfund partners in the Democratic Republic of Congo (DRC), are included throughout this guide. Other examples and adaptation project case studies can be found on the accompanying CD-Rom and on our website at: www.tearfund.org/CEDRA

0.5 Understanding climate change and environmental degradation

0.5.1 Environmental degradation

Environmental degradation is a broad term to describe detrimental human impacts on the environment. This includes using natural resources, such as water and forests, faster than nature can replenish them. It also includes pollution of soil, air and water, for example as a result of certain agricultural or industrial methods, or inappropriate methods of disposing of chemicals and other waste products. Environmental degradation also refers to reduction in biodiversity – the variety of plants and animals – and damage to ecosystems. Ecosystems are the communities of plants, animals and other living things working together with non-living parts of the environment such as rocks, water and the atmosphere. In combination, this depletion and damage mean that too few of these vital resources will remain for future generations.

Environmental degradation impacts may include, for example:

- the destruction of forests – causing soil degradation, destroying biodiversity, threatening agricultural livelihoods, and leading to increased land-surface dryness which can affect rainfall patterns and increase risk of droughts
- the building of dams or diverting rivers upstream – causing water shortages, damage to local ecosystems and increased workloads to collect water
- the destruction of natural coastal protection (eg mangroves) – leading to coastal erosion, exposure to storm damage, waterlogging of soils, loss of biodiversity and relocation of communities
- pollution of water, air or soil by factories – harming plants and animals and causing ill health in humans.

0.5.2 Climate change

The climate of the earth has been changing naturally for many millions of years, from ice age to ice age with warm 'interglacial' periods in between. However, since the industrial revolution

Marcus Perkins / Tearfund

Slash-and-burn methods used in forests in Brazil – often a quick and cheap way to clear land for agriculture – damage the soil and plants and contribute to climate change

(end of the 18th century), human activities are affecting this natural cycle. Carbon dioxide and other ***greenhouse gases*** are released through burning fossil fuels (coal, oil, natural gas) in generating energy and fuelling cars, and through changes to land use such as deforestation and certain methods of agriculture. Greenhouse gases form a layer in the earth's atmosphere that traps heat and keeps the earth warm (known as the ***greenhouse effect***). By increasing the concentration of these gases, the greenhouse effect becomes stronger and causes an increase in the average global temperature.

Thus, the term ***climate change*** is usually used to refer to a long-term, significant change in the climate over time, caused by these human activities. Climate variability is different from climate change and refers to natural, short-term changes. A warmer climate has a variety of impacts on weather patterns and they won't be the same across the world – some areas will experience more extreme changes than others. Some examples of these changes are as follows:

- unpredictable rainfall patterns resulting in more rain in some places (which in turn leads to an increase in flooding) and less rain in others (leading to an increase in drought). This results in lack of access to safe water for human or animal consumption, for crops and for sustaining local ecosystems
- rising temperatures and drought, leading to crop failure and food insecurity and harming biodiversity
- rising temperatures causing the polar ice caps to melt and sea water to heat up and expand, leading to sea-level rise, causing flooding and coastal erosion
- increased likelihood of hazards, such as floods and landslides and more severe cyclones (hurricanes/typhoons), leading to more disasters.

Climate change could be considered as a sub-set of environmental degradation as the climate is part of the environment. However, as climate change is so substantially harmful to all life on earth, and therefore of great importance to all of us, we refer to it alongside environmental degradation.

It is not always possible to determine which changes are due to environmental degradation and which are due to climate change or climate variability. The important thing is to understand what is changing and to plan an appropriate response – and that is what CEDRA aims to help organisations to do.

0.6 Finding out more

The Impacts and Options Checklist in the pocket at the back of this book gives more examples of the most common impacts of environmental degradation and climate change on our communities and projects. The Tearfund publication, *ROOTS 13: Environmental sustainability*, gives further information on the subject. Tearfund's website www.tearfund.org/tilz includes a number of policy reports and other useful documents on the causes and impacts of climate change and on the action needed in response.

CASE STUDY
Farmer Field Schools

The two-year severe drought in the Northern Mara region of Tanzania has caused acute food shortages and malnutrition, especially among women and children. After very poor rainy seasons in 2009, when food and cash crop production plummeted by 50 to 70 per cent, the annual long rains in 2010 faltered across much of the country. About 85 per cent of maize, millet, sorghum and cassava crops were affected. There were also serious water shortages, lack of pasture and massive loss of livestock. Children stopped going to school and families sold whatever they had to buy food. Some young girls were being forced to marry into wealthy households so that their families could buy food with their dowries, while others were turning to prostitution. People were eating seeds intended for planting then travelling to other areas to look for work.

Tearfund's partner, Africa Inland Church (AIC), is helping communities to establish their own sustainable food security solutions through the use of Farmer Field Schools (FFS). Communities have already adopted improved farming methods on a wide scale, including soil conservation, improved fertility and planting techniques, and the use of drought-resistant seeds.

Each village-based FFS of ten to 20 small-scale farmers is trained in demonstrating improved farming methods to the whole community. This includes land preparation techniques, boosting fertility, crop spacing, planting calendars and rainwater harvesting. Communities are learning to network and establish partnerships with other stakeholders, such as the government and other NGOs. This has empowered them. In Kabasa, for example, the community asked the local government to ensure middlemen adopted the government-instituted price increment, which they did.

http://tilz.tearfund.org/foodcasestudies

0.7 Key principles of CEDRA

0.7.1 Adaptive resilient development for long-term sustainability

Tearfund is very concerned that climate and environmental change are having the greatest impact on the poorest, most vulnerable communities by increasing the scale and frequency of disasters and reversing development gains. We therefore encourage the partners, networks and communities we work with not to treat climate change as a new sector and we suggest that adaptation projects should not be undertaken separately from development and DRR projects. Instead, we suggest climate and environmental change should be addressed in an integrated way, together with other projects. Tearfund believes that all projects should be designed to ensure development, adaptation to climate and environmental change, and resilience to disasters. We refer to this as *adaptive resilient development*.

See Appendix B for a more detailed discussion on adaptive resilient development.

NOTE
It is easier to respond to immediate needs, which are more often related to environmental degradation, than to the long-term projected impacts of climate change. We should be careful that our Assessment and final Action Plan address both.

Within this approach, we encourage development and humanitarian workers to avoid working in 'silos' or isolation. For example, an NGO may have one team working on WASH (water, sanitation and hygiene) projects, another on food security projects and another on DRR. Time is short and the multiple pressures we face (from climate and environmental change to food insecurity and conflict) mean it is no longer possible to address issues in isolation. Communities do not think in 'sectors': they simply want to develop in a way that improves the whole of their lives. We strongly encourage CEDRA users to work together to design community-led projects that address multiple problems together. However, we recognise that many organisations do still work in 'sectors' and so CEDRA is designed to be useful both to organisations who do integrated projects addressing many areas, and to those who work in one or several specific sectors. It is also important that we do not just assume our development work will automatically address climate and environmental change; projects in response to climate and environmental change often look like our existing projects. However, the reasons for doing them are different, as they are based on research and scientific evidence.

0.7.2 Participatory decision-making

It is extremely important that you involve a wide range of stakeholders throughout the CEDRA process, particularly communities and scientists. It is vital to ensure that both scientists with access to detailed knowledge and also those who are most vulnerable and often least consulted are heard – in particular women and children, and minority groups.

Most of the exercises within CEDRA are best carried out through focus group meetings with a range of stakeholders. These stakeholders help us identify sustainable adaptations and by involving them, we help them develop a strong sense of ownership of decisions made. This should also encourage further valuable sharing of knowledge. We strongly recommend that power dynamics such as gender equality are considered from the outset. Please see Step 3 for more information and guidance on participatory approaches. If you are new to the idea of

participatory approaches, we recommend that you seek training before beginning your CEDRA Assessment.

0.7.3 Gender equality

Climate change affects women and men differently. It is important that, when you consider the impacts of climate and environmental change, and plan your responses, you consider gender issues at every stage. This involves looking at the different impacts on men and women, as well as looking at the power relationships (which are often unequal) between women and men. It is often appropriate to speak to groups of men and women separately. Likewise, in developing your responses, you need to include girls, boys, women and men. Gender relations are context-specific, change over time and interact with other social variables such as ethnicity, caste or wealth.

It is also important to ensure that the team carrying out CEDRA includes both women and men and has women in senior positions. As well as being right in principle, it can be an excellent way to ensure women's voices are heard, and will give a diversity of viewpoints to your group. Some useful resources on gender and climate change are listed in Appendix D.

0.7.4 Collaboration and knowledge-sharing

CEDRA is best used by a group of agencies working together. Advantages can include sharing workloads, skills and resources, and working together to influence policy change or encourage other agencies to engage with environmental issues. Before you start, consider whether there are other agencies you can work with. Though they may have a different vision or purpose, they will also have different knowledge and experience, and you can share resources and contacts.

Consider running a workshop and inviting different agencies, including local and national government, to find out who is doing what and to establish who would be interested in working together. Climate change and environmental degradation are huge issues, too large for one agency to tackle alone. You may also want to consider setting up a regular forum for NGOs, UN agencies and the government to share information and lessons learnt on these issues.

CASE STUDY

DRC partners working together in a 'Partner Consortium'

Following a CEDRA workshop, staff from eight Tearfund partners in the east of the Democratic Republic of Congo (DRC) decided to form four geographical clusters to carry out CEDRA (in Bukavu, Beni-Butembo, Boga-Bunia and Aru).

- They shared field work to gather scientific and community information and developed a joint CEDRA Assessment, sharing their findings with local communities and stakeholders.
- A joint two-day follow-up workshop was organised to share learning and discuss challenges and technical issues. They helped each other develop Action Plans.
- They continue to share learning and carry out joint actions and adaptations.

This arrangement has proved very successful and enabled partners to achieve far more than they would have done individually. We use the example of the 'Partner Consortium' in the Diocese of Aru to illustrate the Steps and exercises throughout this book.

The full case study can be found on the CEDRA CD-Rom and at www.tearfund.org/CEDRA/ExampleAssessments

Women and children in Uganda discuss changes in the environment and climate, and their plans to adapt farming methods.

Mike Wiggins / Tearfund

0.7.5 Monitoring and learning

It is important to ensure good monitoring and evaluation of the changes you make to projects as a result of the CEDRA process (see Step 7). But we also encourage continuous monitoring, reflection and learning as you carry out each individual Step in CEDRA. It is important to think what you want to achieve at the beginning of each Step, and about how you will measure the extent to which you have achieved it. The CEDRA process provides opportunities for learning in many areas (such as research, participation, planning etc), as well as wider issues such as organisational behaviour and gender dynamics within your team or organisation. We provide questions at the end of each Step to help you reflect on lessons learnt and think about what changes you may need to make as a result.

Step 1 Mapping where we work

To determine the likely impacts of climate and environmental change on communities and projects, you should decide which location(s) you are going to assess. You will need to think through what you already know about these locations and decide what information you need to gather. The process of mapping is as important as its end result – the process will help you think through many different issues relating to the communities you work with. You will develop a visual picture of where the problems are, how they relate to each other and what resources you need to address them.

IN STEP 1 YOU WILL

- ☐ Select the locations you want to map and assess.
- ☐ Draw maps of the locations where you work – including geographical features, demographics, socio-economic activities, environmental hazards and your current projects and activities.
- ☐ Draw a problem tree and use the Impacts and Options Checklist to identify the likely causes and impacts of climate change and environmental degradation (based on current knowledge and understanding).
- ☐ Compile a list of questions that you want answering.

1.1 Selecting impacted areas to assess

CEDRA users in different countries have mapped and assessed whole countries or districts, towns or villages, as well as areas crossing national boundaries. You should identify other agencies with which you want to work in your Assessment and agree with them which areas to map. Maps usually cover the district or region in which the agencies completing the CEDRA Assessment work. However, you may prefer to map a number of local communities separately. We often start the mapping process in our CEDRA capacity building workshop, but this is then continued after the workshop. We ensure that our mapping is correct, and can make any necessary changes, at a later stage when we consult scientific experts in Step 2 and, crucially, communities in Step 3.

1.2 What to include on your assessment map

You can include on your map anything you find useful. Each of the following features can be added. You do not need to be an artist: most people use some kind of key with symbols or colours to represent different activities.

- **Geographical features** include areas such as forests, mountains, rivers, flood plains, marshlands etc (see Exercise 1 on page 16). You should take care to distinguish between

them. This stage of the mapping exercise will help later when you identify environmental hazards because they can be specific to particular locations. For example, hilly areas may face landslides, coastal areas suffer increased soil salinity etc. By contrast, some impacts, such as the increased severity of cyclones, can affect one or several countries. Try also to identify positive features such as higher ground not susceptible to flooding, a district capital with a hospital, good communication links etc.

- **Demographic information** shows where different people groups live and their different activities. This will help us begin to map their activities and understand how they interact with the environment. It is important to think about the different roles women and men play and the different work and tasks they undertake, as well as about children's activities.
- **Socio-economic activities** can be mapped to help us understand further how women, men and children interact with the environment. For example, local industry is likely to use local natural resources such as water, timber, clay or metals. Local livelihoods are likely to affect local biodiversity through activities such as agriculture, fishing or deforestation.
- **Power dynamics** between women and men, and their impact on children, should be mapped, considering issues such as access, control and decision-making. Women usually have the least access to natural resources and land, and the least control and power to make decisions. Yet, women make up the majority of agricultural workers and are generally more dependent on natural resources than men for the provision of food, water, fuel and herbal medicines.

Mike Wiggins / Tearfund

Children map their community, Caracol, Honduras.

- **Environmental hazards** threatening different geographical locations will have to be assessed, unless the physical geography is similar throughout the country or region. You will need also to think through their different impacts on men and women. Some of the hazards may have become obvious as you have added features to the map. Others you may presume or guess at from experience, such as the likelihood of landslides in deforested hilly areas. Some hazards you may be unaware of at this stage, and you will have to add them in later, after consulting communities and other external stakeholders.
- **Projects and activities** being undertaken by communities, yourself and other stakeholders can now be added to the map. These may cause, contribute to or reduce hazards – for example, cutting timber can contribute to loss of water resources or landslides. Flood diversion projects can unintentionally move the flood risk to impact other communities.

Exercise 1

Draw your assessment map

Discuss the locations where you work and select an area you want to map.

Draw your map, with reference to official maps of the area. If this is a map of a town or district, it is good to consult local community members, or even to invite them to draw the map. If you are drawing many towns or villages or a national map, it is good to get the input of other stakeholders, such as local or national government members, other NGOs, universities or scientists.

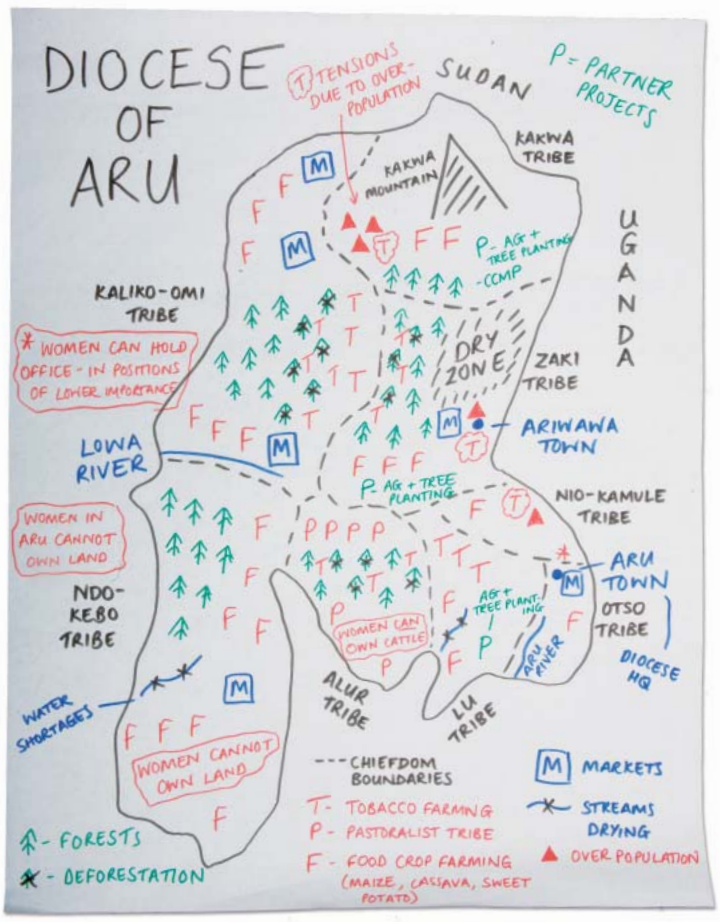
Ensure you have added all the different geographical features, such as:

- coastal
- wetlands
- dry/arid/desert
- arable land
- flood-plains
- lakelands
- highlands
- mid-altitude
- lowlands
- forests
- cloud forest
- rainforests
- semi-arid or steppe
- tundra
- grasslands
- savannah
- town or city
- urban settlements

Now, add the other features – demographics, socio-economic activities etc – as described above.

Example Assessment map

Tearfund partners in the Aru Diocese of Democratic Republic of Congo decided to work together on a CEDRA Assessment. Aru, in the north-east of the country, is in Ituri District in Orientale Province. The partners produced the map shown here.



NOTE
Additional examples of maps can be found on the accompanying CD-Rom or downloaded from our website: www.tearfund.org/CEDRA/Maps

1.3 Causes and impacts of climate and environmental change

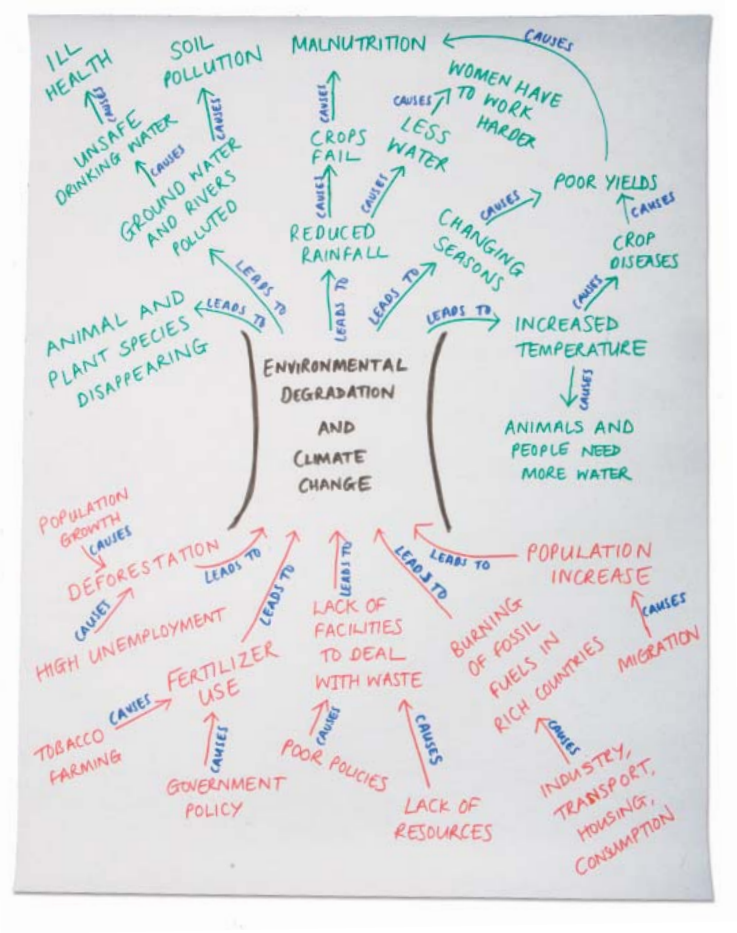
As we saw above, different climate- and environment-related hazards will affect different areas in different ways. You have added some of these to your initial map. It is useful at this stage to consider what you believe future climate and environmental hazards are likely to be. It is important to note that this is an initial assessment based on your current knowledge, to help prepare you to research the issues in more depth. In the following Steps, you will research scientific information and community perspectives on these issues.

Many people use a problem tree to explore the causes and impacts of climate change and environmental degradation. Importantly, it shows the linkages between root causes and problems. An example is given below from the Diocese of Aru, DRC. The problem tree is typically drawn in the way described in Exercise 2 (below).

Example Problem tree

This problem tree was devised by Tearfund partners in the Diocese of Aru, DRC.

NOTE
More examples of cause-and-impact problem trees can be found on the CD-Rom or at: www.tearfund.org/CEDRA/CausesImpacts



Many CEDRA users refer extensively to the climate and environmental **Impacts and Options Checklist** (in the pocket at the back of this book) when thinking through climate change impacts. Doing so helps them write a fuller list of likely impacts and a list of questions for communities and other stakeholders.

It is important to consider how impacts affect women and men differently. For example, when a shortage of rain leads to less fresh water, women's workload is increased as they have to walk further to fetch water. Children, especially girls, are particularly vulnerable to the impacts of climate and environmental change such as diarrhoea, malaria, malnutrition and reduced access to education. It is important to take gender and age into consideration when considering impacts, at every stage of the CEDRA process.

Exercise 2

Climate and environmental causes and impacts

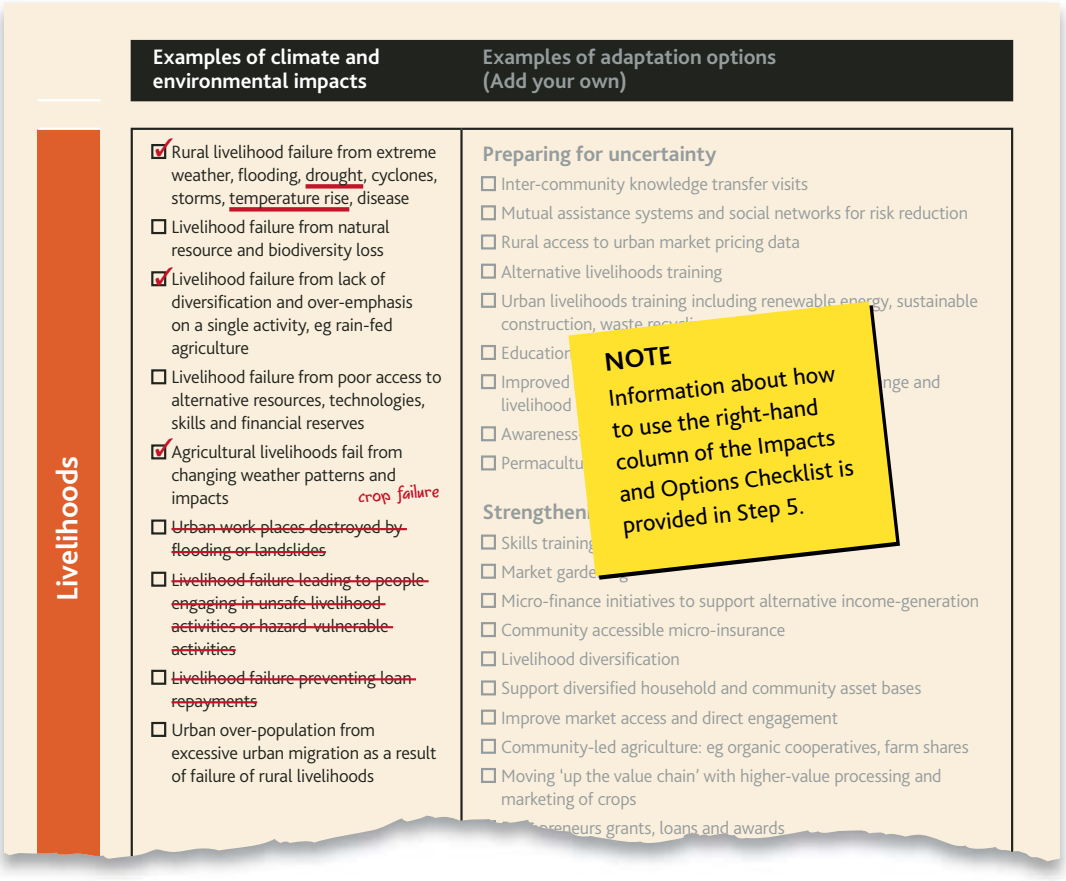
- Develop a problem tree. Start by drawing a tree trunk and write on it the problem you are considering. In this case, we are thinking about environmental degradation, including climate change.
- Now, list all the causes of environmental degradation and climate change that you can think of and draw these as the roots. Depending on how large an area your map covers, there could be many causes, so it may be useful to group the causes into categories (such as agriculture, fuel etc) by drawing sub-roots off the roots. For each cause, ask the question 'why' to identify further causes. At this stage, you are just mapping the possible or suspected impacts. You will verify them later.
- In a similar way, the impacts are drawn as branches on the tree. You may find it useful to group these impacts by drawing twigs on the branches.
- Some people also draw fruit on the tree, which represent the consequences of the impacts. For example, an impact category could be flooding: this could be split into health, food and infrastructure impacts. A 'fruit' of the health impacts could be an increase in water-borne diseases.
- Use the climate and environmental Impacts and Options Checklist (in the pocket at the back of this book) to think through further likely impacts of climate and environmental change. This is just an initial exercise to consider what the impacts might be. Your research in Steps 2 and 3 will confirm them.

While completing this by yourselves in a workshop setting, it should also be completed by different community focus groups.

- To use the checklist, ignore the right-hand column at this stage. You will refer to this later. The first narrow column has categories of impacts written on the side of the table, such as land, health, water, agriculture. Look down this column and select the appropriate part of the table. Tick any impacts which may affect your projects. Underline text which you think best applies to your locations. Most people also add other impacts. If you are not sure, then tick impacts for now and check them later. Many will not be relevant to you: just ignore them or cross them out. Do this for each of the different locations in which you work (see Section 1.1).
- Add the impacts from the checklist to your problem tree if you like. Or you can keep the two separate. You will use these to develop the list of questions you want answered in the next exercise.

Example **Impacts and Options Checklist**

Devised by Tearfund partners in the Diocese of Aru, DRC.

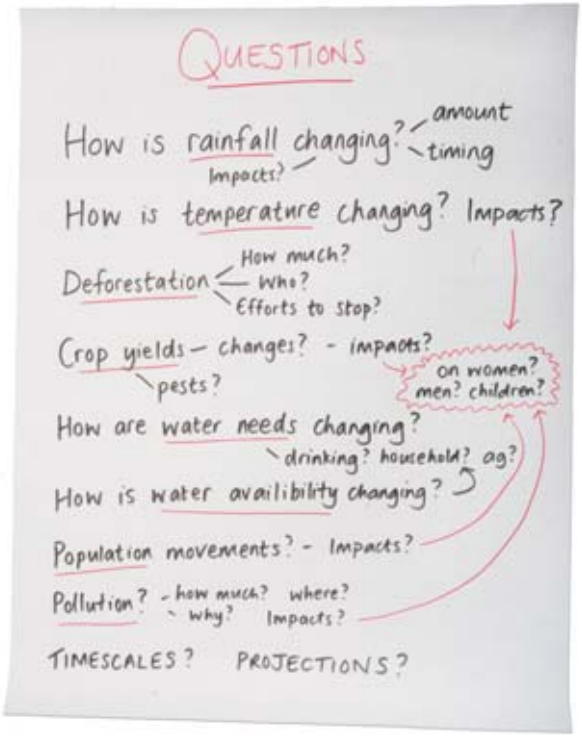


	Examples of climate and environmental impacts	Examples of adaptation options (Add your own)
Livelihoods	☑ Rural livelihood failure from extreme weather, flooding, drought, cyclones, storms, temperature rise, disease ☐ Livelihood failure from natural resource and biodiversity loss ☑ Livelihood failure from lack of diversification and over-emphasis on a single activity, eg rain-fed agriculture ☐ Livelihood failure from poor access to alternative resources, technologies, skills and financial reserves ☑ Agricultural livelihoods fail from changing weather patterns and impacts crop failure ☐ ~~Urban work places destroyed by flooding or landslides~~ ☐ ~~Livelihood failure leading to people engaging in unsafe livelihood activities or hazard vulnerable activities~~ ☐ ~~Livelihood failure preventing loan repayments~~ ☐ Urban over-population from excessive urban migration as a result of failure of rural livelihoods	**Preparing for uncertainty** ☐ Inter-community knowledge transfer visits ☐ Mutual assistance systems and social networks for risk reduction ☐ Rural access to urban market pricing data ☐ Alternative livelihoods training ☐ Urban livelihoods training including renewable energy, sustainable construction, waste recycl… ☐ Educatio… ☐ Improved … livelihood … nge and ☐ Awareness … ☐ Permacultu… **Strengthen…** ☐ Skills training … ☐ Market garde… ☐ Micro-finance initiatives to support alternative income-generation ☐ Community accessible micro-insurance ☐ Livelihood diversification ☐ Support diversified household and community asset bases ☐ Improve market access and direct engagement ☐ Community-led agriculture: eg organic cooperatives, farm shares ☐ Moving 'up the value chain' with higher-value processing and marketing of crops …preneurs grants, loans and awards

NOTE
Information about how to use the right-hand column of the Impacts and Options Checklist is provided in Step 5.

1.4 Compile a list of questions that you want answered

You will by now have written a long list of possible climate and environmental hazards facing your communities or projects. However, you will probably have very little information about the scale of these impacts or their relative significance. You are also unlikely to have much information about how these impacts have changed over time or may change in the future. It is therefore helpful at this point to write a list of questions you would like answering to help you understand the extent of climate and environmental impacts in the areas you have mapped.



Exercise 3

Write a list of questions you want answered

For each of the geographical areas you have drawn on your map, write a list of questions relevant to the climate and environmental impacts you identified above. You may find that some of the questions are the same for different areas, which will reduce the amount of research needed. It is important, however, to make sure you collect all the information needed for each place where you work.

The questions you write can be put to different communities and other stakeholders that you will identify in Step 2. You will probably be surprised by the amount of information others have to answer your questions easily and thoroughly.

In the pocket at the back of this book, we have included a longer list of possible questions to which you can refer in drawing up your own list. This form also includes columns to record different stakeholders' answers. You will not need all of these questions and you will probably want to add some of your own, related to the possible impacts you identified or were unsure about in Exercise 2.

There is a good and more comprehensive list of questions we could use when meeting with scientists and national meteorological offices developed by the Red Cross Climate Centre, at: http://www.climatecentre.org/downloads/File/Stakeholders%20Analysis.pdf

An extract of the list of questions provided at the back of this book is shown below.

Some of the CEDRA Community and Stakeholder Questions

Questions	Answers	Sources
How would you define climate change?		
What climate change impacts have already impacted our country / district / location? • Do you have any evidence / records of these impacts?		
How would you define environmental degradation?		
What environmental degradation impacts have already impacted our country / district / location? • Do you have any evidence / records of these impacts?		
Do you have information about past and present changes regarding the following?		
• Annual and seasonal rainfall – amount, duration		
• Annual and seasonal average temperatures		
• Annual and seasonal [illegible]		

We recommend that you share your maps, likely impacts and list of questions with others in your network, so you can help and support each other in your CEDRA Assessments.

Questions for reflection and learning:

- **What have you learnt as you've carried out this Step?**
- **Have you achieved what you set out to do when you started?**
- **Is there anything you need to change in your approach as you address the other Steps?**
- **Are there skills you've learnt that could be useful to pass on to others in your organisation?**
- **How can you feed back your learning into your annual planning cycle and organisational strategy / strategic review?**

Step 2 Reviewing the science

Part 1a of the CEDRA Assessment

In Step 2, you will begin to answer the questions you wrote in Step 1. You will do this by accessing scientific information to find out about past, present and projected climate change and environmental degradation. After this Step, you will use your scientific research to inform your community consultations and risk assessment. Step 2 contains a number of different tables that show you where you can get scientific information. Exercise 5 on page 28 guides you through using these tables to do your scientific research.

IN STEP 2 YOU WILL

- ☐ Identify which people and information sources to consult.
- ☐ Contact scientists and other stakeholders.
- ☐ Consult national government sources of information.
- ☐ Look at internet sources of information.
- ☐ Summarise key scientific findings in Part 1a of your CEDRA Assessment.

2.1 Understanding and using scientific information

You need to have a good understanding of past and future climate and environmental change to ensure that your work with communities does not fail. Usually our work with communities builds on their existing knowledge and their past experiences of coping with poverty and disasters. The impacts of change mean that our normal humanitarian or development work will fail unless we understand what the most likely climate and environmental changes are and plan so that our projects will be able to withstand them. The strong evidence about current and projected climate and environmental changes that you gather in this Step, along with the experiences of communities in Step 3, will help you understand and prioritise the expected impacts (Step 4) and help you develop strong adaptation options (Step 5).

Finding out about scientific information may seem daunting. This is a common response. We should support each other as we gain experience and confidence. Sharing your scientific research and findings with others in your network will help all of you develop much better CEDRA Assessments, with less effort.

You need to dedicate enough time to finding out about local scientific projections so that your Assessment is accurate. It is good practice to consult several scientific sources to check your findings or identify any information that may be incorrect or misleading. Some sources will probably be more reliable than others.

Uncertainty

Climate science is quite advanced in making projections on a global and regional scale for many decades into the future. Projections are beginning to be available at a local level, but in many places this is not yet the case. There are lots of uncertainties in attempting to make projections of future climate, such as the volume of greenhouse gases that we will produce over the coming decades, or how the natural environment will react to warmer temperatures. Therefore, scientists produce a collection of projections of future climate, giving us a range of future conditions to prepare for. For example, if scientists predict an increase in rainfall of between 30 and 60 per cent, then we should make sure that our projects can definitely withstand an increase of 30 per cent. We should also come up with contingency plans for a 60 per cent increase and see whether we can afford to prepare our projects for this. We should also be aware that scientists use cautious language. When they say something is 'likely', they mean it has more than a 66 per cent certainty of happening, and when they say 'very likely', they mean more than 90 per cent certainty. It is important when exploring the science to ensure that we don't just focus on the short-term projections. We also need to address long-term climate stresses that increase over time, for example, timeframes of 50 to 100 years.

Climate science will often show us that we need to plan for uncertain, unpredictable changes. For example, in the Sahel region of North Africa, we are advised that climate change will lead to a major change in rainfall, but it is currently not possible to forecast whether that means much more rain or much less rain. In cases such as this, we have to plan for a major change without knowing what it is. See Section 5.1 for more discussion on *soft adaptation* methods that help communities adapt to a wide range of changes.

You will find some tips on talking with scientists on the CD-Rom in the back of this book.

We need to work with scientists to translate what they say into information that is of direct help to the communities we work with. This usually means building the adaptive capacity of communities so they are better prepared to deal with a range of different possible changes. Examples include: livelihoods diversification; setting up disaster early warning systems; and helping them gain better access to information, such as local weather forecasts, through good communications links and use of local advisory systems.

2.2 How to find information and make contacts

Each country and region will have its own sources of scientific information. Data, maps and graphs are available for both climate and environmental change, and for anticipated risks of disasters. The relevance, availability and quality of this information vary between locations and sectors. If you are unable to find information specific to your locations, use country- or regional-level information instead. More advice on finding sources of information is given below.

New sources of scientific information are constantly being developed and climate change and environmental degradation are advancing rapidly. It is therefore very important that you check, at least annually, whether scientific projections have been updated. This is further discussed in Step 7.

2.2.1 Stakeholder analysis (and choosing other sources of information)

Most of us tend to use our own experience or consult immediate colleagues or regular contacts when planning our work. However, it is critical that you consult people who have more expertise and experience than you do regarding climate and environmental change, or ultimately your projects may fail. If possible, we recommend that you invite a scientific expert to join you in your first CEDRA workshop to help participants understand the scientific projections for the country and region, and interpret what they mean for the local communities you work with. Try and encourage them to stay for the whole workshop so they engage with the process.

You can use what is known as a 'stakeholder analysis tool' to identify relevant stakeholders and sources of information and knowledge – and effectively draw up a plan of action for your research. There are a number of different ways to do this and we explain one method in Exercise 4 below.

Exercise 4
Conduct a stakeholder analysis

Create a table with three to five columns to categorise different stakeholders – and also other sources of information. Discuss in your group what these categories could be. Write down all the different people, agencies, groups and other sources of information you can think of.

Read through the rest of Step 2 and add to your table of stakeholders. When you have done this, rank (prioritise) which stakeholders or information sources you think may be the most useful. Then, plan which of you will consult them to answer your questions.

If you are a group of organisations carrying out a joint CEDRA Assessment, you will be able to consult more stakeholders and sources of information. The more you consult, the more likely you are to get a strong understanding of the most likely risks your projects will face. If you are a single organisation working through CEDRA, you may not have enough time to do as much research.

Example Stakeholder analysis

Compiled by Tearfund Partner Consortium from the Diocese of Aru, DRC

STAKEHOLDER ANALYSIS

National or local government departments		Local or national networks or alliances		UN agencies, (I)NGOs, companies		Universities / academics		Internet sources	
Department for the Environment and Sustainable Development	1	Climate Action Network	3	UNDP/ UNEP	1	National University science departments	2	National Adaptation Plan	1
District Health and Sanitation Department	2	Regional Disaster Management Network	1	Tobacco companies	1	Regional Environment Research Council	2	World Bank Climate Change Knowledge Portal	2
Agriculture, Fishing and Rearing Inspectorate	2	Anglican Church Relief and Development Society	2	Oxfam	2	Local colleges and study centres	2	Adaptation Learning Net	1
National Climate Change Focal Point	1			Food and Agriculture Organisation (FAO)	1				

Contact through Red Cross

key document

NOTE
The numbers here are an indication of priority.

2.2.2 Stakeholders with scientific knowledge

NOTE
Keep adding any new people you identify to your stakeholder analysis table.

Your stakeholder analysis will have helped you identify some people in your area who have knowledge or interest in the environment and who want to share this information with you. They may include other agencies, community workers and local government officials, such as environmental, water, health, agricultural or food security technical officers. It is really important to contact these people. They in turn may be able to provide you with other useful contacts. There will be other experts whom you do not yet know but whose contact details can be found online or by contacting the organisation they work for.

These people can be added to your stakeholder analysis, to keep a record of everyone you are contacting. You should ideally include some of the people listed in the tables below. Some agencies have a key contact person or group called a *Focal Point*, as well as a country adaptation strategy. Try to access them. Networking with such people may also lead to opportunities to influence local or national policies and even to fruitful funding contacts.

CASE STUDY
Accessing scientific information

The ease with which reliable scientific information can be accessed varies between countries and regions. Tearfund partner Bangladesh Nazarene Mission found local and national scientific data relatively easy to access in Bangladesh. 'To collect the science data, we used an IPCC [Intergovernmental Panel on Climate Change] report, reviewed three reports from the local agriculture, fisheries and meteorological departments, and checked these against information from the national government office. We had not worked with these agencies before. This was very new to us, but it helped us and changed the way we now plan our work.' The government's National Adaptation Programme of Action (NAPA) was available online, and the World Bank Climate Portal also gave detailed projections of changes to rainfall, frequency of cyclones and temperature.

For organisations implementing CEDRA in Uganda, however, it was a more difficult process. Experts at both district and national levels told them they could not release information, and some advised that there was an official fee to access the data. However, some national-level information was still available on the internet: for example from Tearfund's website, a UNDP Climate Change Country Profile and the World Bank Climate Portal (see Table C), and local information was eventually found through contacting the World Meteorological Organisation.

Mike Wiggins / Tearfund

Local authority agricultural advisers often have a wealth of information about what is happening in the region and what the government is doing. They may also recommend other networks and stakeholders to contact.

TABLE A
Stakeholders with scientific knowledge

Stakeholders	Details
Scientists from your country's national meteorological office (or similar) and local climate stations	Meteorological offices study the atmosphere, maintain national and local weather records, and focus on weather processes and forecasting. Some offices provide climate projection data.
Scientists in relevant faculties in your country's universities	Contact university departments such as: Environment, Ecology or Earth Sciences.
Other scientists	Consider contacting environmental research agencies or environmental NGOs.
Government officials	Try to contact the Focal Points related to climate change and DRR, for example: • **National Climate Change Focal Points** – see a list of country Focal Points here: http://maindb.unfccc.int/public/nfp.pl This person or group of people should help you identify useful contacts in relevant government departments. • Many governments also have a person who is a **national Focal Point for the country's DRR programme**: www.unccd.int/en/about-the-convention/Official-contacts/Pages/default.aspx • There may also be a **National Platform for DRR**. This website www.unisdr.org/partners/countries contains links to governments which have a National Platform, along with details of the relevant national Focal Points. • It may be useful to consult the **government ministry responsible for gender equality or women** to see if they have researched climate and environment from a gender perspective. It would also be useful to speak to people in national or local government offices, such as officials in the environment, health, water or agricultural ministries.
UN and other multilateral agencies working in the area of climate change and environmental degradation	Try for example: • **GEF – Global Environment Facility** Regional or country Focal Points may be available via the following websites: www.gef-ngo.net www.gefonline.org/Country/CountryProfile.cfm • **FAO – Food and Agriculture Organisation** The FAO representative's email address is shown on each Country Profile page. Click on the 'Select a country' tab on the left-hand side of the page: www.fao.org/countryprofiles • **IFAD – International Fund for Agricultural Development** Country programme managers' email addresses come up in the bar at the bottom of the following webpage, when you hover your cursor over the person relevant to your country: www.ifad.org/operations/projects/regions/country.htm • **UNDP – United Nations Development Programme** Country information can be found via the following website (which may also have information on DRR strategies): www.undp.org/countries/ • **UNEP – United Nations Environment Programme** Country information can be found via the following website (In some countries, UNDP represents UNEP): www.unep.org/Documents.Multilingual/Default.asp?DocumentID=296
Other development agencies or networks interested in climate change, environmental degradation or DRR	• **Preventionweb** www.preventionweb.net/english Go to the 'Countries and regions' tab, then click on 'National platforms' in the list on the left side of the screen. The details of the national Focal Point will then be displayed. • **Red Cross / Red Crescent Climate Change** www.ifrc.org/en/what-we-do/where-we-work Click on your region and then your country, and the contact details are displayed.

NOTE
Exercise 5 (page 28) explains how you may want to use these tables.

2.2.3 National government sources of information

Most countries have prepared national documents that contain important information on climate change and environmental degradation. They provide scientific information but also explain the government's strategy for addressing risks and impacts. It is important to try to access these if possible. Not only will they help you find out about the science, but they tell you who is working on different issues so you can contact them to collaborate. They can also indicate potential sources of funding. You can usually find these documents on the internet, or from your government's Climate Change Focal Point (see Table A on previous page). These core documents are listed in Table B below, along with websites where you might find them.

TABLE B
National government sources of information

Source	Description	Website
National Communication (NC)	Contains information on greenhouse gas emissions and both current and projected impacts of climate change and environmental degradation, along with information on country adaptation strategies.	http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php
National Adaptation Programme of Action (NAPA) and National Adaptation Plan (NAP)	Most Least Developed Countries (LDCs) have developed NAPAs. They contain information on current and projected impacts of climate change and environmental degradation and on national priority adaptation activities to make the country less vulnerable to climate change. NAPAs are gradually being replaced by NAPs. Check whether your government has produced them.	http://unfccc.int/adaptation/napas/items/4585.php
National Action Programme to Combat Drought and Desertification	These documents contain useful information such as maps on soil and wildlife patterns and other environment-related records, as well as national plans to combat drought and desertification.	www.unccd.int/actionprogrammes/menu.php Follow the links to the relevant region and country.
National Development Plans or strategies	In some countries, these are the key documents (often called National Poverty Plans, National Development Plans or National Action Plans Against Poverty) on climate change and environmental degradation, rather than a NAPA or NAP. Countries also have documents called NAMAs (Nationally Appropriate Mitigation Actions) and national disaster management documents that may prove useful.	There is no central website for all of these documents. You will need to search your government website or ask government stakeholders.
National Biodiversity Strategies and Action Plans (NBSAPs)	These outline countries' commitments under the Convention on Biological Diversity and address climate threats and adaptation needs for protected areas.	www.cbd.int/nbsap/search/ You are able to search by country.

2.2.4 Internet sources of information

Internet sources of information about climate change are developing very rapidly. Unfortunately, the same is not currently true for information about environmental degradation. As with other sources of information, it is important to ensure the internet source is reliable. These sources include documents that you can download and also online tools which you need to search, select options and input information. Often, the information from these tools is provided in the form of tables, graphs or maps, rather than as a written document. They can provide very specific information, such as projected rainfall and temperature change for a particular place over a particular period of time. Some also suggest adaptation options.

The Intergovernmental Panel on Climate Change (IPCC) is one of the most reliable sources (see Table D, below). However, it presents its findings in long documents with many graphs and data which can be hard for a non-scientist to interpret accurately, and it is only published at five- or six-yearly intervals. We recommend that you look at the information the IPCC has produced for your region. However, we would suggest that you begin by reading the country summaries on the websites in Table C (although not all countries are covered). These summaries often use IPCC data but are more accessible than IPCC reports and some of the other 'second-stop' internet sources (see Table D, below). You should also consider using the second-stop internet sources as they may provide important information not contained in the country summaries. This is particularly true if summaries for your country are not available from the websites in Table C.

TABLE C
'First-stop' internet sources – country summaries

Source	Description	Website
UNDP Climate Change Country Profiles	52 country profiles giving a wealth of current and projected climate information.	http://country-profiles.geog.ox.ac.uk/ Click on 'Reports' next to the relevant country
Adaptation Learning Mechanism	Provides summaries of changes in the climate in different countries, and links to relevant documents and resources. Encourages users to use the World Bank Climate Change Portal (below) for detailed climate information.	http://www.adaptationlearning.net/country-profiles
World Bank Climate Change Portal	Provides climate and climate-related data for development practitioners and policy makers. Click on local areas on the map to find out scientific projections of climate change, or type your country into the 'search for a place' box. It also provides adaptation options for certain projects (although the number of projects is limited).	**http://sdwebx.worldbank.org/climateportal/** For country profiles see: http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile
Tearfund Climate Country Profiles	Country profiles compiled for some countries where Tearfund partners work.	www.tearfund.org/CEDRA/ClimateProfiles

Exercise 5

Gathering your scientific information

NOTE
Links to these websites are also on the CD-Rom and at: www.tearfund.org/CEDRA/ScienceSources

If you have access to the internet, you may find that many of your questions can be answered from internet links in Tables B, C and D. Identify which sources may best answer your questions (see Exercise 4, page 23).

Once you have created the table in Exercise 4, plan who should contact which stakeholder, and who should research which documents or internet sources. As mentioned above, it is a good idea to cross-check your sources with other information. Consider the following:

- Think about people you already know who have knowledge or interest in the environment. These may include other agencies, community workers and local government officials such as environment, water, health, agricultural or food security officers. Ask them whether they have scientific information on the local impacts of climate and environmental change, and see if they can answer your questions from Section 1.4. Ask them for the contact details of other people who may have more relevant information.

  Contact these other people. Visiting them in person is usually more fruitful than phone calls, letters or emails. Take questions about the type of information you need.
- Try to visit your country's National Focal Point. Request relevant documents.
- Visit the websites listed in Tables B, C and D to answer some of your questions.

Finally, summarise key scientific findings that answer your questions from Exercise 3 in Part 1a of the CEDRA Assessment. See an example of a completed part of the report on page 31. It is important to provide source references for all the scientific information you provide. You can reference documents, websites and stakeholder interviews. Divide the scientific information into sections so it is easier to read and understand. For example, your section headings might be: Rainfall changes; Temperature changes; Soil salinity; Sea level; Soil quality; Health etc.

As discussed, we recommend that you share your stakeholder analysis, scientific research and stakeholder consultation findings with others in your network, so you can support each other in your CEDRA Assessments.

Kenyan partners consulting the Kenya Red Cross Climate Centre

Mike Wiggins / Tearfund

TABLE D

'Second-stop' internet sources

NOTE
The IPCC is currently working on a 5th assessment report which will have more and up-to-date information on impacts on particular countries. This is likely to be available in 2013 or 2014.

Source	Description	Website
IPCC (Inter-Governmental Panel on Climate Change)	Summaries of scientific information on climate change according to region, and the impacts on ecosystems and societies.	www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter11.pdf
The Climate Information Portal	A useful website providing detailed data on past and present climate change in Africa and projections for the future. It also provides guidance on how to interpret the data.	http://cip.csag.uct.ac.za/webclient/introduction
Climate Wizard	Shows precipitation and temperature projections under various scenarios.	www.climatewizard.org
The Red Cross / Red Crescent Climate Centre	The Climate Centre contains useful information about climate change, DRR and adaptation options.	www.climatecentre.org
UNEP/GRID-Arendal	See maps and graphics filed by region, covering eg deforestation and coastal intrusion.	For maps and graphics: http://maps.grida.no/
International Research Institute for Climate and Society	Some useful descriptions of climate change adaptation projects and data by region, sector and sometimes by country.	http://portal.iri.columbia.edu/portal/server.pt
PreventionWeb (International Strategy for Disaster Reduction)	Contains country information on past disasters, including occurrences and number of people affected.	www.preventionweb.net/english/ Go to 'Countries & regions' tab
EM-Dat Database	Contains information on past disasters. Searches can be carried out, eg by disaster type and country.	www.emdat.be/Database
Famine Early Warning System	Features articles and reports on droughts and food shortages; up-to-date information clearly listed by region or country.	www.fews.net
Coordinated Regional Climate Downscaling Experiment (CORDEX)	Downscales global climate change computer models' projections, which are being prepared for the next assessment report of the Intergovernmental Panel on Climate Change (IPCC), in order to give climate change projections for local areas (every square 50km) across Africa.	http://wcrp.ipsl.jussieu.fr/SF_RCD_CORDEX.html
World Bank weather station data portal	Gives individual weather station trends for temperature and precipitation.	http://iridl.ldeo.columbia.edu/maproom/.Global/.World_Bank/.Climate_Variability/
Regional Climate Outlook Forums	Many regions have Regional Climate Outlook Forums (RCOFs) generating seasonal forecasts.	www.wmo.int/pages/prog/wcp/wcasp/clips/outlooks/climate_forecasts.html
UK Met Office country reports on climate observations, projections and impacts	These include useful summaries of past climate change and future projections. However, they are only available for a small number of countries.	www.metoffice.gov.uk/climate-change/policy-relevant/obs-projections-impacts

NOTE
These sources of scientific information do not have to be accessed in any particular order.

TABLE E
Advanced web tools

These tools are included because they are often talked about. However, they are really intended for use by scientific experts, although you can apply to the organisations that have developed them for training in how to use them – please see the websites listed for more information.

Source	Description	Website
PRECIS	This tool is available on a DVD and is supplied to institutions which attend a PRECIS workshop. It is a sophisticated tool that generates detailed climate change information for many regions of the world. The intention is that users develop climate change scenarios at what PRECIS calls 'national centres of excellence'. Try to find out whether there are any organisations or institutions using PRECIS in your country. They may be able to share valuable information with you.	http://www.metoffice.gov.uk/precis
SERVIR	A web-based tool that uses earth observations (eg satellite imagery) and forecast models together with other data to provide climate (and other) information. It holds data for Mesoamerica, East Africa and the Himalayan regions.	www.servir.net/en

Complete Part 1a of the CEDRA Assessment.

See the worked example on the following page.

Gathering scientific information may be a new experience for you. Using the sources we suggest here will make this much less daunting a task than it might at first appear. Working with others in your network and sharing your findings with each other will also make it easier. Your scientific findings will be compared with your community findings from Step 3 – and it is important not to lose sight of the fact that your aim is to find practical, acceptable, local and sustainable adaptation options.

Questions for reflection and learning:

- **What have you learnt as you've carried out this Step?**
- **Have you achieved what you set out to do when you started?**
- **Is there anything you need to change in your approach as you address the other Steps?**
- **Are there any skills you've learnt that it would be useful to pass on to others in your organisation?**
- **How can you feed back your learning into your annual planning cycle and organisational strategy / strategic review?**

Example Part 1a of the CEDRA Assessment

Compiled by Tearfund Partner Consortium from the Diocese of Aru, DRC

PART 1a: Background information – Science

Findings

The scientific and community data was collected over a period of two months in early 2010. Collecting local scientific data was challenging as our region has no meteorological office. However, information was given to us by the Agriculture, Fishing and Rearing Inspectorate, the Department of the Environment, INERA (the National Institute for Agricultural Research and Study) and some of the tobacco companies in the area. We also researched scientific information from online documents and tools. The government has produced a National Communication (NC) and a NAPA, which we accessed online. The NC describes the struggles to make accurate projections in the DRC given the size of the country, the diversity of ecological conditions and the lack of relevant data throughout the country. It goes into more detail about certain towns or areas, but unfortunately, none in Orientale Province. However, it does give more detailed information on the north-west of Congo, and we therefore assume this will bear some relevance for our Diocese. As we are very close to the Ugandan border, we have also used some data for northern Uganda from some good and reputable sources.

DEFORESTATION: Gallery forests are disappearing rapidly[1] and scrub savannah is becoming grass savannah. This is particularly the case in Zaki, Aluru and Lu chiefdoms, the eastern part of Kaliko and Kakwa, and the eastern part of Ndo district. The scrub and trees are gradually disappearing because the wood is used for firewood, making bricks and charcoal, and for drying many tonnes of tobacco. Many wild plant species are also disappearing as land is cleared.[2] There is no government initiative for reforestation. Some actors, such as the churches and some tobacco companies, are engaging in reforestation. However, the species used for reforestation by the tobacco companies is mostly eucalyptus. These trees impoverish the soil by consuming too much water, and their leaves make the soil acidic. In addition, this reforestation is based purely on economic objectives and not the sustainability of the ecosystem. Deforestation and clearance data for the period 2008–2009 shows that 103,617.76 hectares have been emptied of forest and plant species and 227,025m^3 have been felled.[3]

SOIL AND WATER POLLUTION: The tobacco-growing companies, mining operators and major urban centres are causing extensive soil pollution[4] through: chemical fertiliser use (NPK) in tobacco growing, contravening national standards; bush fires (farmers) and poor waste management (urban centres). An average of 8,968 ha per year is used for growing tobacco, with six bags of chemical fertiliser (NPK) applied to each hectare, totalling 53,808 bags per annum.[5] This leads to contamination of the water table and river and drinking water.

SOLID WASTE: More than six tonnes of solid waste are produced daily throughout the district, in Ingbokolo, Ariwara, Ondolea, Atsinia, Aru town and other trading centres.[6] However, no waste treatment facilities exist, apart from some direct-to-ground burial or open-air burning.

RAINFALL: A gradual reduction in the rainfall measured has been observed since 2004.[7] The March-to-November rainy season and December-to-February dry season have changed, with the rainy season now generally starting around mid-April and ending in mid-November.[8] Streams have dried out due to prolonged drought, as in the case of the Okeleenve stream in the Panduru district in the Lu chiefdom. Others that flow during the rainy season see their flow reduced, or completely dry up during the dry season, as is the case of the Andruvu spring developed as a water supply with the support of the Aru Diocesan Development Office. The flow diminishes year on year.

According to the National Communication (2009),[9] a summary of the range of projected variations for precipitation in 2010, 2025, 2050 and 2100 throughout the entire country is as follows:

	2010	2025	2050	2100
Precipitation (%)	0.3 to 2.5	0.4 to 4.2	0.3 to 7.5	0.8 to 11.4

However, it is important to note that despite the increases in annual rainfall, the rainy season is likely to become shorter, with more rain falling in heavy rainfall events. More detailed information in the National Communication for the north-west of DRC shows an increase in average annual precipitation from 1758.1mm to somewhere between 1758.1 and 1810.8mm in 2025, from 1810.8 to 1866.8mm in 2050 and from 1866.8 to 1925.8mm in 2100.

Findings

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References:

1 Oli and Dhoya group in th
2 Interviews with the Depar
(the Higher Institute of Ag
3 Annual Reports of the Env
4 Interviews with the Agriculture, Fishing and Animal Rearing Department and the district and local chiefdoms
5 Interviews with tobacco companies
6 Interviews with the District Health and Sanitation Department, and Statistical Report from the District Health and Sanitation Department (2009)
7 BBT's rainfall tables
8 2009 Annual Report of the district's Agriculture, Fishing and Rearing Inspectorate
9 Ministry of the Environment, Nature Conservation and Tourism, DRC (2009) 2nd National Communication - http://unfccc.int/resource/docs/natc/rdcnc2.pdf
10 Tearfund (2010) Uganda Climate Change Profile – http://tilz.tearfund.org/webdocs/Tilz/Topics/Environmental%20Sustainability/Uganda_Final.pdf

Step 3 Community participation

Part 1b of the CEDRA Assessment

As well as researching scientific information, it is extremely important to gather local knowledge to understand the climate and environmental impacts that communities have suffered, and to explore with them how they have responded to or adapted to these impacts. It will also enable you to think about how your scientific findings can be used to help local communities and to test whether scientific findings match their experiences. Step 3 will also help you build stronger relationships with the communities with which you work. The consultation process is also a good opportunity to spend time raising communities' awareness of climate and environmental change and their impacts.

IN STEP 3 YOU WILL

- ☐ Select a number of representative communities to consult.
- ☐ Use a range of participatory tools to gather community perspectives.
- ☐ Assess communities' adaptive capacity (ability and resources to cope with climate and environmental change impacts).
- ☐ Write a summary of findings in Part 1b of your CEDRA Assessment.
- ☐ Use these community findings to update your list of causes and impacts developed in Step 1. You will later prioritise them and transfer them to your CEDRA Assessment.

3.1 Why consult local communities?

Local people have considerable knowledge about past changes in weather and the environment, including changes in local vegetation, eg forest, shrubs, grass, agricultural crops, animals, birds, fish, insects and other 'natural resources'. They can usually advise on traditional plant species that are better able to cope with drought, flooding, salinity and so on. They will have experience about changing crop growth and pest and disease patterns, and will have traditional ways of dealing with these changes. They are the rightful stewards of the resources in their area and will have knowledge about impacts on water supplies, food security and health. They will also have opinions about the community's ability to adapt to or cope with these changes. This will help in identifying possible future adaptation methods; the best methods are ones that communities lead and own for themselves.

In reality, your work will take place across many different communities over many years. The purpose of Step 3 is not to focus on just one community or to consult every community you work with. Bearing in mind the resources and time you have available, consult a number of different communities which you think are fairly representative of the geographical areas where you work – eg a community living in the hills, another on the coast and yet another in the forest or arid areas. In consulting quite different communities, you should be able to record

very different types of climate and environmental impacts and community coping mechanisms. People's ability to adapt is often referred to as their 'adaptive capacity'. Adaptive capacity is explored more fully in Appendix B.

It is important to recognise that ignoring certain people's views can lead to serious environmental hazards being overlooked. The following case study is a case in point.

CASE STUDY
Community project in Bangladesh

In Bangladesh, rural communities in coastal and riverside areas are regularly hit by cyclones. Without the benefit of a CEDRA Assessment, the community undertook a number of projects to try to cope better with the devastating impact of cyclones. They constructed a cyclone shelter, developed emergency evacuation plans and trained volunteers to help coordinate protecting important assets and evacuating people safely. Gradually, the community's confidence about surviving a cyclone grew. During a recent project assessment, villagers confirmed that the project had been helpful. However, it also became clear that the more pressing priority had always been rather different: addressing the day-by-day erosion of their land due to sea-level rise and the consequent loss of livelihoods. Some community members had been aware of this, but no one had asked them to input into the initial project.

3.2 Keys to successful community consultation

For community participation to be successful, it is important to have the right approach. The following guidelines should help you prepare for consulting communities and help you answer the questions you wrote in Step 1.

- **Be prepared.** Ensure that you have a full list of questions prepared and that you have all the equipment you need, whether a camera to record pictures drawn on the ground or flipcharts and pens. Ensure you ask 'open questions', not 'closed' ones (which steer people

Mike Wiggins / Tearfund

Women in Honduras describe how changing rainfall patterns have led to an increase in insect-borne diseases.

towards the kind of answers you expect). So, instead of asking 'Is there less rain these days?', you could ask: 'Has the weather changed at all in recent years?'

- **Be respectful.** This is not an exercise in extracting information from people. The community own the information and you are there to try to help them understand and adapt to climate and environmental change. Communities have a wealth of local knowledge and may know more about the environment or climate than you do. Community consultation is a relationship of equals in which we all learn together. Any drawings or information gathered remains the property of the community. You should leave it with them and ask if you can take photographs for your records.
- **Understand power dynamics.** No community is completely without bias. It is most helpful to ask to meet with different groups such as children then women then men. Share their feedback with each other afterwards. This can help different parts of the community to better understand each other and sometimes leads to them developing their own adaptation responses.
- **Be relational.** To ensure that this equal partnership is maintained, it is a good idea to choose a community with which you already have a strong relationship. Avoid giving the impression that you may carry out any projects in their community. Consider whether all groups of people can participate in your meetings – think about location, time and cultural restrictions. Are women, children, labourers, the elderly and minorities able to engage? Are there factors which may hinder these groups from taking part? In some contexts, for example, some women may not take part in activities because they do not have the time. For this reason, flexibility must be built in to the process to enable women to participate throughout. Allow them to choose the time and location that best suit them.
- **Share the work.** Assign roles to different members of your team(s) (eg observer, photographer, note-taker, questioners etc), so you share the workload. You could assign different questioners to ask about different environmental impacts. It is very important to ensure women ask women questions and men ask men, to encourage open responses. This may be a cultural requirement.

For more guidance, the 'vulnerability' and 'capacity analysis' and the 'hazard assessment' of Tearfund tool PADR, Participatory Assessment of Disaster Risk, are helpful for collecting community perceptions. They can be found on pages 43–58 of *ROOTS 9: Reducing risk of disaster in our communities* (see Appendix A). Agencies which have already carried out a PADR assessment may find they already have community knowledge that can be used in CEDRA. Further discussion on the use of community participatory tools is included in this Red Cross Climate Centre information sheet: http://www.climatecentre.org/downloads/File/VCA%20guidance/VCACC_forpractitioners_April2011.pdf Tearfund's *Facilitation skills workbook* also provides detailed information on participatory techniques (see Appendix D). If your team is not familiar with participatory approaches you could look for training courses, or invite someone with skills and experience to teach you.

3.3 Participatory approaches

To answer the questions you prepared in Section 1.4, you should involve as many different community members as possible in a variety of participatory exercises. Try to include representatives from all sectors of the community (female, male, old, young, poorer, richer).

Participatory tools which could be used include:

- focus groups
- community mapping, including mapping of natural resources
- historical maps / pictures
- seasonal calendars
- historical timelines
- transect walks
- use of ranking / matrices
- power mapping

NOTE
If possible, use these tools first with those who hold the least power, eg children, then women, then men. In this way, you will hear their different views. Otherwise, the risk is that everyone will just agree with what the men have said.

Examples and brief instructions on using these tools are included below.

CASE STUDY
Tearfund partner ROLEC's experience in Malawi

During its CEDRA Assessment, ROLEC used participatory tools to ask communities about climate and environmental impacts and how they had coped with them. Villagers mapped their communities, and drew problem trees, seasonal calendars and risk matrices to understand the causes and impacts of climate and environmental change. This process helped them realise that some of the hazards they face are the result of human activities. They mobilised themselves to plant trees and they have asked ROLEC to work with them in constructing a flood-control dyke, built from sustainable local materials. 'CEDRA is an eye-opener on our part as people in Nsanje district,' said village headman Kachere. 'It has helped us to develop action plans on the issues of our concern.'

Focus groups

Focus groups should represent the whole community. You could have one or several groups when you are asking them about the questions developed in Step 1. Perhaps you could separate into different groups men, women, children, the elderly, disabled, ethnic minorities or immigrants, or people with different livelihoods. Again, make sure those with least power are heard.

Robert McSweeney / Tearfund

A group discussion as part of the CEDRA process in Nepal.

Community maps

Community maps are very similar to the maps you drew of your work locations, in Section 1.2. You should ask the community to draw the maps, so that they are free to identify the geographical features, socio-economic features, climate and environmental hazards and responses that are important to them. By observing their mapping, you will be able to note which parts of the environment they are most dependent on, and which parts are thriving or degrading.

Mike Wiggins / Tearfund

Community mapping exercise in northern Thailand.

You will also be able to see what strengths or capacities they have to help them to cope with the hazards they face. This will help you understand how well the community can adapt to climate and environmental impacts. The community map may differ from the one you drew in Section 1.2 for several reasons. You may learn new things from the community that you were not previously aware of. Or there may be certain things that the community has misunderstood (eg 'This river comes from the other side of the border' when in fact its source is in an adjacent state of the same country). Or your maps may differ in interpretation (eg as regards the reason why trees have been planted in a particular area). These differences are all rich opportunities for sharing concepts and ideas between your team and the communities.

Mapping using computer-based geographic information systems

As mobile internet technology is becoming more widely available, local humanitarian and development agencies and also local communities are able to use a ***geographic information system*** or GIS to locate anything on a map precisely. It can then be made available to many others. For example, environmental hazards such as flood or drought zones or landslides can be mapped, as can specific infrastructure such as roads, waterways or electricity and telephone cables. Records of environmental change such as biodiversity loss or natural resource depletion can also be added. This technology is particularly useful because you can look at it on a computer screen and choose to view or hide different layers of images, showing, for example, where people live, different land use or ownership, or historical records of disasters. You can even overlay different projected changes, which helps you plan for uncertainty. For example, if scientists project that an area is to become much wetter or much drier, you can see images portraying the implications of both and therefore plan for multiple different scenarios. GIS mapping can also work very well when combined with participatory mapping.

CASE STUDY
GIS enabling poor communities to access clean water

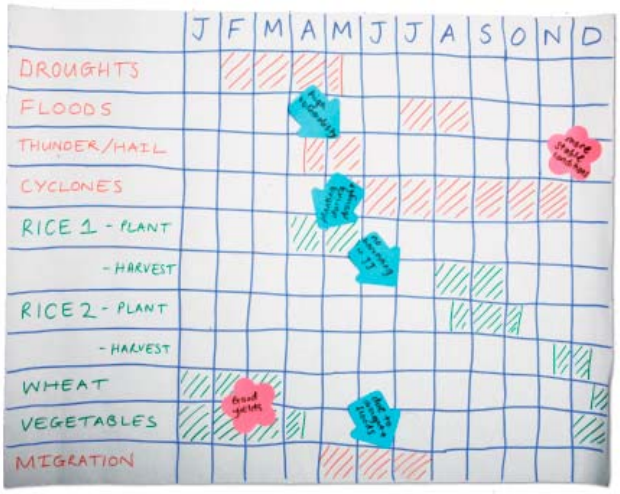
In Sri Lanka, Indonesia and southern India, GIS technology was used to report burst water mains and contaminated drinking water (dug and tube) wells and locate them precisely on a map. This enabled the NGOs to plan a much better response to ensure communities had clean drinking water. This started with transporting water to affected communities by tanker, then focused on repairing key water supply pipelines and wells, until resources were available to repair or replace all drinking water sources.

Historical maps / pictures

Historical maps / pictures are very similar to community maps. The difference is that they map the community environment as it was at some point in the past. You should discuss with the community how far back they can remember and decide when would be a useful point in time to map. This may be, for example, the time before a disaster hit or before there was much migration into or out of the area. Drawing a historical picture can help you and the community see clearly the healthy and degraded parts of their environment.

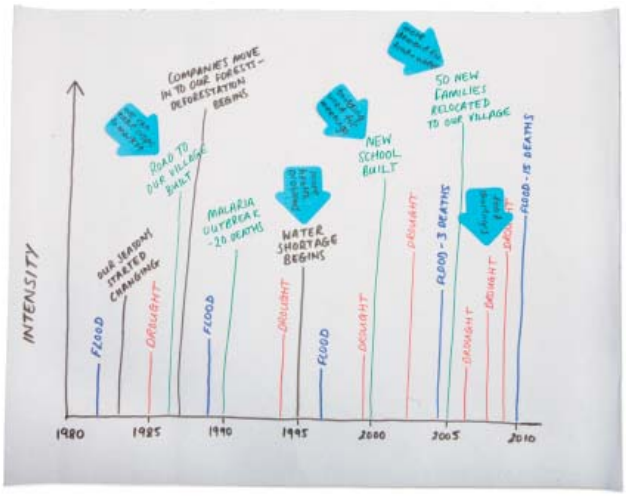
Seasonal calendars

Seasonal calendars are another useful tool for helping you understand climate and environmental impacts on water resources, food security, livelihoods, health etc, and whether climatic extremes coincide with particular agricultural or livelihood practices. They also help you to understand how seasons and cropping have changed if you draw a second, historical one. This example (right) shows that droughts, floods and storms are having a significant impact on crops and migration.



Historical timelines

Historical timelines are useful for recording events that have happened over time, to work out which have the greatest impact, and to find patterns such as frequency of occurrence or increasing intensity over time. You can include anything that is significant to the community, but should be clear to ask about any disasters or significant environmental changes, such as



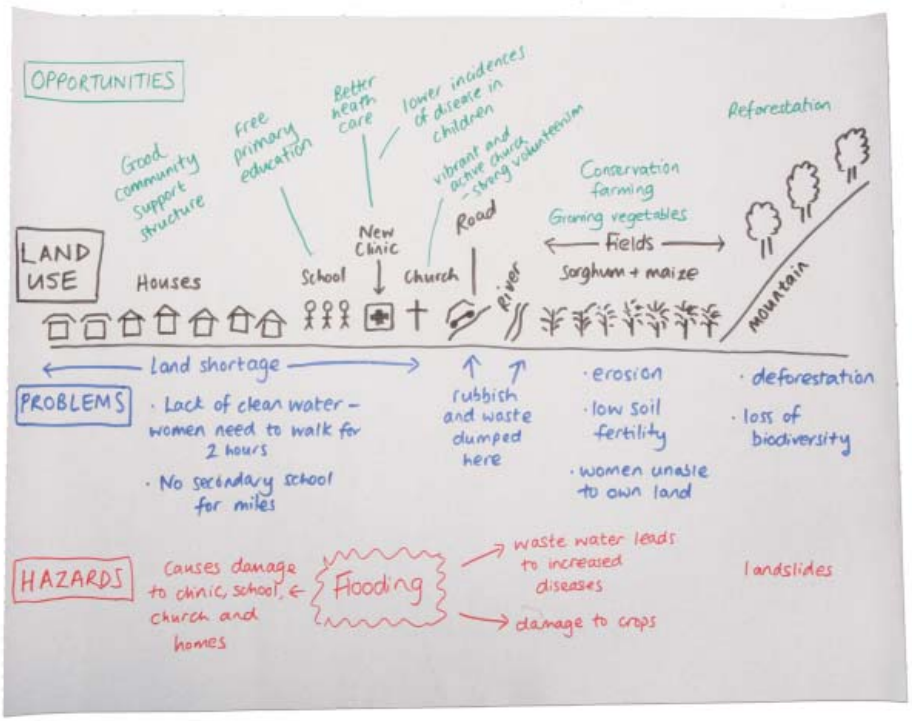
changes in water resources, health, migration, biodiversity, food security, floods, droughts, storms, pollution or industrial accidents. Also, ask about what they consider their capacities or strengths to be (eg knowledge and skills, or alternative crops or livelihoods) and how these might have changed over time.

Transect walks

Transect walks are a helpful way to observe the environmental features of a community and also provide a useful semi-structured method of asking the community about their environment. A transect walk should be undertaken along a defined route, planned with the local community to pass through areas of different land use – preferably from one side of the community to the other. Participants should draw or note everything that they see directly on the line or up to an agreed distance on either side of it. You should include visible items such as slopes, water resources, tree cover, food and cash crops, residential land use and water sources, but you should also note people's comments on issues such as soil fertility, waste disposal, crop failure, land tenure, weather, biodiversity or disease. Note also any comments made about environmental changes they have observed and how they have coped with them. A transect walk is usually drawn as a 'side-on' view (see example below) – as if you had cut away the land and were looking at it from the side.

TRANSECT WALK

This example shows how environmental hazards are exacerbated by socio-economic problems. However, it also identifies many capacities to address hazards.



Ranking matrices

Ranking matrices are a way of identifying which climate or environmental impacts have the greatest effect on communities. Activities are written along the top column (eg fishing, farming, school etc), and known environmental impacts are listed down the side (eg flooding, drought, disease etc). The table is then split into rows and columns. If possible, children, then women, then men should be asked to give each impact a score against each activity. A low

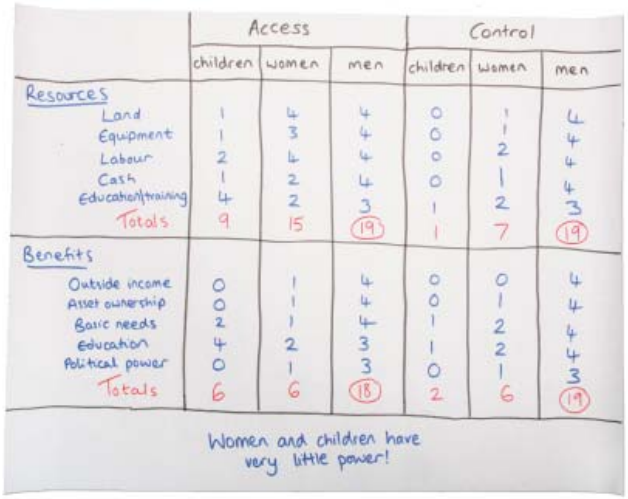
score is 1, meaning there is little impact on the activity. A high score is 5, meaning the impact is considerable. It is possible to give negative scores, which means that the impact is beneficial. Instead of writing on paper, people could vote with stones on a grid drawn on the ground. Totals of the columns and rows are added up separately for men, women and children. For each group, the square at the intersection of the highest scoring row and highest scoring column is circled to show what the greatest issues are.

In this example, drought is the highest ranked impact for men (row total: 26) and farming is the most impacted activity (column total: 25), so drought impacts on farming are the biggest problem for men.

Power mapping

Power mapping is important because climate and environmental changes usually affect women and children most. They usually hold least power in the community, even though women are usually responsible for providing water, firewood, food and healthcare. Women observe changes in the environment closely and often have a greater understanding of the need to manage local environmental resources sustainably. When considering the local environment, it is helpful to list the environmental resources in the top half of the table and environmental benefits in the bottom half, and to draw two sets of columns where the community scores who has the greatest and least access to and control over those resources. Again, it is important to ask the children to do this exercise first, then the women, then the men, or there is a risk that those who usually have the least power will simply agree with those with the most power.

It is helpful to think through the results of this power mapping when considering the impacts of climate and environmental change on a community. Impacts will affect men, women and children differently, and be influenced by the power each group has. You need to be aware of these dynamics when using the information gathered from communities, and when you think about responses in Step 5.



CASE STUDY
Community participation in India

During a CEDRA community consultation in India, the community explained in their mapping exercise that flooding was the worst problem. However, their seasonal calendar, timeline and risk ranking all indicated that it was unpredictable rainfall patterns that were having the greatest impact on them. Feeding this back to the community was very helpful to them.

3.4 Capacities and empowerment

Many people say that communities have a right to be told about the causes and future effects of climate change, because it is having an increasing impact on their lives. However, others caution that we should be careful not to fill them with despair about the future, or provoke anger towards governments or people from rich countries. They argue that it is also dangerous to raise awareness of climate change without providing solutions and opportunities for advocacy. Give some time to reflecting on these issues before you visit the community and think how you will approach the subjects sensitively. We suggest giving communities all the information but in a way that leaves them feeling empowered to act on the issues, with encouragement and hope about their future. You can help them by undertaking a capacity assessment with them (see PADR, page 47 of *ROOTS 9: Reducing risk of disaster in our communities*). All communities, even the poorest, have capacities which can help them adapt to climate change. You can also inform them about their rights and others' responsibilities, which can help them develop advocacy responses to bring about the change needed.

Exercise 6

Carry out a community consultation

Carry out participatory exercises in one or more communities in each location that you identified in Exercise 1. This will help you answer the questions you developed about climate and environmental impacts. Think about the questions you want answered as you plan and carry out the participatory exercises. Refer to the participatory tools above.

Ensure that your community consultation includes gathering information on:

- coping mechanisms (how the community has coped with environmental and climate changes) and adaptation methods that have worked or failed in the past
- community capacities such as good governance and leadership or a church's ability to mobilise volunteers (See Section 6.2 of *ROOTS 9: Reducing risk of disaster in our communities*)
- particular vulnerabilities community members mention, for example, a lack of capacity to plan projects, or opposition towards trying out new methods

Summarise your key community findings, including those that highlight new issues of concern to the community, and feed back your findings to the community. Sharing your findings with communities can help them develop their own adaptations.

The different assessments should be compared to check whether information is consistent or varies between groups. If there is conflicting evidence, feed this back to the community to see what they think has led to the difference of opinions. Compare this feedback with the answers you got from scientists and other sources in Step 2.

Write this information in Part 1b of the CEDRA Assessment, using the example below as a guide. Use both your scientific and community findings to update your list of causes and impacts developed in Step 1. You will later prioritise them and transfer them to your CEDRA Assessment.

Complete Part 1b of the CEDRA Assessment.

See the worked example on the following page.

Example Part 1b of the CEDRA Assessment

Compiled by Tearfund Partner Consortium from the Diocese of Aru, DRC

PART 1b: Background information – Community experiences

Location	Findings
Aru Diocese of Democratic Republic of Congo	**Background:** In order to gather the community experiences, the following techniques were used: field surveys, interviews, mapping, historical pictures, transect walks, seasonal calendars and focus groups – using separate groups for women, men and children. We consulted women in the village to advise on the time and location of activities that would best suit them, and tried to ensure that we heard the different views and perspectives of men, women and children, and of people belonging to different tribes, in all of the activities. We selected four villages, each in different Chiefdoms, in which to do our research. These villages represent approximately 10 per cent of the total area in which partners in the Consortium are working in the Diocese of Aru. A summary of the key issues arising is given below:
Village of Buta in the Lu Chiefdom	– The scrub savannah and forest galleries are now over-populated. This is leading to savannah clearance and deforestation. – People have good knowledge of all the plants and trees in the area and the conditions they all need in which to grow well. They know which plant and tree species have already disappeared and which are under threat. – Because of the deforestation, the soil quality has degraded and it is also affecting water supply. – Plant diseases have increased in recent years. – Plant diseases, poor soil quality and lack of rains are resulting in lower crop yields, which in turn means less food is available for consumption. This is leading to an increase in malnutrition and hunger in communities. Young children and women are particularly badly affected. – Men and women both talked about the climate now being 'disturbed'. In particular, older people explained that temperatures have increased a great deal over the last 30 years. – The community is increasingly experiencing drought. Fresh water sources in the locality, such as wells and springs, are no longer providing sufficient water. This is leading to increased workloads for women as they have to walk further, sometimes up to two or three hours, to find water. – Villagers are seeing increases in diseases and infant mortality. The weakest people (in particular those living with HIV) are affected the most. However, there are strong extended family support networks in the village, and neighbours and villagers are supporting each other in caring for the sick. – Deforestation and population increase have led to the disappearance of wild animals. (This was cited as a bigger problem for men than for women.)
Village of Laibo in the Kaliko-Omi Chiefdom	– Migration, over-population and tobacco company expansion have led to loss of forests and scrub land. Local churches have developed afforestation schemes. Some of the women in the village are volunteering with these churches to help plant new trees. – The river beds are shrinking, and communities are experiencing a shorter rainy season. There is less water available for drinking from local sources and therefore women are having to walk further to find water for drinking and household use. This is a major burden for women, and time that used to be spent on livelihood activities is often now spent walking in search of water. – Wild animals are scarce due to deforestation and over-population. – The agricultural calendar in the village has changed signficantly. Before 1980, the rainy season was longer than the dry season. Now, however, the dry season is longer, substantially reducing agricultural yield. Men are working harder in the fields but the crops are reducing. Men have begun to harvest rainwater in containers in order to irrigate their fields. However, sometimes it does not rain for a very long time so they still lack water for irrigation. – Five tobacco companies are working in the area, cultivating large areas. They are using chemical fertilisers, which is polluting our soil and water. Children are becoming ill when they drink the polluted water. This in turn affects their education, and many are regularly having to miss school. Again, women are impacted as they have to work harder and walk further to find water that is safe for drinking. This is impacting women's availability for income-generation activities. Soil pollution is an additional factor affecting crop yields adding to the problems in the point above.

Location	Findi
Village of Azumba in the Aluru Chiefdom	– Villag – Many but th germ harve – Low a Men, preva child – A wo the h – There – Many drink walk activi
Village of Biringi in the Ndo Chiefdom	– Defor fores impa – Popu use a recen – The a time, – Crop being – Lack temp havin respo from affec
Conclusion	The fin increas sanitat the fac in the r Some people perceived that annual rainfall was decreasing, others commented that it was only in certain seasons (most often the rainy season) that rainfall was decreasing. Others felt that the timing of rainfall was becoming less predictable but that the amount wasn't changing. As the communities are not yet doing any local record-keeping of rainfall data, it is difficult to verify the exact situation. However, from the scientific data researched, it seems that the wider area has experienced decreases in annual rainfall as well as changes to the timings of the rainy seasons. Other than the uncertainty with regard to rainfall, there are many similarities between community experiences and the scientific information gathered. This provides a clear basis on which to conduct the CEDRA Assessment. (NOTE: in order for the communities to gain a better understanding of the changes to rainfall, we are going to encourage the development of community environmental monitoring systems, which will include rainfall monitoring. This will be included in our CEDRA Action Plan.)

3.5 Using community findings for advocacy

Community experiences are useful, not just for planning your own development strategy, but also to help others respond to climate and environmental change. You could share your findings with other NGOs and with your local and national government – using them in your advocacy work. It is also important to share community feedback with scientists, particularly if this feedback appears to contradict scientists' records. This will help scientists understand community perceptions and encourage them to engage more with communities.

We also recommend that you share the findings of your community participatory assessments with others in your organisation, particularly senior managers, and with others in your network, so you can help and support each other in your CEDRA Assessments.

Guidance on advocating on climate change – whether internally, locally, nationally or internationally – is included in the following Tearfund publications: *Why advocate on climate change?*; *ROOTS 13: Environmental sustainability* – Section 6; and *ROOTS 1: The advocacy toolkit*. All of these publications can be found on Tearfund's website at: www.tearfund.org/tilz

CASE STUDY

Engaging local leaders in river dyke construction in Malawi

Disaster risk reduction can be one of the key ways of helping communities adapt to climate change. In Malawi, local communities faced a problem that a local river had changed course and had displaced some households in several villages. When heavy rains came, some people's gardens were washed away. Tearfund partner River of Life and the affected local communities identified the idea of constructing a dyke as a way to redirect the river flow.

River of Life started an advocacy initiative among local traditional leaders, local church leaders, teachers, civil protection committees and government officials. They gathered them together to start a discussion and hear about the communities' solution for the problem. Stakeholders met together and, after much discussion, were able to agree on the project and commit to providing different parts of the resources required. For example, the district assembly agreed to provide a tractor, the government forestry department agreed to help plant riverbank cover, and the community agreed to do some of the practical work.

The advocacy activity itself also helped transform and build relationships. Traditional leaders, church leaders and government officials were able to work together and view each other as partners in development.

Taken from Tearfund publication *Why advocate on climate change?*, p15

Questions for reflection and learning:

- What have you learnt as you've carried out this Step?
- Have you achieved what you set out to do when you started?
- Is there anything you need to change in your approach as you address the other Steps?
- Are there any skills you've learnt that it would be useful to pass on to others in your organisation?
- How can you feed back your learning into your annual planning cycle and organisational strategy / strategic review?

Step 4 Evaluate impacts and prioritise risks

Columns A–F of Part 2 of the CEDRA Assessment

On the basis of the information you have gathered in the previous Steps, you can now evaluate climate and environmental impacts, prioritise the risks to your existing projects and identify potential issues that may require new projects or approaches in the future. You can do Step 4 as a desk-based exercise or complete it by working with communities and external stakeholders. Your decision is likely to depend on the time and resources you have available.

IN STEP 4 YOU WILL

- ☐ Complete a risk assessment, outlining the current and projected climate and environmental change impacts on your projects and the locations where you work.
- ☐ Rank the significance, likelihood and risk of each impact.
- ☐ Prioritise the impacts on communities and projects.
- ☐ Answer the following strategic questions, and develop appropriate responses:
  - Are any of your existing projects at risk of failing?
  - Are some communities or locations more vulnerable than others?
  - Do any of your projects need strengthening or adapting?
  - Do any new adaptation projects need starting?

4.1 Documenting climate and environmental impacts

Your first task in completing a risk assessment is to document the climate and environmental change impacts on your projects and the locations where you work. Follow the instructions in Exercise 7 (below) and complete columns A, B and C of Part 2 of the CEDRA Assessment in the pocket at the back of this book. An example of how your table might look after this exercise is provided on page 48. More examples are given on the CD-Rom and at www.tearfund.org/CEDRA

Mike Wiggins / Tearfund

Villagers in Zimbabwe discussing the changes they have seen in the climate and effects these are having on their lives.

Exercise 7

Locations, projects and impacts

In this exercise, you will complete the first three columns of Part 2 of the CEDRA Assessment in the pocket at the back of this book. At this stage, do not complete the other columns.

Columns A and B – Locations and Projects

Refer to your organisation's overall programme or project plan and complete the following:

- Write the names of all the locations where you work on separate rows in column A of the assessment table. Or, if you prefer, you can list sectors in this column rather than locations.
- In column B, list all the projects that you are implementing in each location. Depending on how many projects you have, it may be easier to group projects together in 'sectors' (eg agriculture, WASH etc). If you have listed sectors in column A, you can list the projects within each sector in column B.
- If you have already decided that you want to start new projects in response to the climate and environmental impacts that you have identified, you can add these to Part 3 of the Assessment. For the project to be relevant and successful, however, you should consult the relevant communities and other stakeholders to hear their views and gain more information on likely climate and environmental impacts and potential adaptive strategies.

Column C – Climate and environmental impacts

Refer to the information collected in Exercise 2 and updated after Steps 2 and 3 and fill in column C with details of the impacts that could affect projects. These impacts could be current or potential ones. It is possible that some projects will not experience any climate or environmental impacts, while others may be affected in many different ways.

Complete columns A–C of Part 2 of the CEDRA Assessment.

NOTE
Each separate agency involved in a CEDRA Assessment will complete Part 2 of the report separately.

Write down on a separate row every distinct location where you currently work.

Write down the names of all the projects that you currently have, against each of the locations where you work. Write each project on a new row.
If you work in 'sectors', then you can group your projects by sector in this column.

Write down all the different climate or environmental impacts you can think of in this column, against each project and location. You can add more rows to add more impacts. Record here your findings from communities and external stakeholders.
You can also consult the Impacts and Options Checklist in the pocket at the back of this book.
You are likely to find that you write down many of the same impacts for several locations and projects. That is to be expected.

NOTE
Your list of possible impacts in column C is likely to be very long initially. This is good. It can be reduced later when you have prioritised the risks.

CEDRA ASSESSMENT PART 2: Project risk assessment

Sig = Significance of impact: (4= high; 1= low) **Lik**= Likelihood of impact: (4= high; 1= low) **Rsk**= Risk

A Locations or sectors	B Projects (by sector)	C Climate and environmental impacts	D Sig	E Lik	F Rsk

4.2 Assessing risk

We now know that climate and environmental change are advancing very rapidly – and are already having substantial impacts on our communities and projects. It will not be possible to respond to or fix all of the problems that you identify. Given the scale of the problem, you need some way of assessing how likely different environmental impacts are to occur and how significant they might be. You also need to prioritise which of these impacts you should and can respond to, and which you want to alert others to and encourage them to respond. There are many different ways to address risk or prioritise impacts; the CEDRA process is just one approach you could consider.

Liu Liu / Tearfund

A group in Bangladesh evaluate the risks to their community.

There are also many different ways to define the risk of a certain climate or environmental impact on your project or location. The most widely accepted definition says that ***risk*** is the combination of two factors: the ***significance*** of that impact happening (in other words, how big it is – such as how many people will be affected and over how wide an area) and the ***likelihood*** (probability or chance) that the impact will happen. Presented as a mathematical formula, this can be written as:

Risk	equals	How big the impact is on the project	multiplied by	How likely the impact is to happen

This can be summarised as: **Risk = significance x likelihood**

So to calculate the risk that each climate or environmental impact poses to your project or location, you need first to assess the significance and likelihood of each impact. Your next step is to complete Exercise 8 (below), which shows you how to assess both of these factors by giving them scores – which will allow you to fill in columns D, E and F of Part 2 of the CEDRA Assessment. For an example of how this completed section might look, study the example on page 48. More examples can be found on the CD-Rom and at: www.tearfund.org/CEDRA

Exercise 8

Assessing the risk of climate and environmental impacts

In this exercise, you will complete columns D, E and F of Part 2 of the CEDRA Assessment.

Column D – Significance: how big the impact on the project will be

Climate or environmental changes can have low, medium or high impact on projects and locations. In other words, their significance varies. To work out the risk each impact poses, you need to give each one a **score** (of 1 to 4) for its significance. Consider factors such as the project's value, the scale and duration of impact, the reversibility or otherwise of the effect etc.

4 = Highly significant impact
This impact means the project is unlikely to succeed.

3 = Moderately significant impact
This impact will have a considerable effect on the project's success.

2 = Some significance
This impact will have some influence on the project's success.

1 = Little or no significance
This impact has very little influence on the project's success.

For example: A flood in an area where there are no people has very little significance, so you could give it a score of 1. But if a flood was likely to destroy crops or houses and spread disease, it would have high significance, so you could give it a score of perhaps 3 or 4.

Likewise, an increase in temperature may not do much damage to a project teaching communities about hygiene, so you could give it a score of 1. But a rise in temperature may greatly affect an agriculture project by, for example, causing an increase in crop pests – so you may give it a higher score.

Note: This scoring process is not scientific. Give the score that you think is most appropriate. You may find you want to change your scores once you have worked your way through the full list of impacts, to make sure all of your scores are balanced against each other.

Column E – Likelihood: how likely the impact is to happen

To assess the likelihood of a climate or environmental impact, you should refer to your research in Steps 2 and 3. You will also need to consider factors such as: whether these impacts have already occurred, how often, with what severity – and with what frequency and intensity they are likely to occur in the future. It is also important to bear in mind the weight of evidence behind a certain risk – particularly if you give it a high score. You need now to give a likelihood **score** of 1 to 4 in column E against each of the impacts you have listed in column C. The likelihood of an impact occurring does not vary between projects, but usually varies between locations.

4 = Highly likely that the impact will occur
75–100% likelihood of impact occurring within 25 years

3 = Moderately likely that the impact will occur
50–75% likelihood of impact occurring within 25 years

2 = Some likelihood that the impact will occur
25–50% likelihood of impact occurring within 25 years

1 = Little or no likelihood that the impact will occur
0–25% likelihood of impact occurring within 25 years

Example: The likelihood of a flood occurring at the top of a mountain is low because water can easily drain away. The likelihood of a flood occurring in a low-lying area depends on a number of different issues such as the amount of rain, the capacity of the soil and water courses to absorb the rain, and the natural features or human-made structures that would tend to direct the water towards or away from the community.

Exercise 8

continued

NOTE
Examples of completed CEDRA Assessments are on the CD-Rom and on our website: www.tearfund.org/CEDRA/ExampleAssessments

Column F – Risk

To complete column F, simply multiply the significance score in column D by the likelihood score in column E. Write the answer as the risk score in column F.

All of your impacts for all projects and locations should now have a score of between 1 and 16. The impacts with higher scores are the most urgent in terms of needing to be addressed. Your lower ranked impacts may be of low importance, but they may be easily addressed with simple and low-cost solutions.

This Step provides a great opportunity for team-building as you discuss together at length the potential impacts and risks to projects.

Complete columns D–F of Part 2 of the CEDRA Assessment.

See example on the following page.

4.3 Prioritising projects

No one but you can decide which impacts or risks your agency should respond to. You need to discuss these issues in depth with your colleagues, communities and stakeholders. The scores you have given are not an exact measure. They are to help you compare impacts and decide for yourself which are the most important. One way to decide is to look at impacts with scores of more than 6 in column F of Part 2 of the CEDRA Assessment and decide if you or others can respond to them. It may be a case of ensuring that other agencies are aware of some of these risks so that they can respond. Impacts with low-risk scores are also worth consideration as some are likely to have solutions which are simple and low cost. You may be able to help communities make simple changes to some of their activities that make their lifestyles and livelihoods more sustainable.

As before, we recommend that you share your partially completed CEDRA Assessment with others in your network. In this way, you can help and support each other in the task and check whether you have a similar understanding of risk assessment.

Questions for reflection and learning:

- What have you learnt as you've carried out this Step?
- Have you achieved what you set out to do when you started?
- Is there anything you need to change in your approach as you address the other Steps?
- Are there any skills you've learnt that it would be useful to pass on to others in your organisation?
- How can you feed back your learning into your annual planning cycle and organisational strategy / strategic review?

Example Project risk assessment in Part 2 of the CEDRA Assessment

Compiled by Tearfund Partner Consortium from the Diocese of Aru, DRC

CEDRA ASSESSMENT PART 2: Project risk assessment

Sig = Significance of impact: (4= high; 1= low) **Lik**= Likelihood of impact: (4= high; 1= low) **Rsk**= Risk = Significance X Likelihood (Multiply figures D and E)

A Locations or sectors	B Projects (by sector)	C Climate and environmental impacts	D Sig	E Lik	F Rsk	G Possible adaptation options to strengthen projects and communities
Health	Development of drinking water sources in 22 parishes in the Diocese of Aru	Reduction in water source flow due to deforestation and shorter rainy season. This means less available drinking water and hence an increased workload for women	3	3	9	
		Pollution of the water table due to the use of chemical products in tobacco cultivation. Children are particularly vulnerable to the impacts of drinking polluted water	4	3	12 Key risk to address	
	Advocacy to district authorities to build and maintain latrines in market places and other public areas	Hazards caused by the build-up of public waste mean that limited district resources for sanitation are diverted to dealing with the impact of hazards rather than building latrines	2	4	8	
		Women and girls are vulnerable to attack as they try to find discreet locations to use in the absence of latrines	4	2	8	
		Reduction in rainfall leads to lack of water to provide hand-washing facilities	2	2	4 Ignore this one?	
Environment and sustainable development	Gradual reforestation of 22 hectares of land throughout the Diocese of Aru	Destruction of seedlings due to unpredictable growing seasons and an increase in uncontrollable harmful insects	4	2	8	
		Trees do not grow due to an increase in temperature and a reduction in the amount of rainfall at certain times of year	3	3	9	

NOTE
Column G is filled in during Step 5 of the CEDRA process.

Step 5 Identify and prioritise adaptation options

Part 2 column G and Part 3 of the CEDRA Assessment

In this Step, you will consider how to adapt to climate and environmental impacts. Initially, you will consider all possible adaptation options and then think about whether any are feasible or desirable for your agency to carry out. Once you have considered and compared the options, you will then decide which ones to carry out.

IN STEP 5 YOU WILL

- ☐ Consult people who can offer guidance on potential adaptation options.
- ☐ Consult representative communities and stakeholders.
- ☐ Compare adaptation options using a list of criteria.
- ☐ Decide how your proposed adaptations can be integrated into existing or planned projects.
- ☐ Complete column G of Part 2 of the CEDRA Assessment.
- ☐ Consider whether any new projects are needed and, if so, assess the potential impacts, risks and modifications that may be associated with them and complete Part 3 of the CEDRA Assessment.

5.1 What is adaptation?

Adaptation is the process of reducing vulnerability to or releasing potential benefits from a changing climate or environment. Throughout history, humans and ecosystems have always adapted to changes in their surroundings in order to survive and prosper, though this is usually a gradual process. What is new is the current rapid pace of climate and environmental change. Delaying adaptation increases the risk of disaster and leads to potentially higher adaptation costs later on. Advances in science and in participatory tools make it possible for us to find adaptation options to the likely changes in climate and environment.

Traditional community coping mechanisms to deal with short-term changes in the climate or environment are relevant to your decision-making in this Step. However, in isolation, they are not sufficient to cope with the rapid rate of change. New means of dealing with the risks arising from human-induced changes are needed – in other words, adaptation. The different approaches to adaptation can be divided roughly into ***hard***, ***soft*** or ***integrated*** options. Tearfund encourages taking an integrated approach, but recognises that many donors do not yet do this. These approaches are summarised below and discussed more fully in Appendix B.

Hard adaptation projects usually address a very specific impact of climate change such as sea-level rise or drought. They are useful when the likely impacts of climate and environmental change are predictable, not uncertain. They include: cyclone shelters, alternative crops, rainwater harvesting and coastal defence. They are usually easy to design and carry out and their completion is easy to measure. Hard adaptation projects are, however, more difficult to extend ('scale up') or replicate, and can require more expense and external support to set up. Their main disadvantage is that they tend to 'compete' with existing development or DRR activities instead of being integrated with them, which can waste resources and effort.

Soft adaptation projects tend to be less obvious. They include building up communities' skills and flexibility so that they have the adaptive capacity to respond to a variety of climate change impacts. Examples also include developing social networks, early warning systems, entitlements, social protection, institution building, learning and feedback systems and policy reform. The advantages of soft adaptation projects are numerous: they are replicable, easy to extend (scalable), cheaper and easier to carry out; they usually require fewer resources; and they naturally lend themselves to community participation and so tend to have better outcomes for larger groups of people. It is, however, hard to measure their effectiveness or document precisely the kind of influence and impact they have.

Soft adaptations are also better at dealing with uncertainty. If you don't know whether climate change will lead to increased or decreased rainfall, for example, then you need to help communities develop capacities to adjust to any change. Soft adaptation options may also 'compete' with existing development or DRR activities instead of being integrated with them.

It is tempting for agencies to focus on hard adaptation options because they are often easier to measure and report on. However, soft adaptation options such as capacity building or early warning systems can be more effective. Tearfund encourages integrated approaches as discussed below.

Mike Wiggins / Tearfund

A businessman wades through a flash flood. Communities in Southern Africa tell us the rainfalls have become erratic, with perhaps a whole month's rain coming in a single day.

5.2 Adaptive resilient development

Adaptation should not be carried out separately from development or resilience-building activities such as DRR. There is no clear boundary between adaptation, development and DRR. Tearfund's answer to the question 'what is adaptation?' is that all projects should be intentionally designed to ensure that development, adaptation to climate and environmental change and resilience to disasters are addressed together. We are calling this kind of work *adaptive resilient development*. Others may describe this as *climate-smart* or *climate-resilient* sustainable development, although definitions vary.

ADAPTIVE RESILIENT DEVELOPMENT

Benefits

- It builds on existing development interventions – but these are adapted to ensure they do not fail under climate and environmental change impacts or natural disasters.
- Whilst development costs increase, this is unlikely to be as much as for separate *hard adaptation* projects.
- Existing financial and development structures and actors can be combined with adaptation funding for greater impact.
- It ensures that both dedicated climate change funds and all development funding support both development and adaptation.
- It integrates adaptation into all of your work.

Disadvantages

- *Soft* activities that contribute to adaptive resilient development, such as community governance, can be politically contentious.
- Its impacts are difficult to measure and it is difficult to report on how much of the project addressed climate or environmental change directly.
- It is difficult to prove that your intervention led to a specific outcome.

Challenges

- It can be difficult to report that the entire intervention is responding to climate change.
- It could slow down adaptation to climate change.
- Whilst efficiencies may be gained from stopping *siloed* working (focusing on different sectors in isolation), it is possible that integrated approaches will reduce the input of specialists who can make projects much more effective.
- It requires greater planning and the engagement of more stakeholders.
- It is a new way of working. You can't train everyone as specialists, but it requires substantial extensive effort to integrate adaptation and resilience into all development areas.

Adaptive resilient development means making sure that we strengthen existing or planned development work to address adaptation and disaster resilience too. Adaptive resilient development will often include numerous ***soft adaptation*** activities as well as some ***hard adaptation*** options, but the aim is always to strengthen work to address development, adaptation and resilience to disasters. For example, we could build a well to supply water to a local community as a development project. This project would be strengthened by ensuring the well was capped and protected from contamination in the face of a disaster. If the area we are working in is facing reduced rainfall from climate change and the water table is getting lower,

we may need to adapt the project by introducing rainwater harvesting at certain times of the year to supplement the supply from the well.

As a development project, we could plant crops to help with improving a community's nutrition. We could strengthen this project against the potential disaster of flooding by building small rock and earth embankments, flood diversion channels or land drains. We could also adapt to the expected climate change impacts of less frequent but more intense rainfall by building a surface water run-off storage tank to irrigate the field.

As a development project, we could train women in health and nutrition. But if a cyclone disaster hits the area, causing flash floods, and local people can't swim, many will drown. Equally, if we teach them to grow vegetables to improve their health, but these crops aren't resistant to expected impacts of climate change, their nutrition will not improve. Therefore the project would be strengthened by including a component that teaches people to cope in floods, and by ensuring that the crops chosen can withstand the expected impacts of climate change.

We encourage you to take the time to read through Appendix B where we explain adaptive resilient development in more detail. It will help you think through what you are trying to achieve through your work.

Exercise 9

Adapting to unpredictable change

Meet with your communities and other key stakeholders to explore with them the things that help a community adapt to unpredictable and uncertain changes. You could do this by asking them to imagine the following:

'Imagine that climate change means you get one-tenth of the rain you currently get. Now imagine that climate change means you will get ten times as much rain. Now, imagine that one of these changes will happen, but you don't know which one. What sort of assets would help the community to survive in either scenario?'

Their answers may include:

- Good community leadership – inclusive, accountable, transparent
- Strong relationships within the community – ability to resolve conflicts, overcome divisions
- Mental and spiritual health – hope, confidence, resistance to despair and fatalism
- Good linkages to local and national government structures, plans and resources; ability to advocate/inform government about risks and problems on the ground
- Access to information about changing risks, future projections; linked into networks that help them update this info (government, scientists, civil society)
- Ability to reflect and learn from experience; institutions that help a community do this regularly, with participation from marginalised groups
- Institutions that help community members learn by experimenting (eg Farmer Field Schools – see page 10)
- Links to networks outside the community – overseas migrants, religious networks, civil society organisations
- Diverse livelihood opportunities (especially those unconnected to either climatic extreme)
- Financial assets (eg self-help group savings, access to non-exploitative credit) built up for emergencies

You could then ask: 'What changes should we make in our community or projects in an uncertain environment to include more of these things?'

Some donors appear to be focusing on large-scale or national-level adaptations because of the large amounts of money to be spent over relatively short time periods. Passing on these short-term timescales to NGOs makes implementing soft adaptation options much more difficult. Adaptation is quite a new area of work. Whilst funds for adaptation must be additional to overseas development aid, at the same time we encourage donors to allow NGOs to integrate adaptation into both development and DRR activities.

5.3 The importance of addressing gender in adaptation

As we explained in the 'CEDRA's approach' section of the Introduction, it is vital to take gender into consideration when assessing and responding to climate change and environmental degradation. Climate change responses have the potential to challenge existing gender power imbalances and can help build gender equality and promote women's rights. But, if gender is ignored, responses may encourage destructive and harmful power relations between men and women.

There is a helpful discussion in IDS's *Gender-responsive strategies on climate change* report (June 2011). This document recommends that adaptation work considers the following:

- gender roles and norms and unequal power relations, and how they will be addressed
- risks and opportunities for men, women, boys and girls
- whether adequate resources are available to develop and carry out responses that are sensitive to the needs of different genders
- the different needs and preferences of men and women
- policies and programmes are evaluated for their sensitivity to gender issues
- accountability mechanisms are inclusive and aware of gender issues.

On page 59 is an example of one very successful adaptation project in response to flooding, which also helped with community development, building resilience and empowering women. It was carried out by Eficor, a Tearfund partner in India.

In addition to gender, another significant power differential to be considered is age. Children and young people's voices need to be heard. They will be affected by environmental and climate change in different ways to older people, and they may have different ideas about how they should respond.

5.4 How to find out about different adaptation options

There are many adaptation options you could consider but you need to find those that will work best with the communities and projects you work with. Consult communities, scientific sources and stakeholders such as government technical advisers or other development workers. Visit adaptation projects to learn from others' successes and failures. The Impacts and Options Checklist in the pocket at the back of this book will help. It cannot list all possible adaptation options, so use this table to help you think about different options and add your own ideas.

Adaptation often builds on communities' traditional practice, but may require new skills and resources. An important way of discovering what is already working within communities is to use a good participatory methodology to find out if anyone in a community is less affected by the changes that are happening. Meeting with them and spending time with them will enable you to discover what they are doing and why. There are also useful films about different adaptation options. Try searching on www.YouTube.com for 'adaptation in [your country]' or a particular option, such as 'wood-efficient stoves'.

It is also important to look at some your government's plans that you found in Step 2, such as the National Adaptation Plan or National Development Plan. These will list relevant adaptation options.

CASE STUDY

Storing rainwater in Rajasthan

Rajasthan state in India is suffering from worsening droughts and local communities struggle to cope because people generally have few reserves. The situation was very difficult but Discipleship Centre, a Tearfund partner, developed opportunities for people to respond positively to their situation and in ways that encouraged adaptive resilient development. This has led to some unexpected benefits – in terms of local women being empowered and mobilising the community in responses which are ongoing.

Staff from Discipleship Centre (DC) decided to help vulnerable communities adapt to their changing climate and started by leading them through a participatory assessment of disaster risk (PADR – see Appendix A).

Together, they considered likely impacts (such as drought or cyclones), and assessed who and what would be affected. Then, they planned how to adapt to these impacts, building on skills and resources communities already had. As part of the process, DC encouraged local people to form Village Development Committees. These committees provided the first opportunity for men and women of different castes to meet and make decisions together.

One such committee decided to build rainwater cisterns about three to four metres wide and four metres deep. During the rainy season, rainwater is now collected through channels into the cisterns, which each store up to 40,000 litres. A full cistern can provide drinking water for several families all year round.

DC provided training and materials to help build one cistern using cement. One cistern was not, however, enough to meet village needs. So, motivated by their new awareness and understanding, the village committee decided to take their cause to the local government. DC helped the committee make a formal application and provided advice on how to present their case. As a result, the government has built another ten cisterns for the village.

Taken from Tearfund publication, *Footsteps 70*

Richard Hanson / Tearfund

A child collects water from a recently constructed rainwater tank.

5.5 How to start choosing your own adaptation options

Within CEDRA, adaptation options will in most cases mean strengthening existing projects, but in some contexts new projects may need to be identified.

NOTE
Consider short- and long-term benefits. Short-term actions don't always provide long-term protection against climate impacts.

Once you have consulted the people and sources listed in Section 5.4, you are likely to have a number of different possible adaptation options for each of the climate and environmental impacts you have identified in Steps 1 to 4. Now it is time to narrow down your options and identify which of these options are the strongest. Again, we recommend that you share your list of possible adaptation options with others in your network, so you can help and support each other in identifying practical, appropriate options. If you have carried out PADR assessments (see Appendix A), use the findings to inform your decisions.

The table on page 57 has been devised to help you compare different options. To create the table for yourself, draw different columns listing the most important issues (*criteria*) for your community and organisation to consider, using the list below to guide you. Then, write each of your potential adaptation options on a separate row. Use the example on the next page as a guide. Giving a score to each benefit against each adaptation will allow you to compare your options. This is best done together with communities.

POSSIBLE CRITERIA FOR COMPARING ADAPTATION OPTIONS:

Consider to what extent the option meets the following criteria:

- ☑ **ENVIRONMENTAL SUSTAINABILITY** – both in the short and long term, and using resources that are unlikely to be significantly affected by climate and environmental change.
- ☑ **IMPACT** The project will be effective and help many people in addressing the climate and environmental impacts.

Mike Wiggins / Tearfund

A woman in Zimbabwe explains how the community have adapted their farming practices, using low tillage and mulching to retain organic matter and water.

- ☑ **BUILDING THE CAPACITY OF VULNERABLE PEOPLE** This will involve tackling unequal power dynamics such as gender or ethnic inequalities.
- ☑ **BUILDING ON COMMUNITIES' EXISTING COPING MECHANISMS** Communities are strengthened so that disaster resilience and adaptive capacity to climate changes and environmental degradation are built.
- ☑ **COST-EFFECTIVENESS** The project is good value for money, and finance, skills and resources are available to set up and run the project.
- ☑ **TIME-FRAME** The project can be carried out within an acceptable timeframe considering short-term versus long-term benefits.

NOTE
If you conclude that local governance issues hinder your communities from adapting to climate and environmental change, your first adaptation may be some advocacy work to improve governance.

- ☑ **MALADAPTATION RISKS** The project does not risk making people more vulnerable to climate change and environmental degradation.
- ☑ **NO REGRETS** The project contributes to development regardless of whether climate change or environmental degradation happens. For example, a project may have a dual purpose, such as a cyclone shelter also being used as a school.
- ☑ **COMPATIBILITY WITH CULTURAL AND SOCIAL NORMS** The project will be accepted by communities. However, please note that it may be necessary to challenge negative cultural and social norms.
- ☑ **POLICY ENVIRONMENT** The local and national policy environment is conducive to the activities. In some circumstances, the project may also be able to influence the policies, practices and attitudes of people in power such as government officials.
- ☑ **COMPLEMENTARITY** – to other projects and adaptations within your own organisation, and to what other organisations or institutions are doing (ie avoiding working against other projects).

Mike Wiggins / Tearfund

An Indian woman recalls how the community has adapted to flooding and droughts, and explains how they have increased in frequency since she was a child.

Exercise 10

Narrowing down your adaptation options

In this exercise you will fill in column G of Part 2 of your CEDRA Assessment (in the pocket at the back of this book) – narrowing down your adaptation options to ones which would be potentially beneficial and feasible. Using the guidelines in Section 5.4, research and compare possible adaptation options for all your priority impacts.

Next, re-read the guidelines in Section 5.5 and start the process of narrowing down the options which will work best for your communities and your organisation. If possible, consult the communities you work with to gather their views. If this is not possible because you do not have sufficient resources or time, you could select those impacts that you think your agency is most likely to be able to respond to and assess those alone.

Use participatory tools such as focus groups (see page 35) to help in your selection process. The options table above is a useful tool to help focus group members agree on how effective different options are. Criteria could be scored with one, two or three ticks, or with the words 'high', 'medium' or 'low'. When you have ranked the different options, look at the scores and discuss whether you think that the highest-scoring option is the best one to use. If you disagree, then you may want to change your criteria.

Write your proposed adaptations in column G in Part 2 of your CEDRA report.

Example Table to help compare adaptation options

Compiled by Tearfund Partner Consortium from the Diocese of Aru, DRC

This example compares options for adapting their drinking water project to respond to the risk of pollution of the water table due to the use of chemical products in the cultivation of tobacco.

NOTE
You can draw your own table, based on this one. These criteria are just examples. You should write your own list.

ADAPTATION OPTIONS COMPARISON TABLE

Adaptation options	Criteria: Environmental sustainability	Impact	Building the capacity of vulnerable people	Building on communities' existing coping mechanisms	Cost-effectiveness	Time-frame	Maladaptation risks	No regrets	Compatibility with cultural and social norms	Policy environment	Complementarity	TOTAL
Raise awareness about risks of growing tobacco on the floodplain and around water sources	✓ ✓ ✓	✓	✓ ✓	✓ ✓	✓	✓ ✓	✓ ✓	✓ ✓	✓	✓ ✓	✓ ✓	20
Advocacy aimed at local government and the tobacco companies to reduce chemical use	✓ ✓ ✓	✓ ✓ ✓	✓ ✓	✓	✓ ✓ ✓	✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓	✓ ✓	✓ ✓ ✓	26
Create sharing and dialogue groups to share concerns and mobilise for action	✓ ✓ ✓	✓	✓ ✓	✓ ✓	✓ ✓	✓	✓ ✓	✓ ✓ ✓	✓ ✓	✓ ✓	✓ ✓	22
Rainwater harvesting to capture and use	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	22

Complete column G of Part 2 of the CEDRA Assessment.

See the worked example on the following page.

Example Potential adaptation options in Part 2 of the CEDRA Assessment

Compiled by Tearfund Partner Consortium from the Diocese of Aru, DRC

CEDRA ASSESSMENT PART 2: Project risk assessment

Sig = Significance of impact: (4= high; 1= low) **Lik**= Likelihood of impact: (4= high; 1= low) **Rsk**= Risk = Significance X Likelihood (Multiply figures D and E)

A Locations or sectors	B Projects (by sector)	C Climate and environmental impacts	D Sig	E Lik	F Rsk	G Possible adaptation options to strengthen projects and communities
Health	Development of drinking water sources in 22 parishes in the Diocese of Aru	Reduction in water source flow due to deforestation and shorter rainy season. This means less available drinking water and hence an increased workload for women	3	3	9	Reforestation in the area around the water sources
						Introduce rainwater harvesting during the rainy season
						Raise awareness and understanding in the community of the impacts of climate change and environmental degradation and in particular how they affect the different roles of women and men. Encourage the whole community to conserve water
		Pollution of the water table due to the use of chemical products in tobacco cultivation. Children are particularly vulnerable to the impacts of drinking polluted water	4	3	12	Raise awareness among the population of the need to refrain from growing tobacco on the floodplain and around water sources
						Advocacy aimed at local government and tobacco companies to stop the irresponsible use of chemical products
						Create sharing and dialogue groups of men and women in the communities to share concerns and mobilise for action
						Rainwater harvesting to capture and use unpolluted rainwater
	Advocacy to district authorities to build and maintain latrines in market places and other public areas	Hazards caused by the build-up of public waste mean that limited district resources for sanitation are diverted to dealing with the impact of hazards rather than building latrines	2	4	8	Advocacy aimed at district authorities to develop and fund a comprehensive policy and strategy for dealing with all aspects of sanitation, including disposal of public waste and the provision of latrines in public places
		Women and girls are vulnerable to attack as they try to find discreet locations to use in the absence of latrines	4	2	8	Ensure separate sanitation facilities for women and men are built
						Awareness-raising and training among communities to address and tackle gender-based violence
		Reduction in rainfall leads to lack of water to provide hand-washing facilities	2	2	4	Rainwater harvesting and provision of tippy taps in public places Low risk – but worth doing anyway. Easy to implement

	and spread of improved stoves, and training in the development of vegetable gardens through 25 socio-professional and literacy training centres	to make stoves due to environmental degradation				ese of ARU decided this was so important that they planned to develop a new livelihoods project focused on women (see Part 3 CEDRA Assessment, page 72)
		Gardens fail due to unpredictability of rain	3	3	9	Use drought-resistant plant and vegetable varieties
						Encourage re-use of domestic water (eg after washing dishes) to water gardens

NOTE
Examples of completed CEDRA Assessments can be found on our website: www.tearfund.org/CEDRA/ExampleAssessments

5.6 Should you modify existing projects or do something new?

Where possible, Tearfund recommends that you strengthen your existing projects. However, it may be that your decision is to recommend that your organisation starts up new projects. While completing a CEDRA Assessment, you may realise that there are communities more vulnerable than the ones you are currently working with. For example, in working with other NGOs, you may realise that no one is working in a certain area of the country that is currently experiencing the most serious climate change impacts. You may want to plan to begin working in that area. Or, you may realise that there are impacts which need addressing urgently (see case study below) and which your current projects do not address. This is to be expected and you can plan for this in your CEDRA Assessment. You could also consider these situations as issues requiring advocacy to prompt others to respond. Entering a new area of work may mean joining existing advocacy groups and networks.

Proposed new projects should be listed in Part 3 of your CEDRA Assessment, which you can now complete, using the example on page 60 as a guide. These projects should also be assessed against environmental and climate impacts, using the CEDRA risk assessment, and should also be changed to become stronger if required.

CASE STUDY
Withstanding floods with savings

Phudan Devi is from a small village in Bihar state, East India, where she lives with her husband and five children. They are subsistence farmers with less than two acres of land which produces barely enough to support the family. As well as being poor, they belong to a low 'caste' or social group and so are despised and marginalised. What's more, they live in an area that floods. Phudan's family lost everything in a major flood in 2004. Families such as hers do not have savings to fall back on or skills to earn money.

Tearfund partner Eficor helps communities such as Phudan's to adapt – by training and enabling people to prepare for and cope with floods and other disasters. This includes building up communities' financial resilience, and particularly women's, by showing them how to set up self-help groups (SHGs) and by training people so they can pursue alternative livelihoods.

Phudan joined an SHG in 2006. She took out a loan of 2000 Rupees (£26) from the SHG and cultivated potatoes on a quarter of their farmland. Her investment produced 7500 Rupees' (£100) worth of potatoes. She took another loan of 1000 Rupees (£13) and planted vegetables, generating a profit of 2500 Rupees (£32.50). When floods came again in 2007, Phudan's family and the other 175 families in their community suffered much less damage than in 2004 because they were much better prepared: they had built up greater financial resources and were growing flood-resistant crops.

http://tilz.tearfund.org/foodcasestudies

Complete Part 3 of the CEDRA Assessment.

Example Part 3 of the CEDRA Assessment

Compiled by Tearfund Partner Consortium from the Diocese of Aru, DRC

CEDRA ASSESSMENT PART 3: New projects

Sig = Significance of impact: (4= high; 1= low) **Lik**= Likelihood of impact: (4= high; 1= low) **Rsk**= Risk = Significance X Likelihood (Multiply figures D and E)

A Locations or sectors	B Projects (by sector)	C Climate and environmental impacts	D Sig	E Lik	F Rsk	G Possible adaptation options to strengthen projects and communities
Livelihoods	Income-generation skills for women – focusing on tailoring and soap-making	Lack of water and food means that women have no time to take part in groups or lessons to develop skills	3	3	9	Ensure integration with water and food security projects
						Ensure full participation of women in the design of the project, to know when and where would suit them best for training sessions to be held
Climate change	Advocacy for more government action on climate change	Climate and environmental pressures on other projects mean lack of resources for advocacy	3	3	9	Join an advocacy network to share the workload and to develop a stronger voice

NOTE
If your adaptation option in column G is an entirely new project, you should transfer it to Part 3 of your CEDRA report so that the risks from the environment and climate can be assessed.

Questions for reflection and learning:

- What have you learnt as you've carried out this Step?
- Have you achieved what you set out to do when you started?
- Is there anything you need to change in your approach as you address the other Steps?
- Are there any skills you've learnt that it would be useful to pass on to others in your organisation?
- How can you feed back your learning into your annual planning cycle and organisational strategy / strategic review?

CASE STUDY

Strengthening a WASH project in Kampala

Tearfund partner A Rocha began a water, sanitation and hygiene (WASH) project in the Namungoona slum of Kampala in Uganda in 2008. The target included refurbishing three spring wells, constructing a toilet in the market place, distributing 210 biosand filters and carrying out a campaign of community sanitation and hygiene education.

A Rocha were trained in CEDRA in 2009 – a process which led them to review scientific sources and consult communities they worked with about climate and environmental impacts. They found three existing threats – floods, famine and drought – which were projected to become much worse. 'CEDRA training inspired us to strengthen our WASH project in Kampala to make it climate proof,' said Sara Kaweesa, Director of A Rocha Uganda.

CEDRA led A Rocha to design larger drainage channels serving the spring wells. These channels protected the spring wells during the many flash floods that Kampala experienced in 2011. CEDRA also highlighted the importance of community participation in adapting to climate change. 'We trained people to make their own filters. They now have the skills to build new ones if these are destroyed.' A Rocha realised people had little awareness of climate change and so held 'climate change hearings' for them.

Unexpected benefits arising from the project included stronger community relationships. 'One of the spring wells is in a predominantly Muslim community. As we consulted them and encouraged their participation, we found that Christians and Muslims could work well with each other. When climate change comes, it does not discriminate between religions: it hits the whole community.'

More details of changes A Rocha made in response to CEDRA can be found on the CD-Rom or at: www.tearfund.org/CEDRA/CaseStudies

Sara Kaweesa / A Rocha

Community members de-silt a drainage channel in Kampala.

Step 6 Complete the CEDRA Assessment and Action Plan

By now, you will have done a considerable amount of work on your CEDRA Assessment. You may have completed some or all of the following Steps (and, as we said in the Introduction, you should adapt CEDRA to suit your way of working):

- ☑ In **Step 1**, you drew maps of the locations where you work; assessed the likely climate and environmental impacts on the communities and projects there; and drew up lists of questions you wanted answering.
- ☑ In **Step 2**, you identified potential stakeholders and sources of scientific information, and consulted them to find out more about current and projected climate and environmental impacts.
- ☑ In **Step 3**, you identified a number of representative communities and consulted them on their experiences of climate and environmental change and how they have coped with these impacts. You then made an assessment of their ability and resources to cope with future impacts.
- ☑ In **Step 4**, you wrote on your CEDRA Assessment details of the locations and projects you are working with and the likely climate and environmental impacts there. You then looked at the significance and likelihood of these impacts and ranked or prioritised them with a risk score.
- ☑ In **Step 5**, you evaluated the risks and wrote a list of many possible adaptation options. You may also have identified some new projects that you would like to carry out.

IN STEP 6 YOU WILL

- ☐ Review the information gathered in the first five Steps and complete your CEDRA Assessment.
- ☐ File your community assessment, stakeholder interviews and other research records.
- ☐ Write an Action Plan which contains a list of activities your agency or network of agencies wants to commit to doing. It will also contain a list of potential actions that you would like to encourage others to undertake.
- ☐ Plan a follow-up workshop to share the information you have gathered and gain support in decision-making and problem-solving.

6.1 Completing your CEDRA Assessment

At this point, you should review all that you have done so far on your CEDRA Assessment. Make any changes that you feel are necessary to ensure that it is complete, fair and representative and to ensure that it provides robust evidence to support the Action Plan that you will develop next. You should ask some community representatives and other stakeholders, such as scientists and government officials, for their input and comments. Allow for the possibility that you may need to change things if there is clear feedback from community representatives that

something is not acceptable. This may take more time to change and get right, but it will be better and more sustainable in the long term.

To support your CEDRA Assessment, you should compile a folder with all your supporting reference material, including community assessment and stakeholder interview records, photographs, community participatory assessment records and details of scientific and stakeholder research that you have undertaken. It is very worthwhile to take the time to sort and label these records and then reference them within the relevant sections of your CEDRA Assessment. Doing this will help you when you refer to your CEDRA Assessment in designing new projects, raising awareness amongst communities and stakeholders and informing your annual planning cycles and multi-year strategies.

6.2 Drawing up an Action Plan

Now you need to decide which actions you would like to take in response to what you have found out during your CEDRA Assessment, and also decide which actions you would like to encourage others to take. The Action Plan template is provided in the pocket at the back of this book for this purpose, although you will probably want to adapt it. You could have a short workshop with others from your organisation and network to produce the Action Plan together. Additional examples of Action Plans are available on the CD-Rom or from our website: www.tearfund.org/CEDRA/ExampleAssessments

Exercise 11
Developing an Action Plan

- Go through your CEDRA Assessment and think about all the impacts and risks facing the communities you work with and your current or proposed projects.
- Review your list of possible adaptation options (Part 2, column G) and your list of proposed new projects (Part 3).
- Copy the adaptation options you have decided on and proposed new projects to the Action Plan (in the pocket at the back of this book).
- Write down any new activities that you have decided to start, such as developing your own organisation's environmental policy, staff or community awareness-raising campaigns, office energy-saving measures etc.
- Now, add to the table all the actions which you have identified as necessary but for which your agency does not have sufficient capacity. Review your list of stakeholders, including local and national government, other NGOs and communities. Alongside each proposed action, write down which of the various stakeholders might be able to take on these actions.
- Plan to meet with these stakeholders, if possible, and share your findings with them (see below).

Complete the CEDRA Action Plan.

See the worked example on the following page.

Example CEDRA Action Plan

Compiled by Tearfund Partner Consortium from the Diocese of Aru, DRC

CEDRA ACTION PLAN

Proposed action	Who	Where	When	How
STRATEGIC / ORGANISATIONAL ACTIONS				
Each partner organisation in the Consortium to develop an Environmental Policy (EP)	All partners set up an environmental policy group and ensure the policy covers all main organisational activities	HQ, but ensuring field offices are involved	To begin immediately, complete within 2 months Quick win!	Form EP groups – develop a plan and timeline Ask other NGOs for EP examples and advice Consult Tearfund's *ROOTS 13* EP guidance Assign roles in each agency
Establish a monthly networking meeting of Consortium members to share learning on the implementation of the CEDRA Action Plan	Administrative Officer in Diocesan office for community development to organise	Meetings will take place in the Diocesan office in Aru	Beginning next month and then monthly	Arrange dates and times Email invitations Book room and resources
Add updating the CEDRA Assessment into next year's planning cycle	CEOs of each organisation	HQs	At beginning of planning process	Ensure sufficient time is added to planning process for this Assign responsibility for leading on the update
All staff to read CEDRA Assessment conclusions and use in their decision-making and planning Really important!	CEOs, all team managers, all project staff	All officers	To begin immediately and then ongoing	Distribute copies to all offices Cancel one regular meeting to free up time for reading Otherwise it won't happen... Add to job descriptions and monitor through appraisal process Each office to assign a 'CEDRA champion' to encourage staff to read and use CEDRA findings
Join a national climate change advocacy network to share the workload and to develop a stronger voice Easy to do	HFC's Advocacy Officer	Kinshasa	Meetings every 3 months	Add to Advocacy Officer's job description Develop budget – cost to be shared by all agencies Develop process for Advocacy Officer to get input from, and feed back to, all agencies
PROJECT ACTIONS				
Reforestation in the area around the water sources	ACC, working through local churches	Starting with Zaki, Kaliko-omi and Kakwa and moving on to other Chiefdoms	November 2010 – October 2012	Visit communities where churches are already involved in afforestation Arrange for other churches to visit these communities Distribute saplings and encourage churches to assign tree planting leaders and begin afforestation work
Introduce rainwater harvesting during the rainy season	WASH project managers in ACC and BDDC	Zaki, Kakwa and Nio-Kamule	March 2011	Train communities in basic principles of rainwater-harvesting and in construction of ferro-cement tanks Establish RWH demonstration sites in each village

Proposed action	Who			
Raise awareness and understanding in the community of the impacts of climate change and environmental degradation and in particular how they affect the different roles of women and men. Encourage the whole community to conserve water	BDDC Devel			
Raise awareness among the population of the need to refrain from growing tobacco on the floodplain and around water sources	BDDC Devel			
Awareness-raising and training among communities and companies to address and tackle gender-based violence	HFC a			
Develop campaigns to raise awareness and provide education about protecting the environment	BDDC Devel			
Set up farmer field schools to test different agricultural crops and growing methods, eg chemical / organic fertilisers	Agricu office organ			
Use drought-resistant plant and vegetable varieties	Led b Projec in AC imple agricu office organ local government agricultural adviser			
Develop advocacy strategy to stop the over-intensive use of chemical products by tobacco companies	Led and coordinated by Project Officer from Anglican Church Development Office – but to involve all project managers	Advocacy strategy will include analysis of where advocacy should focus	September 2010	Project officers to be released from 50% of normal responsibilities to focus on developing advocacy strategy

6.3 Presenting your Action Plan

When you have written up your draft Action Plan, present your findings and recommendations to colleagues. Crucially, it is important for the whole senior management team to feed in to and support recommendations. It is important not to overwhelm your colleagues, so you may choose to share different parts of your findings with different colleagues or teams, according to the locations or sectors where they work. Equally, different colleagues who have been involved with CEDRA may feed back to different groups of people.

Present the findings of your CEDRA Assessment to the stakeholders identified in Exercise 4 as possible candidates for carrying out some of the adaptation options. Give them sufficient time to ask questions and challenge your findings. Ask them about their existing activities and ask if you can share your recommendations with them. Explore with them whether they have the capacity to take on some of the adaptation options you have identified – whether as new projects or preferably by modifying and strengthening their existing work.

Share your findings with your network, communities and external stakeholders, either at this stage or as part of the follow-up workshop described below. Agree who 'owns' the CEDRA Assessment and Action Plan. Then agree how often they will review it and how they will ensure that the actions are carried out. You could consider writing a one-page summary of your key findings.

6.4 Follow-up workshop

It is not possible for any one agency to address all the issues raised in the course of your CEDRA Assessment. So it is important to find ways of sharing your learning with others and encouraging other stakeholders to take action on some of the impacts identified.

You will find an example workshop timetable on the CD-Rom at the back of this book.

Tearfund recommends that you hold a follow-up workshop to share your CEDRA findings and Action Plan recommendations – ideally over two or three days. Invite a range of stakeholders: workshops are an excellent opportunity to share information gathered and also to receive support for decision-making and problem-solving early on. Our experience is that it works well if you invite the original participants to the whole workshop and invite the external stakeholders and key community representatives to the last day.

Questions for reflection and learning:

- **What have you learnt as you've carried out this Step?**
- **Have you achieved what you set out to do when you started?**
- **Is there anything you need to change in your approach as you address the other Steps?**
- **Are there any skills you've learnt that it would be useful to pass on to others in your organisation?**
- **How can you feed back your learning into your annual planning cycle and organisational strategy / strategic review?**

Step 7 Achieving lasting change

Step 7 helps you ensure that your CEDRA Assessment leads to real and useful change. It helps you learn from your CEDRA Assessment, implement your Action Plan and ensure your current and future projects are adapted to achieve the outcomes you intend. It also helps you to become a learning organisation – learning from everything you do, retaining that learning and taking it forward into all new projects.

IN STEP 7 YOU WILL

- ☐ Plan how to keep your CEDRA Assessment up to date and ensure it is used to inform project designs and strategic plans.
- ☐ Decide what local environmental change would be most helpful and feasible to record.
- ☐ Plan to develop local environmental records.

7.1 Learning from and updating CEDRA Assessments

Learning should be captured throughout the process of carrying out your CEDRA Assessment and Action Plan. We all need to learn from our successes and failures. It is important to capture and share this learning to help yourself and others build on good practice or avoid repeating your mistakes.

You should plan how you are going to encourage learning from the start of CEDRA. Begin by drawing up a list of questions you want to ask all contributors to the CEDRA Assessment – colleagues, communities and stakeholders. These questions could include:

- What has or hasn't worked well in this process? Where? Why?
- What would have made this process work better?
- What were the conditions like before we started this process?
- What has changed since we began this process?
- What problems have we faced? How have we overcome them? Could we have avoided them?
- What assumptions have we made? Were any of them wrong?
- Did we identify the correct risks? Could we have managed them better?

True learning is difficult. It requires you to challenge yourself to ensure that you are being open-minded and to value self-criticism as an opportunity to learn, not as a chance to blame. Lessons will be learnt only if you plan regular times within the CEDRA process to reflect and discuss, and then plan appropriate timeslots and methods to communicate your learning effectively to others.

7.1.1 Regularly updating your CEDRA Assessment

Climate change and environmental degradation are advancing so quickly that you cannot afford to let your CEDRA Assessment sit on a shelf once it is complete. You should refer to it regularly – whenever you design a new project, start working with a new community, or update your organisational strategy or annual plan. You should update your Assessment annually – which will require a lot less effort than doing it in the first place. Keep in regular communication with your network of stakeholders so you can support and continue to learn from each other as new sources of information (media, scientific, community findings) come to light.

You should prepare a clear plan which identifies when you will update your CEDRA Assessment and who will collect and update scientific and community information. This plan should ensure you integrate relevant findings into the needs assessments of all new projects.

Exercise 12
Taking CEDRA forward into future planning

Make a plan for how you will keep your CEDRA Assessment up to date and how you will use it to inform your project designs and strategic plans.

Think too about how to keep up to date with any new scientific data or stakeholder or community perceptions. Plan how relevant findings can be integrated into the needs assessments of all new projects, as well as be fed into existing projects.

7.2 Local environmental record-keeping

Local environmental record-keeping can give rise to new information that is very useful to collect to inform CEDRA and future projects. It can help with your planning and will provide evidence of both environmental change and the need for your adaptations. It will also inform future assessments and help communities understand changes happening in the environment around them. Given this, it is very helpful to consider opportunities for starting local environmental record-keeping at an early stage in the CEDRA process. You could encourage local schools to keep these records or identify community groups which might do so, such as farmers' or fishermen's associations.

Examples of useful environmental records include:

- daily or weekly temperature charts
- rainfall records
- animal and bird migration
- crop yields or failures
- severity and extent of local disasters such as floods, drought and landslides.

Tearfund has many examples of community groups keeping very accurate local records (eg children's immunisation and educational records). Their accuracy and commitment to the task depend very much on whether or not they are convinced that records serve a useful purpose. You can use resources from *ROOTS 9: Reducing risk of disaster in our communities* (see Appendix A) to help communities understand the issues and decide their own responses.

Records charting environmental change can be very useful for communities. They can provide helpful information for their own local activities such as farming or water resource management, and to inform discussions about local authority activities in the community. Tools such as rain gauges can be used to empower communities to collect their own climate data and make the link between communities and meteorology institutions locally. Such records also provide evidence to support project designs and donor proposals as they demonstrate the need for and likely effectiveness of the project.

Exercise 13
Starting local record-keeping

Discuss with your colleagues, network or communities which local environmental changes would be most helpful and feasible to record. Think about who may be able to keep these records. Ask yourself: can you integrate record-keeping into your normal project activities, or ask local government, national universities, or local schools or community groups to keep the records?

Plan to start keeping records from now on, ideally before you start a project. This is called creating a baseline against which you can review future observed changes. Plan how these local records can be integrated into the needs assessments of all new projects, as well as be fed into the project cycles of existing projects.

7.3 Monitoring and evaluating adaptive resilient development projects

You also need to plan for effective monitoring and evaluation of your adaptation (adaptive resilient development) projects, to ensure communities survive the impacts of climate and environmental change. To do this, you need to select an appropriate monitoring and evaluation (M&E) scheme or framework that will enable you to check if your CEDRA Assessment helped you select the appropriate adaptation projects, and whether or not they were effective. There are many useful resources available on M&E, including:

- If your primary purpose is to learn, you could use a process such as the Most Significant Change technique http://www.mande.co.uk/docs/MSCGuide.pdf, a participatory monitoring and evaluation tool which collects stories of significant change.
- If you are most concerned with accountability to donors and communities to show you are using funds well and are working closely with communities to understand their needs and priorities, consider using the ALNAP guide on evaluation for accountability: http://www.alnap.org/pool/files/eha_2006.pdf
- Many donors want you to demonstrate value for money. Tearfund's publication *Investing in communities: the benefits and costs of building resilience for food security in Malawi* gives good guidance on how to take a Cost-Benefit Analysis approach: http://tilz.tearfund.org/webdocs/Tilz/Research/Investing%20in%20Communities%20web.pdf
- Increasingly, donors want you to show that your projects are achieving the intended change or impact. 'Impact pathways' show visually how project activities lead to 'outputs' which together achieve 'outcomes', resulting in an overall 'impact'. See: http://boru.pbworks.com/w/page/13774903/FrontPage

- If you are monitoring and evaluating in insecure environments, such as areas of conflict or rapid political or economic change, go to: http://www.dfid.gov.uk/Documents/publications1/governance/building-peaceful-states-I.pdf

Tearfund's *ROOTS* guides on advocacy and on project cycle management may also help you: www.tearfund.org/tilz

7.3.1 Outputs, outcomes and impact

Whichever M&E framework you choose, it is important that projects have realistic, achievable outputs and outcomes. Outputs can be described as the activities that a project will deliver – for example, seeds distributed to 50 households. Outcomes are broader and can be described as the benefits or change an organisation is able to bring about as a direct result of its activities – for example, increased food security for 50 households. It's also important to have appropriate indicators to demonstrate that projects have achieved their goals (see below).

To measure outputs, outcomes and impact, you need to record what the situation was like before you started your project – in other words, establish a baseline. A baseline records what the environment was like before your CEDRA Assessment and before you adapted your projects. It enables you to produce a 'before and after' assessment of change over time. Useful guidance is provided here: http://documents.wfp.org/stellent/groups/public/documents/ko/mekb_module_10.pdf To establish a baseline we need to define appropriate indicators that measure whether or not our activities led to outcomes we have achieved.

Exercise 14
Monitoring and evaluating projects

As with any project you carry out, plan how to evaluate your inputs, activities, outputs and outcomes for each adaptation you undertake in response to CEDRA. Think about what you want to and can measure. Plan to measure these things now, ideally before you start a project (so creating a baseline), and then annually. Consider how, when and by whom climate and environmental impacts on the project will be measured.

7.4 Learning from evaluation

Reflecting on the value of the inputs, activities, outputs and outcomes of the changes made in response to CEDRA is an important part of your regular review. Usually this happens at the evaluation stage of the project cycle. 'Adaptation options' listed in column G of Part 2 of the CEDRA Assessment and 'New projects' listed in Part 3 should be built in to the project cycle plan and into Action Plans. This means that all your projects will undergo regular M&E.

Evaluation will help to show the difference that your projects have made. This will also provide an opportunity for organisational learning and will encourage staff that progress is being made.

All evaluations should help to answer the following questions:

- Have we achieved all our intended benefits?
- What are the unintended outcomes and outputs (positive and negative)? What do they tell us?
- Have there been any negative outcomes?

- What were the critical issues and the lessons learnt?
- How could we do it better next time?

However, evaluations can be easier said than done. The following problems are common and need to be avoided through careful planning:

- Baseline data is not collected
- Communities are not consulted
- Indirect impacts of the project are not assessed.

It may be difficult to evaluate your adaptation project if, for example, it is preparing people for the risk of a landslide which has not happened (yet) or if, for instance, temperature rises are so gradual that it is hard to tell after two years what difference your project has made. This should not stop you evaluating, or make you conclude that the action was unjustified. Instead, your evaluation should consider:

- Are the risks still anticipated?
- Have any climate or environmental impacts been felt? How did the project or programme cope? Are new adaptive resilient development actions required?
- How easy was the project to carry out and how does this compare to our expectations?
- Were the costs as expected?
- Were there any negative impacts on the environment? Do these negative impacts outweigh the actual or potential benefits of the project?

Tearfund and our partners have found action learning to be the strongest way to achieve effective adaptation to climate and environmental change. This means looking at what others have done, asking detailed questions about the possible strengths and weaknesses, reflecting on how to build on existing approaches, and then just having a go.

Pilot your adapted existing or new adaptation (adaptive resilient development) projects as soon as you can now – which means trying them out locally on a small scale first, to learn what works well and what you can improve. As you become confident about your project and the way it is responding to impacts, invite other agencies, stakeholders and communities to visit and comment on it – so you can learn from them. Make sure you capture this learning and share it with your colleagues and network of stakeholders so that this learning is not lost. It may take a little more time to raise funds or support for adaptive resilient development projects but their benefits in the longer term should prove this process to be very worthwhile.

Appendix A Other related Tearfund resources

Is CEDRA the right resource for you?

CEDRA is primarily intended for local development agencies to check if their existing development projects are strong enough to withstand climate and environmental change. It can be used as a review of existing projects or as a strategic assessment tool to inform your programme planning. We describe below a number of other Tearfund resources that have different, but related, uses. We encourage you to read through this list to check whether you think CEDRA is the right tool for you to be using at this time.

These documents are on the CD-Rom at the back of this book and can also be downloaded from: www.tearfund.org/CEDRA/Resources

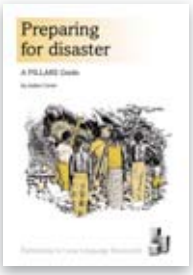
ROOTS 13: ENVIRONMENTAL SUSTAINABILITY Considers how development agencies' projects and office activities, and individuals' personal lifestyles, affect and are affected by the environment and climate, and gives practical responses.

TEARFUND'S ENVIRONMENTAL ASSESSMENT (EA) A project planning tool to assess how individual projects impact and are impacted by the local environment. The EA helps development workers decide whether to change the project design or location, and compare alternative projects to select the most beneficial. Many donors request Environmental Assessments to support project proposals. A basic version is also included in *ROOTS 13* (above).

ROOTS 9: REDUCING RISK OF DISASTER IN OUR COMMUNITIES – 2ND EDITION Describes 'Participatory Assessment of Disaster Risk' (PADR) – a community-level method of assessing hazards, vulnerabilities and capacities. It is a mobilising process which results in a community-owned risk management plan. PADR applies to climatic, environmental and geophysical disasters, and takes account of changing hazard patterns through climate change. The result should be resilient communities who are well able to cope with most hazards. Some of the questions and participatory tools in PADR can be used to gather community-based information for CEDRA (see Step 3). Likewise, your CEDRA findings can usefully inform PADR assessments.

DISASTERS AND THE LOCAL CHURCH Practical guidance for local church leaders about ways of preparing for and responding to common disasters. It includes risk and needs assessments, and practical things to do in drought, floods, tropical storms, landslides and earthquakes. There are also case studies and Bible studies.

CHARACTERISTICS OF A DISASTER-RESILIENT COMMUNITY Details the characteristics which will enable a community to withstand common hazards. They are grouped into Governance, Risk Assessment, Knowledge and Education, Vulnerability Reduction, and Disaster Preparedness and Response. There are also case studies and examples of many ways in which the characteristics can be used in relief and development projects.



PREPARING FOR DISASTER A book in the *PILLARS* series for community-level workers, with guidance for discussion sessions for community groups on the topic of disasters. It is written in an easy-to-understand and accessible style and could also be used in schools.

WATER SAFETY PLANS FOR COMMUNITIES: GUIDANCE FOR ADOPTION OF WATER SAFETY PLANS AT COMMUNITY LEVEL Helps Tearfund's partners and Disaster Management teams and other external agencies supporting the implementation of water supply projects. It offers guidance on how to help beneficiary communities create their own Water Safety Plans and in so doing gain sustainable access to safe water.

ADOPTION OF COMMUNITY-LED TOTAL SANITATION: GUIDANCE FOR PROGRAMMING OF CLTS IN TEARFUND-SUPPORTED PROJECTS Guidelines based on Tearfund's early experience of CLTS and taking into account the experiences of other organisations in implementing CLTS. They are intended to help Tearfund partners and Disaster Management teams in robust programming of CLTS, particularly in addressing the issues of environmentally and physically safe sanitation systems, and how to achieve safe sanitation systems equitably throughout a community following a CLTS campaign.

UMOJA Helps church leaders and their congregations work together with the local community to bring about positive change for the whole community. It helps local churches and communities build on the resources and skills they already have and is a process that inspires and equips local people with a vision for determining their own future with their own resources. The Umoja *Facilitator's Guide* contains Bible studies, activities, energisers, tools, advice and a step-by-step process to help a church and community become inspired and start working for transformation in their community. The Umoja *Co-ordinator's Guide* provides everything that an organisation or church needs to know to start and manage an Umoja programme across a number of local communities.

Appendix B What's the difference between adaptation, disaster risk reduction and sustainable development?

In this appendix, we explore three ways of thinking about adaptation and its relationship with DRR and development. Firstly, we use a game to illustrate how they can overlap and be integrated; secondly, we use graphs to help us think about how they can have different aims; thirdly, we consider different approaches to adaptation. Tearfund's overall conclusion is that adaptation should be integrated into DRR and development wherever possible.

B.1 The Three Circles Game

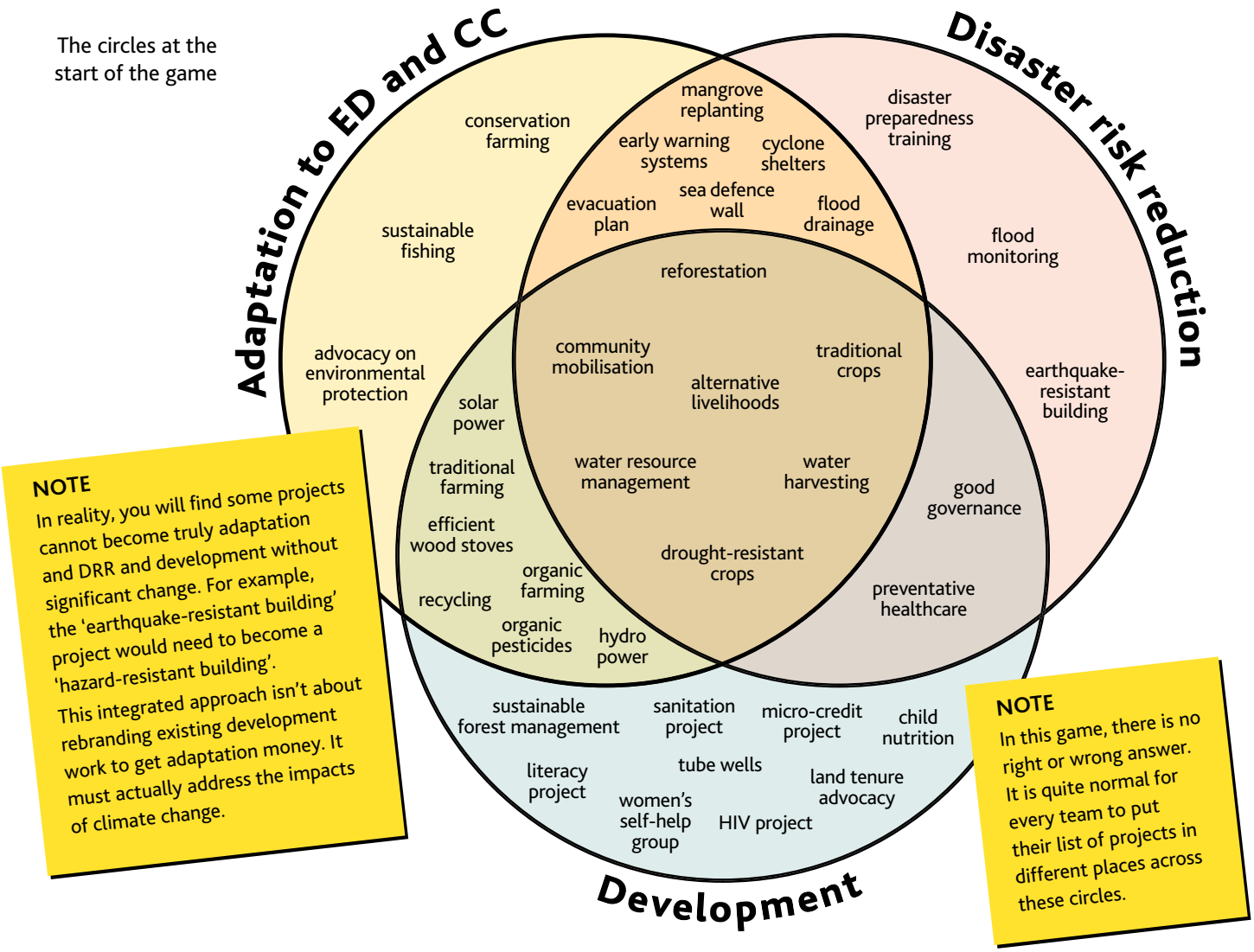
The aim of the CEDRA Assessment is to strengthen our existing or future projects against climate and environmental change. Many of Tearfund's partners start with the question: 'What is the difference between adaptation (to climate change and environmental degradation), DRR and development?' The question often implies an expectation of learning new skills and approaches in order to respond to climate and environmental change.

This issue is very widely debated and there is no consensus on it. We have therefore written this appendix to help you think through the overlaps and differences between the three, starting with the Three Circles Game.

How to play the Three Circles Game

- Gather a group of at least six participants.
- Write a list or draw/print pictures of many different types of projects, such as the ones listed in the circles below, and hand these out equally between the participants.
- Create three large overlapping circles on the floor, using string/chalk or marking them with sticks on the ground. Write titles for each of the three circles. Start with the titles 'Community development', 'Adaptation' (explaining that we mean adaptation to both climate change [CC] and environmental degradation [ED]) and 'Disaster risk reduction'. Take some time to check the participants understand these titles.
- Ask individuals to place their project titles or pictures in what they think is the right circle or in the right overlap between two or three circles.
- Encourage them to place their projects/pictures wherever they like and to explain to others why they chose to place them where they did.
- Give the participants plenty of time, but as the exercise progresses, give gentle encouragement to participants to question each other's decisions.

The circles at the start of the game



NOTE

In reality, you will find some projects cannot become truly adaptation and DRR and development without significant change. For example, the 'earthquake-resistant building' project would need to become a 'hazard-resistant building'.

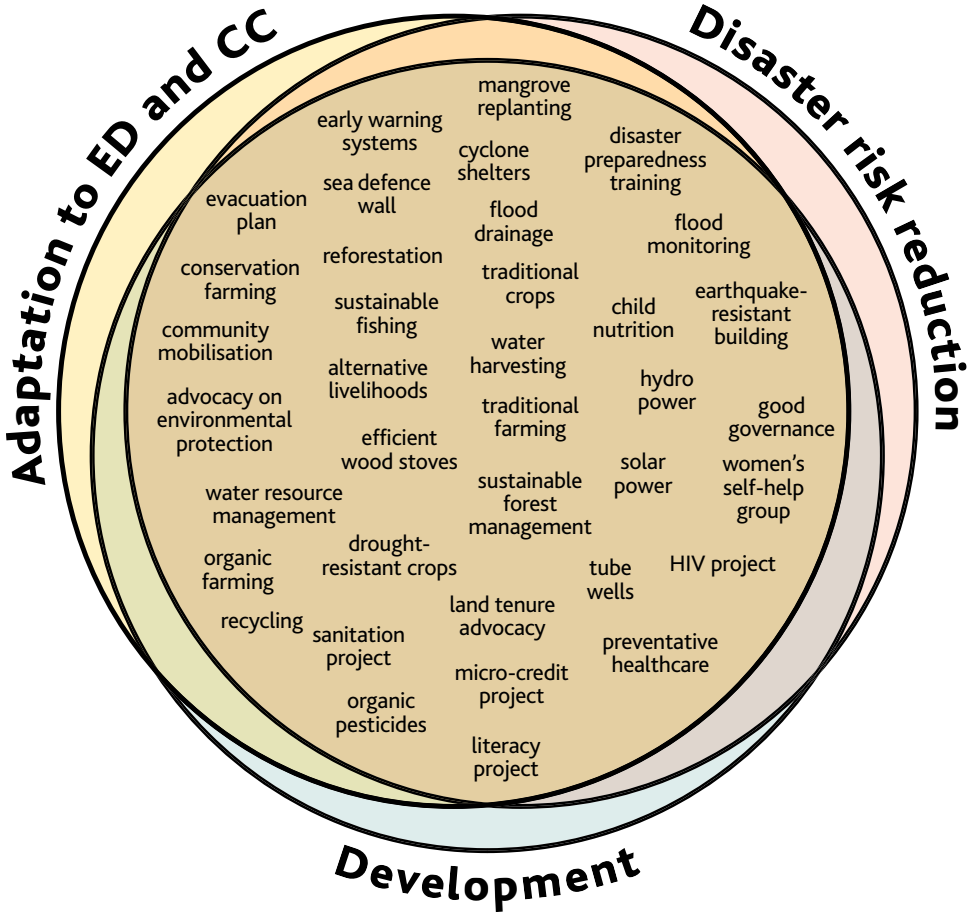
This integrated approach isn't about rebranding existing development work to get adaptation money. It must actually address the impacts of climate change.

NOTE

In this game, there is no right or wrong answer. It is quite normal for every team to put their list of projects in different places across these circles.

- Participants in this game always disagree, because there cannot be an absolute correct answer – and this is great. However, given enough time, one or more participants usually say that most, or perhaps all, projects can be designed to fit into overlaps between two or all three of the circles.
- When the participants have had a good discussion and have moved many of the projects to the centre of the circles, move your circles so all three sit one on top of each other, as in the picture opposite. This will leave many projects sitting outside the now-overlapping circles.
- Now ask participants to discuss ways to change or adapt the projects so they can be placed in the middle.
- Participants usually get quite excited and realise that it is a good idea to design all projects deliberately to address multiple issues, and that this usually requires only a little extra thought rather than additional cost.
- You may also want to discuss which other issues you can include in all projects, such as gender equality, protection of children and vulnerable adults etc.
- Finally, ask participants how it would affect their discussions if you re-labelled the overlapping circles. For example, you could label them 'Food security', 'Water resource management' and 'Health' or swap one of these for 'Social protection'.

All projects can be modified so they address adaptation to climate change and environmental degradation, disaster risk reduction and development.



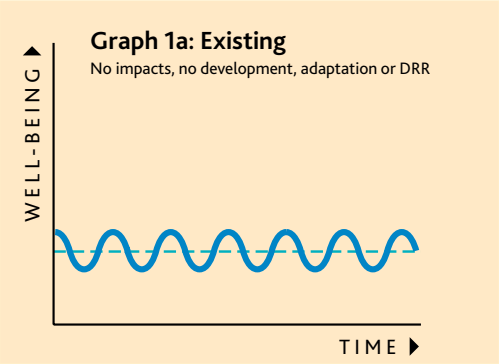
This quote from one of Tearfund's partners in Uganda is a typical response to this exercise:

'I have always worked on DRR, while this fellow worked on water projects and this lady worked on food security. We've just realised that we've been doing the same things in the same places, but never discussed our work with each other. All this time we could have been working together to produce single projects that are more effective in resolving many different community problems. We are going to change the way we work right away and be a lot more effective with our projects just by working differently.'

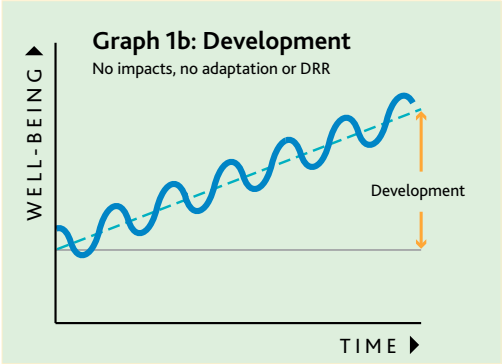
B.2 Development, climate adaptation and disaster resilience graphs

The graphs on the following page look at development, adaption and DRR separately and then together. This is a deliberate false separation because there will always be overlaps between adaptation, disaster resilience and development. However, these graphs should help you think about the underlying purpose of all three, so you can then be deliberate in ensuring that each is included when you design your projects.

The three graphs on the left-hand side represent communities which have no internal or external support or interventions to help them develop, build resilience to disasters or adapt to climate and environmental change. In all of these situations, the community's well-being remains static or declines.

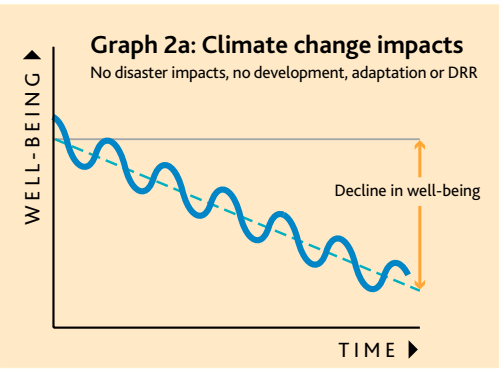


GRAPH 1A represents a community that is 'existing' without change. There are no negative impacts from climate or environmental change, disasters or other causes. Also, there is no improvement to well-being through development, adaptation, DRR or otherwise. The variation in the line is due to natural local changes such as seasonal weather variation.

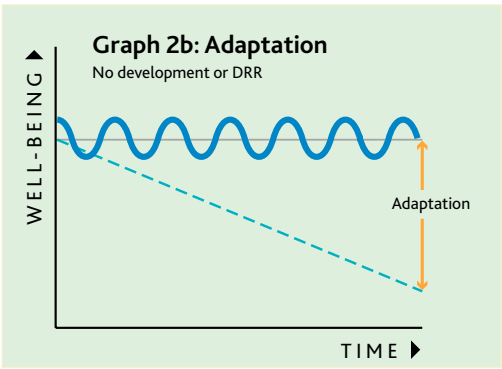


GRAPH 1B is a simplified representation of the intended results of development. Whether development is carried out by the community's own initiative or by some external actor (the government, NGOs, the private sector), the underlying intention is that well-being improves over time.

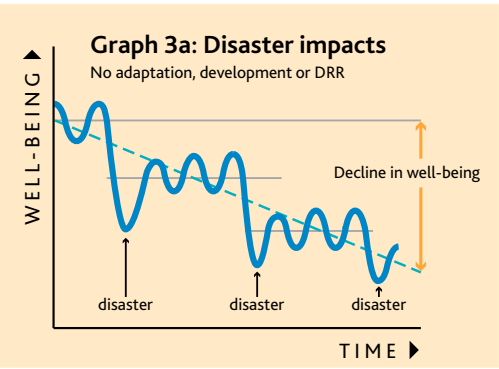
NOTE
These graphs are a deliberate false separation. In the real world, DRR is a fundamental element of adaptation, and adaptation must build on a foundation of sustainable development.



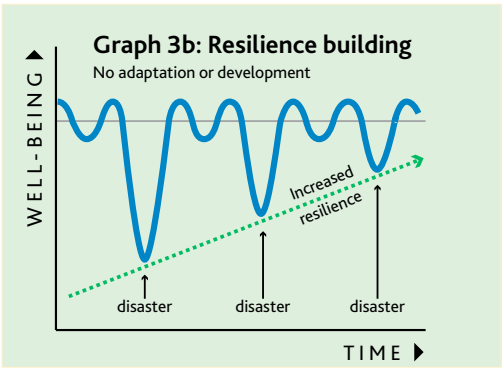
GRAPH 2A represents climate change (and also environmental degradation) impacts which are already reducing the well-being in communities around the world in the absence of external adaptation, truly sustainable development or DRR interventions. The graph assumes there are no other disaster shocks or negative impacts on the community.



GRAPH 2B separates out the main intention of adaptation in response to climate or environmental impacts. The main purpose of adaptation is to return the community to the same or higher level of well-being as they would have had if the climate or environmental impacts had not happened.



GRAPH 3A shows how a community impacted by a number of disasters over time usually suffers a dip in well-being if there are no interventions to help them recover from the disasters or increase their resilience to potential disasters. This graph assumes that there are no ongoing development or adaptation activities and no impacts from climate and environmental change.



GRAPH 3B illustrates the purpose of disaster management and risk reduction activities, to help communities recover from disasters and return to their previous levels of well-being, and increase their resilience so that future disasters do not have such a big impact.

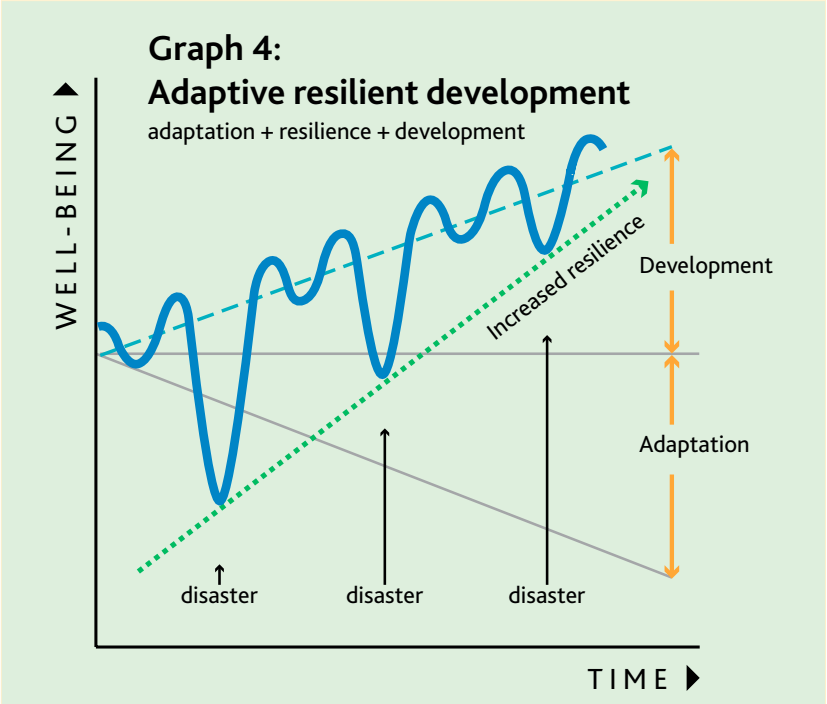
B.3 The integrated picture: adaptive resilient development

Among development workers, the words *adaptation* and *resilience* don't have an agreed definition. They are sometimes used as if they conflict with each other, and sometimes as if they mean the same thing. This can be confusing!

So far, CEDRA has tended to use *adaptation* and *resilience* in a simple, specific way – *adaptation* is taking action to adjust to climate change or environmental degradation, and *resilience* is the ability to recover from a disaster. This is also how many NGOs and donors use these terms. And one of the main, specific requests Tearfund has had from our partners is to show how work on disaster resilience and work on climate change adaptation can fit together.

However, *adaptation* and *resilience* overlap in their meaning and both are relevant to any kind of risk or change, not just climate change, environmental degradation and disasters. Billions of people's lives and livelihoods are also vulnerable to violent conflicts, epidemics, volatile food prices, economic crashes and other large-scale risks. We want the communities we serve to be resilient and adapt to these kinds of shocks and stresses as well.

The Three Circles Game and the graphs helped us to imagine how we can integrate disasters and climate change into development programming. Now in this section, we suggest some ways of thinking about resilience and adaptation that can apply to all kinds of risk and change, not just in one or two specific sectors.



GRAPH 4 illustrates the benefit if we intentionally combine the skills and resources from adaptation, development and DRR practices to help communities adapt to climate and environmental change and become resilient to disasters, and to support them in development. This could also be described as adaptive development that aims to build local capacity to adapt to climate change over time, taking into account the potential negative impacts of climate change, whilst ensuring interventions also build resilience to disasters. We are calling this *adaptive resilient development*.

Resilience

Development practitioners often associate the word *resilience* with building resilience to disasters. However, *resilience* is used in broader definitions by specialists from different fields: ecologists, disaster specialists, psychologists, engineers, military planners, businesses. Some of the most common ways it is used include:

- the ability to *bounce back better* or *get back to the way things used to be* after a disaster, shock, or other disruption
- the opposite of *vulnerability*
- an individual's or household's capacity to deal with stress or adversity
- the ability to manage risks and ride out changes
- a measure of how much disruption a system can handle before it loses its key structures and functions.

This last definition came from the field of ecology, but is relevant to all kinds of systems – communities, livelihoods and governments, as well as ecosystems. It could also be rephrased as a question: 'How far are we from crossing a threshold where the system will fundamentally change?' How much over-grazing will turn this dryland pasture into a desert? What scale of flood would wipe out this community's land and assets, making people's current livelihoods impossible? How many street protests can this government take before it collapses and the protesters take over? How much internal conflict can this community take before people stop trusting each other enough to work together?

In each of these examples, once the threshold is crossed into a new kind of system, it is very hard or impossible to get back to the old system. So one useful way of thinking about community resilience is helping communities identify undesirable thresholds – where their livelihoods or well-being would change irreversibly for the worse – and discuss ways to increase their 'distance' from those thresholds.

Resilience does not necessarily mean going back to exactly the way things were. If a community is developing in a particular direction – say, toward reduced poverty or more sustainable resource use – *resilience* can mean the ability to get back onto that development path, not just to the exact state that the community was in before.

Similarly, resilience is not the same as resisting change. A rigid tree looks much stronger than a flexible reed, but in a windstorm, the tree may be blown over while the reed stays rooted. In the same way, the most resilient systems tend to be flexible; their 'key structures and functions' can adapt to change or uncertainty.

Adaptation and adaptive capacity

The various definitions of *adaptation* also have some clear common elements. An adaptation is something done in response to an expected or actual change. Adaptation can aim to prevent or reduce harm, moderate risk or take advantage of benefits. It can be planned or happen as an instinctive reaction. It can be slow and incremental (such as adjusting planting dates) or rapid and transformative (such as migration or alternative livelihoods).

Adaptive capacity is defined as a system's ability to adapt. Humans and the ecosystems upon which we depend generally have significant adaptive capacity over long periods, for example through migration, diversification or changing the natural resources we rely upon. However, we struggle to adapt to rapid change, such as disasters. Many commentators use the term in connection with a community's ability (resources, time, money, skills) to respond to climate change impacts and return to their previous or higher level of well-being (Graph 2b, page 76).

We also struggle to adapt in times of uncertainty and unpredictability, when it's hard to know which specific impacts will occur. Some of the most important examples of adaptive capacity are those which help a community to prepare for uncertain future changes. These include:

- the ability to experiment, innovate and learn as a community
- well-established community institutions for making decisions, taking joint action and resolving conflicts
- strong social networks linking the community to the outside world
- strong, institutionalised feedback systems that measure the effects of the community's livelihood activities on the environment
- access to diverse opportunities and resources (natural and economic)
- access to and understanding of information about relevant trends and risks (eg scientific projections about climate impacts).

Adaptive capacity can be increased by building up these resources and communities' ability to use them. For example, this could be done by helping a community record and interpret environmental change; experiment with seed varieties to find the most locally appropriate ones; support traditional conflict-resolution mechanisms; and encourage diversified livelihoods. Increasing numbers of agencies are focusing on building adaptive capacity as the main way of adapting to climate change.

Adaptive capacity has clear similarities with broader definitions of *resilience*. All of the elements of adaptive capacity listed above would also make a community more resilient, and increasing resilience is generally an example of positive adaptation.

However, resilience and adaptation are not identical. No system can be 100 per cent resilient to all changes; there will always be a threshold where it breaks down. Beyond that threshold, adaptation is the only option. For example, climate change is projected to cause sea-level rise that will submerge some communities. Those communities would have no option but radical transformation – the scale of change would be beyond the resilience threshold where they could maintain their fundamental structures and functions. Also, adaptation has to be concerned with long-term changes over 20, 50 or 100 years, not just the short term.

Sustainable development

We tend to use *resilience* and *adaptation* as wholly positive words. However, both can exist in a negative way. People can adapt in ways that are unhealthy, unsustainable or unjust; these are often called *maladaptations*. And harmful or oppressive systems can be resilient. Think of:

- oppressive governments
- corrupt governments or businesses

- fatalistic belief systems
- exploitative economic relationships.

That's why it's important to ensure all our work supports development as well as adaptation and resilience. Our development plans – of what needs to change in a system, as well as what needs to be preserved – will shape the ways in which we encourage communities to adapt and become more resilient.

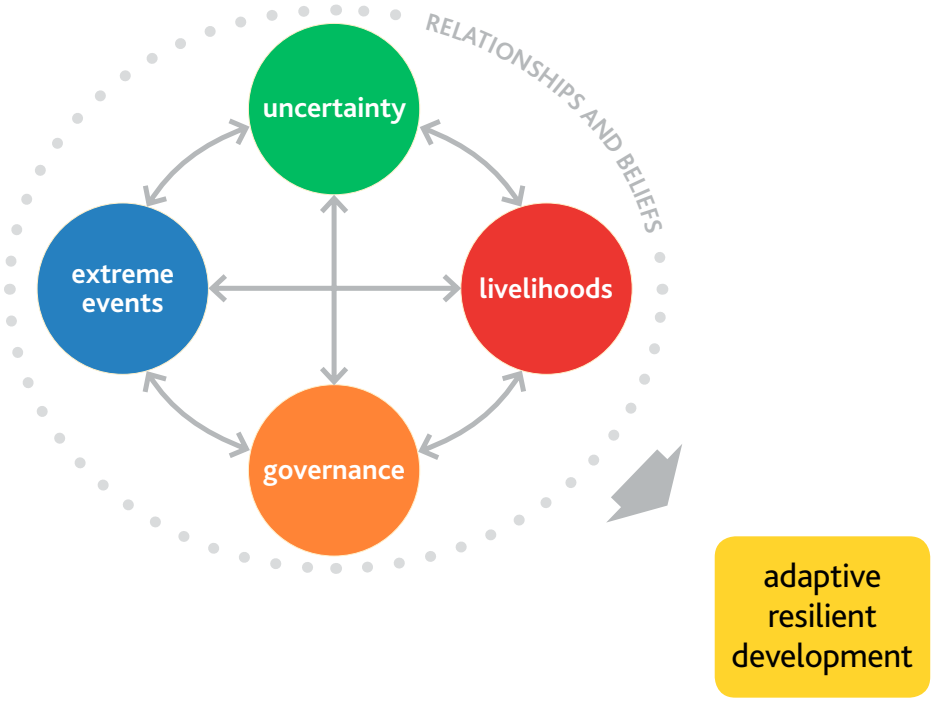
Using tools such as logical frameworks, development planners tend to set goals for what we want to change, 'all else being equal', and then think separately about the risk of things going wrong. But in the complex systems we work with – communities, countries, global institutions – we can't hold everything else equal or foresee all relevant changes. A genuinely resilient system is not one where we have tried to make contingency plans for all the risks we can imagine. Rather, it is a system with positive characteristics that help it cope with and recover from any disruptive change – including the ones we can't imagine, or whose impacts are unpredictable.

Foundations for adaptive resilient development

Our existing development sectors have produced many useful toolkits for responding to specific issues such as natural disasters, WASH or health. But adaptive resilient development starts with a broader, more integrated vision of the factors that make a community stronger in the face of any change.

So what does it look like? While different development actors use different frameworks to describe resilience or adaptive capacity, the underlying principles are very similar. We find it helpful to use a modified version of a framework developed by the NGO, Practical Action.[1]

A framework for adaptive resilient development, based on an original resilience framework by Practical Action



1 From: Pasteur K (2011) *From Vulnerability to resilience: a framework for analysis and action to build community resilience,* Rugby, Practical Action Publishing. The original did not have a 'relationships and beliefs' category, and Tearfund has made slight changes to some of the other category names.

The categories within the circles in this diagram guide us in asking the most important questions about a community's ability to cope with any type of change, such as:

PREPARING FOR UNCERTAINTY (ADAPTIVE CAPACITY)

- What institutions/practices help the community reflect on and learn from their experience?
- What broader social networks is the community part of?
- How does the community access information about risks and changes that affect their environment and livelihoods?

STRENGTHENING LIVELIHOODS

- How diverse are the livelihoods in the community (eg how reliant on one vulnerable activity)?
- Are community livelihoods ecologically sustainable, especially in light of current trends and future projections?
- Do community members have equitable access to key assets for their livelihoods (land, water, credit)?

PREPARING FOR EXTREME EVENTS (BUILDING RESILIENCE)
(eg disasters, violent conflict, food-price spikes)

- Has the community developed contingency plans for extreme events?
- Does the community have an early warning system for the most likely extreme events?
- Which people and assets are most vulnerable to extreme events?

STRENGTHENING GOVERNANCE

- How does the community make decisions and act on them (community institutions)?
- How does the community resolve internal conflicts and conflicts with neighbours?
- How does the community's decision-making connect to formal government structures and policies (local and national)?

RELATIONSHIPS AND BELIEFS
(underlying all the other categories)

- Where have differences in power resulted in broken relationships, both within and outside the community? Looking at the other categories, which relationships need to be restored if effective change is to come about?
- Does the community have hope and a vision for its future?

These questions can also be applied to other sectors. For example, if we are carrying out a water supply project and we want it to be adaptive and resilient, we will ask questions such as:

- **GOVERNANCE:** What institutions will help the community manage water supply and resolve conflicts over water?
- **LIVELIHOODS:** Do all community members have equitable access to the water supply? Is the water supply ecologically sustainable?

- **PREPAREDNESS:** Is the water source vulnerable to flooding/drought/violence?
- **UNCERTAINTY:** How can the community access information about water-table levels? What institutions help the community see how their water use affects groundwater levels, and respond appropriately?
- **RELATIONSHIPS:** Have relationships in the community been broken over the issue of water? Are there distorted power dynamics (eg between men and women) affecting people's access to water, and their ability to come together to find solutions?

By taking these issues into account, we can ensure that our work and the communities we serve are as resilient as possible to risk and change, including climate change and environmental degradation.

B.4 The potential reach of different types of adaptation

Although there are many different definitions of *adaptation*, with little sign of consensus currently, the pyramid opposite explores three of them: *hard adaptation* (see page 50), *soft adaptation* and *adaptive resilient development*. It is important to explore these different approaches so you understand the potential advantages and disadvantages of each.

Tearfund argues that the best adaptation is integrated with existing or new normal development and DRR projects. However, we recognise that many large institutional donors are currently separating out their development adaptation budget all the way down to activity level.

Tearfund strongly believes that new money should be provided for adaptation, but also believes that integrated programming, through combining development funding with adaptation funding, at country and community level is more efficient and results in 'no regrets' adaptation projects. It is important that you can clearly show to donors that part or all of a project is adaptation – otherwise you will not be eligible for the funding.

It's very important to note that adaptive resilient development is not about re-labelling normal development or DRR projects as adaptation projects. Climate and environmental change are huge additional threats. Tearfund is arguing for existing and new projects to be strengthened against the additional challenge of climate and environmental change. We explore *hard* and *soft adaptation* and *adaptive resilient development* in the pyramid opposite to help you 'speak the language' of donors in your proposals.

The potential reach of different types of adaptation project

HARD adaptation projects

NARROW REACH

Designed to reduce the impacts of climate change, eg cyclone shelters, alternative crops, rainwater harvesting, coastal defence

Benefits

- Hard adaptation projects are more visible and easier to label as climate change adaptation
- Projects are usually easy to design, implement and measure (report on) and are therefore attractive to donors
- Usually easy to copy
- Can have rapid tangible benefits

Disadvantages

- Often not integrated with development / DRR work
- Wastes resources on separating adaptation from normal development / DRR
- Limited possibilities for replication
- May need redesigning for each local situation
- Limited in scale and extent. Not likely to lead to rapid replication or local transformation
- Can be expensive and achieve only local 'one-off' results

Challenges

- Many of these projects are already being done and called *development* or *DRR*
- Some donors are indicating that they want to fund large-scale / national-level adaptation projects because of the large amounts of money involved
- We don't want to waste resources by 'competing' with normal development or relief work

SOFT adaptation projects

WIDER REACH

Designed to build (adaptive) capacity so communities have the skills and flexibility to respond to a variety of climate change impacts as they occur, eg building social networks, early warning systems, entitlements, social protection

Benefits

- Can be cheaper or cost nothing
- Easy to replicate and scale up because local people own them and drive them
- Can have greater reach than hard adaptations
- Can lead to better outcomes for larger groups of people because driven by local demand
- Easy for civil society to be involved
- More likely to lead to transformational change
- Better at dealing with uncertainty

Disadvantages

- Not integrated with development / DRR
- Wastes resources on separating adaptation from normal development / DRR
- Soft approaches such as *governance* are usually more politically contentious than hard adaptations
- Longer-term benefits are less immediate but longer lasting
- Difficult to measure and report on
- Difficult to prove your intervention led to the outcome

Challenges

- Difficult to report that the entire intervention is responding to climate change
- Risk creating 'competition' with development or DRR work
- Staff may find soft approaches more difficult to implement so may give them less attention
- Demonstrating to donors that these interventions are genuinely climate change adaptation
- Some donors are indicating they want to fund hard adaptation projects
- Soft adaptations are important and often missed

Adaptive resilient development (ARD)

WIDEST REACH

Adaptive resilient development projects are normal development projects designed to withstand climate and environmental impacts and to be resilient to disasters (*climate-smart* sustainable development).

They may include both soft and hard approaches. The distinction is the strengthening of existing projects, not creating new/separate adaptation projects.

Benefits

- Builds on existing development interventions, but adapted to not fail under climate change impacts
- Can create synergy and effective use of resources across sectors
- Can help avoid maladaptation
- Assist with joined-up working
- Cost increases, but not as much as for separate hard adaptation projects
- Uses existing financial and development structures and actors
- Integrates adaptation into all of your work
- Avoids maladaptation and creates more joined-up effective response, considering adaptation, resilience and development needs

Disadvantages

- ARD is more complicated than soft or hard adaptation so harder for staff to keep doing
- Hard to measure and report on how much of the project was in response to climate change
- Hard to prove your intervention led to the outcome
- Hard to attribute the entire intervention to climate change adaptation

Challenges

- Whilst sectoral working can lead to duplication of effort, integrated working can lose the focus and input of specialists
- Attributing proportion of the project to climate change (additionality)
- Climate funding could go to 'rebranded' development projects with little actual adaptation impact
- Requires greater planning and engagement of more stakeholders

Appendix c What our words mean

Below is a list of definitions of some of the terms we use in CEDRA. Different people use different words to describe the same thing, and others use the same words with different meanings! We are including this list of simple definitions, deliberately using non-technical language, to try to make CEDRA as clear and helpful as possible.

Acid rain	Rain containing dilute solutions of strong mineral acids due to pollution
Adaptation	Adjustments in the system to changes we expect and the capacity to adapt to future changes
Adaptive resilient development	Ensuring that all projects are designed to ensure development, adaptation to climate and environmental change, and resilience to disasters
Afforestation	Planting new forests on land that has not had forests historically
Aquifer	Underground water source
Arid	An area that receives little or no rain, supporting little or no vegetation or agriculture
Awareness-raising	Raising knowledge in the general population about risks and how people can act to reduce their vulnerability to them
Biodiversity	The variety of animals, plants, fungi and micro-organisms in an area
Capacity	The combination of all the strengths, attributes and resources available within a community, society or organisation to achieve agreed goals
Carbon dioxide	A naturally occurring gas, also a by-product of burning fossil fuels, such as oil and coal. The main greenhouse gas contributing to climate change
Climate	The average weather in an area, including temperature, air pressure, humidity, precipitation, sunshine, cloudiness and winds
Climate change	A change in the state of the climate that can be identified by changes in the mean and/or the variability, and that persists for an extended period of time. Though the climate is also influenced by natural processes, the term is used here with reference to the post-industrial changes caused by human activities
Climate change adaptation (CCA)	Taking action to adjust to climate change
Climate forecast/predictions / projections	How scientists project the climate will change in the future
Climate variability	Short-term natural changes in the climate, often varying from season to season, measured by temperature and precipitation, and frequency of events
Coastal erosion	Waves, tides, currents, dredging or drainage reducing the shoreline
Coastal protection	Measures to prevent coastal erosion, eg mangroves and coral reefs offer the coast natural protection from erosion and flooding
Cyclone	see *Tropical cyclone*
Deforestation	The conversion of forest land to non-forest land by humans or natural processes, eg human causes could include logging to sell wood and land clearance, including through burning forest and shrubs
Desertification	The persistent degradation of land in dry areas resulting from climatic and human activities. Possible human causes include overgrazing, over-intensive farming and extensive logging
Disaster	When a hazard impacts on a vulnerable community, causing widespread damage to life, property and livelihoods which the community cannot cope with using its own resources
Disaster risk reduction (DRR)	Measures taken to curb losses from a disaster, ie reducing exposure to hazards, reducing vulnerability of the community and increasing their capacity
Drought	An extended period of time when a region does not have enough water

Ecology	The whole web of interactions between animals, plants and the environment
Ecosystem	A system of living organisms interacting with each other and their environment
Environment	Physical and natural surroundings, also meaning human or social environment
Environmental degradation	The reduction of the capacity of the natural environment to meet social and ecological requirements and needs
Environmental sustainability	Development that meets the needs of the present without compromising the ability of future generations to meet their needs
Evaluation	An assessment carried out at, or after, the end of a project or programme to show its impact
Flooding	An expanse of water overflows and submerges normally dry land
Fossil fuel	A fuel, such as coal and natural gas, produced by the decomposition of ancient (fossilised) plants and animals. Burning fossil fuels releases greenhouse gases
Global warming	The rise in average temperature of the atmosphere due to the greenhouse gas effect (see *Greenhouse gas*)
Governance	The process of governing a country, local area, organisation, system or process
Greenhouse effect	The insulating layer of gases in the earth's atmosphere that trap heat and keep the earth warm enough for habitation
Greenhouse gas	A gas that causes the earth to grow warmer when pollution adds the gas to the earth's atmosphere and helps cause the sun's rays to be trapped in our planet. This greenhouse effect contributes to climate change. Greenhouse gases include CO_2, methane, nitrous oxide, ozone and water vapour
Groundwater	Water located or sourced from beneath the ground
Hazard	A natural or man-made event or situation which could lead to danger, loss or injury
Hurricane	See *Tropical cyclone*
Land degradation	The process of land becoming less productive. Possible human causes include deforestation (eg through using fires), overabstraction of minerals, over-intensive farming and grazing causing soil erosion, overuse of chemical fertilisers and growth or movement of populations
Landslides	The sliding of a mass of earth and/or rock down a slope
Maladaptation	Project designs that unwittingly make people more vulnerable to climate change and environmental degradation
Mitigation	Climate change adaptation definition: Measures taken to prevent or reduce a hazard, reducing greenhouse gas emissions to reduce climate change
Mitigation	Disaster risk reduction (DRR) definition: Measures taken to reduce the potential impact of a hazard
Monsoon	A wind from the south-west or south that brings heavy rainfall to southern Asia in the summer
Networking	Obtaining or communicating information through social or professional contacts and links
Overabstraction	Taking too much of a resource such as water or a fossil fuel, such that it cannot be renewed through natural processes
Overgrazing	Livestock grazing that goes on for too long or without sufficient recovery periods, making land less useful and contributing to desertification and erosion
Over-intensive farming	Farming that makes land less productive through: farming for too long or without sufficient recovery periods; over-use of chemical fertilisers and pesticides; or removal of too many natural protective barriers
Participation	The involvement of people in the decisions and processes that affect them
Participatory tools	Group activities which enable people to express and analyse the realities of their daily lives
Pollution	Making dirty, or contaminating, an environment or natural resource, eg from industry, sewage, solid waste, farming or chemicals
Precipitation	Rain, snow or hail
Pressures / stresses	Actions and processes that cause vulnerability

Prevention	Measures taken to prevent or reduce a hazard, eg reducing greenhouse gas emissions to reduce climate change. In the climate change adaptation field, this is also called *mitigation*
Project cycle management	The process of planning and managing projects, programmes and organisations. This process can be drawn as a cycle, and each phase of the project (identification, design, implementation and evaluation) leads to the next
Reforestation	Planting forests on land that previously contained forests
Resilience	Capacity to face change or shocks and continue to function
Risk	The chance of something bad happening
Run-off	See *Surface run-off*
Salinisation	Increasing concentration of salt (in soil or water)
Saltwater intrusion	Increase of salinity (salt concentration) in soil or groundwater located close to the coast. This can be caused by excessive withdrawal of water from the freshwater source or by sea-level rise or coastal erosion
Sea-level rise	An increase in the average level of the sea or ocean
Semi-arid	(Also called *steppe*). When a region experiences low annual rainfall resulting in the reduction in natural vegetation
Smog	Air pollution consisting of smoke and fog
Soil degradation	Human activities or natural processes causing soil to become less productive
Soil erosion	The loss of soil through rainfall, run-off or wind
Stakeholder	A person or group with an interest in, or concern for, a project or activity that an organisation carries out
Steppe	See *Semi-arid*
Storm surge / tidal surge	An offshore rise of water, usually associated with a tropical cyclone
Stresses	See *Pressures*
Subtropics	Regions of the earth found north and south of the Tropics. Subtropical weather conditions are usually hot in summer and warm in winter – rarely seeing snow or ice
Surface run-off	The flow of water from rain, snowmelt or other sources over the surface of land when soil is soaked to its full capacity
Sustainability	When the benefits of a project continue without external intervention
Tidal surge	See *Storm surge*
Tropical cyclone	A violent, rotating storm with heavy wind and rain. Also called a *hurricane* or *typhoon*
Tropics	A region of the earth centred on the equator. Conditions usually referred to as tropical are wet and hot, with lush vegetation
Tundra	Mountain area, above the tree line
Typhoon	See *Tropical cyclone*
Uncertainty	An expression of the extent to which the future of the climate is unknown
Vector-borne disease	A disease transmitted by an insect or other organism (the vector), eg malaria and dengue carried by mosquitoes
Vulnerability	The level of exposure to and ability to cope, recover or adapt to a stress
Water run-off	See *Surface run-off*
Water table	The level of the surface of the groundwater relative to ground level

Appendix D Useful resources

- Blackman R (2009) *ROOTS 5: Project cycle management*, Tearfund UK. Order from roots@tearfund.org or download from www.tearfund.org/tilz
- Burton I, Diringer E, Smith J (2006) *Adaptation to climate change: international policy options*, Pew Centre on Global Climate Change www.unece.org/env/water/meetings/Water.and.Climate/first.meet/PEW_Adaptation.pdf
- CARE (2009) *Climate vulnerability and capacity analysis*, CARE
- Venton P (2010) *How to integrate climate change adaptation into national-level policy and planning in the water sector*, Tearfund UK
- Clarke S, Blackman R and Carter I (2004) *Facilitation skills workbook*, Tearfund UK. Order from roots@tearfund.org or download from www.tearfund.org/tilz
- Ehrhart C, Thow A, de Blois M, Warhurst A (2009) *Humanitarian implications of climate change: mapping emerging trends and risk hotspots*, CARE. Download from http://www.careclimatechange.org/files/reports/CARE_Human_Implications.pdf
- GEF and UNDP website: Adaptation Learning Mechanism www.adaptationlearning.net
- Hansford B (2011) *ROOTS 9: Reducing risk of disaster in our communities*, Tearfund UK. Order from roots@tearfund.org or download from www.tearfund.org/tilz
- Hedger M, Cacouris J (2008) *Separate streams? Adapting water resources management to climate change*, Tearfund UK
- IDS (2011) *Gender-responsive strategies on climate change*
- IDS (2006) *Assessing and addressing adaptation: opportunities and risks from climate change and disasters (ORCHID)* www.ids.ac.uk/UserFiles/File/poverty_team/climate_change/orchidfinal.pdf
- IFRC (2007) Red Cross / Red Crescent Climate Guide, International Federation of Red Cross and Red Crescent Societies http://www.climatecentre.org/downloads/File/RCRC_ClimateG_DisasterManagement.pdf
- IISD CRiSTAL tool (Community-based Risk Screening Tool – Adaptation & Livelihoods) http://www.iisd.org/cristaltool/
- IISD Task Force on Climate Change, Vulnerable Communities and Adaptation (2003) *Livelihoods and climate change: combining disaster risk reduction, natural resource management and climate change adaptation in a new approach to the reduction of vulnerability and poverty* www.iisd.org/pdf/2003/natres_livelihoods_cc.pdf
- IPCC (2011) *IPCC Special Report: Managing the risks of extreme events and disasters to advance climate change adaptation (SREX)*, A Special Report of Working Group I and Working Group II of the Intergovernmental Panel on Climate Change
- Kelly C, Khinmaung J (2007) *Prepare to live: strengthening the resilience of communities to manage food insecurity in the Sahel region*, Tearfund UK. Download from www.tearfund.org/tilz
- La Trobe S, Faleiro J (2007) *Why advocate for disaster risk reduction?* Tearfund UK. Download from www.tearfund.org/tilz
- Millennium Ecosystems Assessment (2005) http://millenniumassessment.org/en/index.aspx
- Naess A et al (2010) *Changing climate changing lives: Adaptation strategies of pastoral and agro-pastoral communities in Ethiopia and Mali*. http://tilz.tearfund.org/webdocs/Tilz/Research/Changing%20climates%20changing%20lives%20final.pdf
- Plan (2011) *Weathering the storm: adolescent girls and climate change* http://plan-international.org/about-plan/resources/publications/emergencies/weathering-the-storm-adolescent-girls-and-climate-change
- Practical Action website – click on the left-hand menus, on 'Technical enquiries' then 'Adaptation to climate change' for some examples of adaptation options on the website http://practicalaction.org/
- Provention Consortium community risk assessment methodologies and case studies www.proventionconsortium.org
- The Economics of Ecosystems & Biodiversity http://www.teebweb.org/
- UNFCCC (2007) *Climate change: impacts, vulnerabilities and adaptation to climate change in developing countries* http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/txt/pub_07_impacts.pdf
- UNISDR (2009) UN International Strategy for Disaster Reduction Terminology on Disaster Risk Reduction http://unisdr.org/files/7817_UNISDRTerminologyEnglish.pdf
- USAID (2007) *Adapting to climate variability and change: a guidance manual for development planning* www.usaid.gov/our_work/environment/climate/docs/reports/cc_vamanual.pdf
- Shaw S (2011) *Why advocate on climate change?*, Tearfund UK Download from www.tearfund.org/tilz
- Venton P, La Trobe S (2008) *Linking climate change adaptation and disaster risk reduction*, Tearfund UK. Download from www.tearfund.org/tilz
- Wiggins S, Wiggins M and Collins J (2008) *ROOTS 13: Environmental sustainability*, Tearfund UK. Order from roots@tearfund.org or download from www.tearfund.org/tilz
- World Bank (2008) *Climate resilient cities: a primer on reducing vulnerabilities to disasters (a self-assessment tool for cities)* www.worldbank.org/eap/climatecities
- World Bank (2008) Climate Change Portal http://sdwebx.worldbank.org/climateportal/

Guide to CEDRA Steps and Forms

This table shows which forms and Appendices relate to each CEDRA Step.

Blank forms for photocopying are enclosed in the pocket opposite.

The corresponding files are on the CD-Rom that accompanies the book and can also be downloaded from www.tearfund.org/CEDRA/Forms

We recommend adapting the forms to suit your own location and context.

CEDRA Step	Related Form or Appendix
Step 1 Mapping where we work	
1.1 Selecting impacted areas to assess	
1.2 What to include on your assessment map	
1.3 Causes and impacts of climate and environmental change	**FORM 1** Impacts and Options Checklist
1.4 Compile a list of questions that you want answered	**FORM 2** Community and Stakeholder Questions
Step 2 Reviewing the science	
2.1 Understanding and using scientific information	
2.2 How to find information and make contacts	**FORM 3** CEDRA Assessment Part 1A
Step 3 Community participation	
3.1 Why consult local communities?	
3.2 Keys to successful community consultation	
3.3 Participatory approaches	
3.4 Capacities and empowerment	
3.5 Using community findings for advocacy	**FORM 3** CEDRA Assessment Part 1B
Step 4 Evaluate impacts and prioritise risks	
4.1 Documenting climate and environmental impacts	**FORM 3** CEDRA Assessment Part 2
4.2 Assessing risk	**FORM 3** CEDRA Assessment Part 2, cols D–F
4.3 Prioritising projects	
Step 5 Identify and prioritise adaptation options	
5.1 What is adaptation?	Appendix B
5.2 Adaptive resilient development	Appendix B
5.3 The importance of addressing gender in adaptation	
5.4 How to find out about different adaptation options	**FORM 1** Impacts and Options Checklist
5.5 How to start choosing your own adaptation options	**FORM 1** Impacts and Options Checklist Adaptation Options table **FORM 3** CEDRA Assessment Part 2, col G
5.6 Should you modify existing projects or do something new?	**FORM 3** CEDRA Assessment Part 3
Step 6 Complete the CEDRA Assessment and Action Plan	
6.1 Completing your CEDRA Assessment	**FORM 3** CEDRA Assessment template
6.2 Drawing up an Action Plan	**FORM 4** Action Plan
6.3 Presenting your Action Plan	**FORM 4** Action Plan
6.4 Follow-up workshop	
Step 7 Achieving lasting change	
7.1 Learning from and updating CEDRA Assessments	Appendix D
7.2 Local environmental record-keeping	**FORM 3** CEDRA Assessment template
7.3 Monitoring and evaluating adaptive resilient development projects	
7.4 Learning from evaluation	

FORM 1

Impacts and Options Checklist

(Climate and environmental impacts and options for adaptive resilient development checklist)

This document is on the CD-Rom at the back of the CEDRA book and can also be downloaded from: www.tearfund.org/CEDRA/ImpactsOptions

This checklist can be referred to when completing the following Steps of CEDRA:

STEP 1: MAPPING WHERE WE WORK Refer to the relevant sections of the table – eg land / water / health. Then read through the examples of climate and environmental impacts. Refer to these example impacts, and think of your own when creating your map, problem tree and list of questions. **The impacts shown are examples only – we cannot list all possible impacts.**

STEP 5: IDENTIFY AND PRIORITISE ADAPTATION OPTIONS Refer to the relevant sections of the table. Consider the impacts you have identified and use the final column to give you examples of ways in which you may be able to adapt your projects so they are strengthened against climate and environmental change. **The list of adaptations are examples only – we cannot list all possible ways to adapt and we would encourage you to think of your own.**

Consider the combined impact of all of your work. Tearfund encourages CEDRA users to adapt their development projects so they are resilient to external impacts such as disasters, and flexible enough to cope with uncertainty. We are calling this *adaptive resilient development*. Take some time to consider whether all of your adaptations together support and strengthen each other, or could weaken or work against each other.

When you use the table, it is important to think through the following questions:

- How will climate and environmental impacts affect women, men and children in different ways?
- How will climate and environmental impacts affect minorities?
- How can your adaptation options help to restore relationships in families and in communities?

It is also important to think about planning for the short term (less than five years), the medium term (5–25 years) and the long term (25–100 years and beyond).

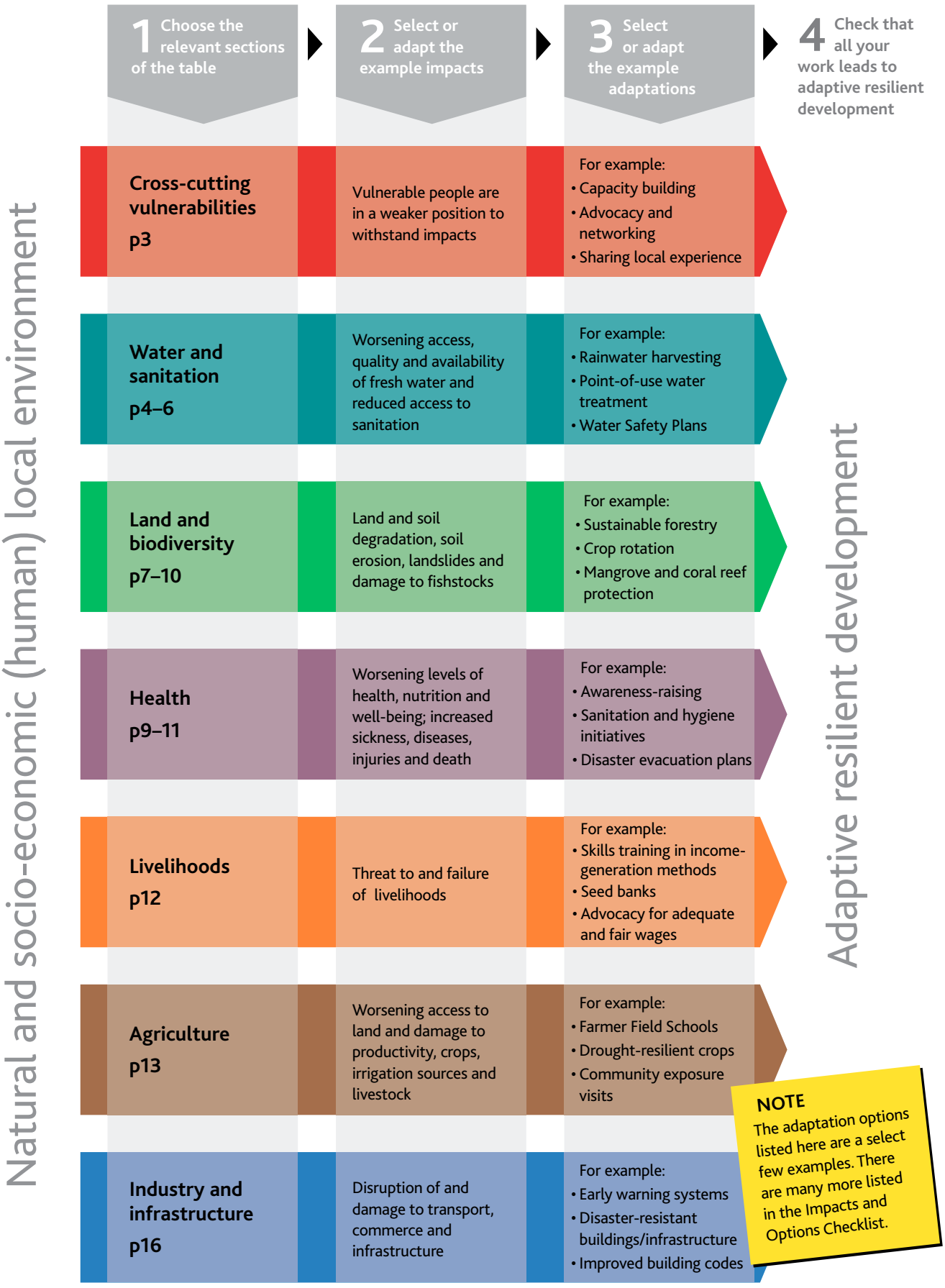
You can also refer to the visual guide on the next page for how to use this table.

Tearfund is developing an adaptive resilient development framework to help ensure all development work is resilient and adaptive. This is based on the following four principles, included through the Impacts and Options Table, against which every project should be checked:

- **PREPARING FOR UNCERTAINTY** (this refers to preparing for changes that are not yet known and relates to the concept of adaptive capacity)
- **STRENGTHENING LIVELIHOODS**
- **PREPARING FOR EXTREME EVENTS** (such as disasters, or sudden political, economic or environmental change)
- **STRENGTHENING GOVERNANCE** (local and national)

These four principles are all essential to ensure any project is sustainable over the longer term. They are explained and explored in more detail in Appendix B.

Visual guide to using the Impacts and Options Checklist



NOTE
These vulnerabilities cut across all the areas and sectors in this checklist. However, to avoid repetition, we have listed them together at the beginning.

Cross-cutting vulnerabilities

Examples of climate and environmental impacts	Examples of adaptation options (Add your own)

☐ Vulnerable people will be affected more by increased temperatures, more intense storms, increased coastal soil salinity, etc

☐ The most vulnerable people are usually:

- women including widows and pregnant women
- children including orphans
- slum dwellers
- older people
- people with disabilities or illness
- people living with HIV and AIDS
- people who are poor
- people who are disenfranchised
- people who are oppressed and/or in abusive relationships
- minority groups

☐ For each of the above groups, there will be particular vulnerabilities. For example, women can die in floods if not taught to swim, or they may feel unable to escape in disaster situations if doing so would involve breaking religious or cultural taboos such as the need to remove traditional restrictive garments. The same may be true of children, and people who are ill. Vulnerabilities need considering in all project planning.

NOTE
What other impacts will increase vulnerabilities within the communities you work with?

Preparing for uncertainty

Wide range of capacity building work with vulnerable people. Examples:

☐ Strengthening support groups; self-help groups; social networks

☐ Social protection and safety nets

☐ Physical asset strengthening, eg housing, irrigation, electricity

☐ Teaching skills and literacy

☐ Ensuring men, women and children have access to and understand information about climate change and environmental degradation

☐ Develop and map vulnerability and capacity indicators, eg social, political, economic

☐ Map resources, skills, assets, knowledge, coping mechanisms

☐ Teach adult learners and children about causes and implications of climate change and actions that individuals, families and communities can take to avoid or reduce impact (eg conserve water, sustainable integrated agriculture / agroforestry)

Strengthening livelihoods

☐ Alternative livelihoods for vulnerable and marginalised groups (eg alternative crops)

☐ Encouraging income diversity

☐ Developing home gardens

☐ Self-help groups, Farmer Field Schools

☐ Government, business, community partnership contracts

Preparing for extreme events (eg disasters)

☐ Awareness-raising, evacuation plans, early warning systems

☐ Ensure disaster impact data and statistical loss data are available and used in vulnerability capacity building

☐ Develop mentoring system for vulnerable people in times of disaster

Strengthening local and national governance

☐ Address underlying gender inequality preventing women from learning skills such as swimming that can be useful in times of crisis

☐ Advocacy for addressing vulnerable people's rights in National Adaptation Plans

☐ Advocacy for governments to represent the views and experiences of the most vulnerable people in global negotiations

☐ Share local experience of climate change and adaptation with local and national government

☐ Form coalitions and networks to support and resource initiatives (best practices, exchanges, gathering and sharing resources)

☐ Set up project advisory committees of stakeholders from civil society organisations, academic institutions, government

☐ Ensure poverty reduction strategies target vulnerable groups

☐ Provide positive incentives for pro-poor research and development

☐ Provide public facilities for community meetings etc

Water – access and availability

Examples of climate and environmental impacts	Examples of adaptation options (Add your own)
☐ Cyclones (hurricanes / typhoons), tidal surges, flooding and landslides can damage pumps, pipes and submerge wells, and affect other water infrastructure, affecting availability and quality of water, and physical access to sources ☐ Increased workload and vulnerability, especially for women and children. More time spent walking to fetch clean water may mean less time in school for children, and less time earning a livelihood for women. Also, walking further into unknown areas may risk increasing vulnerability to violence and abuse ☐ In urban areas, increased demand may push up the price for water charged by small-scale private water vendors, leading to poor people being unable to afford it ☐ Increased illness and mortality, especially for most vulnerable, eg people living with HIV and AIDS ☐ Increased violence and social unrest due to conflicts over water. Impacts likely to vary according to gender and vulnerability ☐ Predicted sea-level rise could result in saltwater intrusion of coastal water bodies and reduce access to fresh water ☐ Worsening access to fresh water could lead to disruption in industrial processes that rely on water ☐ Difficulties accessing fresh water could negatively impact the tourism and recreation industry ☐ Increased water demand ☐ Water shortages, eg due to temperature rise and drought ☐ Disasters such as floods can lead to a reduction in the availability of drinking water due to sediment build-up ☐ Building dams or diverting rivers upstream affects availability downstream ☐ Over-abstraction of water for industry leads to less availability for domestic use	**Preparing for uncertainty** ☐ Climate change awareness hearings in communities to inform women, men and children of the causes and impacts of climate change and to build capacity to respond ☐ Public health / hygiene campaigns on water collection, conservation, non-contamination and coping with drought ☐ Street drama, eg about community water resource management ☐ Strengthen data on climate change impacts on water resources ☐ Plastic-lined / covered ponds to reduce water loss ☐ Fixation points (including well points) ☐ Education in communities, schools and with businesses about water conservation and re-use ☐ Develop tools and approaches building capacity for water institutions to conduct vulnerability assessments and responses ☐ Promote free and open access to accurate climate change science and water resources data ☐ Hydrogeological surveys **Strengthening livelihoods** ☐ Rainwater harvesting livelihoods – roof-top tanks, dams and ponds ☐ Water storage and sustainable pumping schemes ☐ Efficient irrigation schemes ☐ Advocacy for fair water prices ☐ Recharge groundwater aquifers through afforestation ☐ Water retaining dykes and bunds to increase infiltration ☐ Advocacy for small-scale farmer water access rights ☐ Advocacy for community access to safe drinking water **Preparing for extreme events (eg disasters)** ☐ Design water and sanitation infrastructure to withstand flooding, cyclones and landslides ☐ Site pumping stations on higher ground, away from the coast ☐ Construction of elevated well platforms and hand pumps above anticipated flood levels ☐ Upstream communities monitor river levels for downstream flood early warning ☐ Strengthen early warning systems ☐ Community participatory disaster planning ☐ Water source protection **Strengthening local and national governance** ☐ River basin and watershed modelling ☐ Address gender equality, eg water collection is not just for women. Facilitating men in sharing the burden can lead to adaptation ☐ Advocacy for water sector policies and regulation ☐ Advocacy for national water provision standards enforcement ☐ Government water storage and transfer programmes ☐ Establish national focal point to coordinate water access ☐ Establish local or national public water charges

NOTE
See the Health section of this table for more health impacts due to lack of access to water and sanitation, and more adaptation options.

NOTE
See the Agriculture section for this table for more detailed impacts of lack of water on agriculture, and more adaptation options.

Water – sanitation access

Examples of climate and environmental impacts	Examples of adaptation options (Add your own)
☐ Shortage of water for use in enterprises such as agriculture, laundries, tanneries and bakeries ☐ Increasing uncertainty in weather forecasting makes it difficult for water agencies and users to plan and ensure sufficient water resources ☐ River flows reduced or increased by less ice or snow melt	**Strengthening governance (continued)** ☐ Government water resources monitoring and management ☐ Establish a local framework to promote effective management of water resources in a changing climate ☐ Transboundary water sharing agreements ☐ Transboundary water transfers, mechanical ground water recharge, desalination of salt water ☐ Integrated Water Resource Management and Water Basin Management ☐ Develop water efficiency programmes for key sectors
☐ Flooding may damage latrines and contaminate soils and fresh water ☐ Flooding in slums can contaminate water, spread disease and flood homes ☐ Landslide damage to sanitation infrastructure ☐ Drought reducing water for sewage treatment ☐ Poor solid waste management can cause disease spread ☐ Rising sea levels may damage sewage treatment plants ☐ Less water for hygiene **NOTE** What other impacts will affect water and sanitation?	**Preparing for uncertainty** ☐ Focus existing youth outreach programs on climate change, water issues and sanitation ☐ Waterborne disease/health threats mapping ☐ Water conservation to ensure sufficient water for hygiene **Strengthening livelihoods** ☐ Community Led Total Sanitation ☐ Biogas latrines in slums ☐ Develop dry or ecosan sewage treatment **Preparing for extreme events (eg disasters)** ☐ Design sanitation infrastructure to withstand landslides ☐ Flood protection, eg ensure toilets and sewage treatment infrastructure raised above flood levels **Strengthening local and national governance** ☐ Advocacy to secure access to sanitation ☐ Solid and sewage waste treatment ☐ Community sanitation organisations ☐ Flood Management planning

Water – quality

Examples of climate and environmental impacts	Examples of adaptation options (Add your own)
☐ Pollution from untreated sewage ingress or solid waste leachates ☐ Pollution from chemical pesticides, fertilisers, tanneries, mining and other industry ☐ Salinisation of fresh water, soils, wetlands and estuaries due to over-abstraction, flooding, tidal surge, erosion and sea-level rise; affects drinking water ☐ Increase in water surface temperature can lead to deterioration in water quality including increase in bacteria and algal blooms affecting colour, odour, taste and purity ☐ Floods increase the contamination risk from wastewater overflows and excess agricultural and industrial run-off ☐ A reduction in the quality of fresh water could negatively impact the tourism and recreation industry ☐ Worsening water quality and pollution could negatively impact aquatic ecosystems and ecosystem services	**Preparing for uncertainty** ☐ Hygiene promotion and water safety capacity building for both children, women and men ☐ Train health workers and others in dealing with water-borne disease ☐ Desalination systems ☐ Point-of-use water treatment such as bio-sand filters ☐ Educate communities on and promote use of organic fertilisers and pesticides ☐ Improve community understanding of sustainable waste management **Strengthening livelihoods** ☐ Reforestation ☐ Organic farming ☐ Non-polluting livelihoods ☐ Recycling-based livelihoods **Preparing for extreme events (eg disasters)** ☐ Protect water sources and communal water points from pollution by drawing up Water Safety Plans ☐ Monitor groundwater salinity and abstraction. Avoid over-abstraction that can cause salinisation ☐ Education and awareness-raising ☐ Improve early warning systems for flooding **Strengthening local and national governance** ☐ Advocacy for sewerage networks in densely populated urban areas to prevent waste water contaminating ground water ☐ Advocacy on integrated pollution prevention and control ☐ Technical and infrastructure support provided by local government, eg provision of biosand water filters ☐ Sewage or solid waste management ☐ Legislation and subsidy promoting organic fertilisers and pesticides

NOTE
See the Agriculture section of this table for more impacts and adaptation options focusing on agriculture.

Land and biodiversity – land degradation

Examples of climate and environmental impacts	Examples of adaptation options (Add your own)
☐ Desertification, eg from over-grazing, intensive farming, over-logging ☐ Soil erosion, eg from intensive farming and grazing ☐ Land degradation from population growth or movement ☐ Deforestation, eg from logging, land clearance, slash and burn ☐ Land degradation can choke water run-off channels and cause flooding ☐ Biodiversity loss, eg from intensive farming or climate change affecting breeding or migration routes ☐ Land degradation from wood fuel use ☐ Land degradation from unsustainable waste management, eg from over-population or poor urban planning ☐ Land degradation from burning scrub to stimulate pasture growth ☐ Short-term farmer tenancies encouraging poor soil management ☐ Increased risk of wildfires as a result of land degradation ☐ Land and biodiversity damaged as a result of tourism ☐ Increased temperatures killing trees and forests	**Preparing for uncertainty** ☐ Farmer Field Schools for sustainable farming methods ☐ Community learning exchange visits ☐ Promote improved stoves (reduce firewood use and deforestation) ☐ Collect, synthesise, share sustainable land management knowledge ☐ Expose communities to improved farming methods ☐ Educate communities on fuel efficiency and renewables ☐ Improve community waste management knowledge ☐ Educate communities on land management ☐ Community sustainable natural resource management **Strengthening livelihoods** ☐ Conservation farming ☐ Floating gardens ☐ Sustainable forestry ☐ Advocacy for sustainable agro-company regulation ☐ Fuel-efficient stove livelihoods ☐ Renewable energy livelihoods ☐ Sustainable soil management: mulching, agroforestry, intercropping ☐ Sustainable waste management systems **Preparing for extreme events (eg disasters)** ☐ Crop rotation to maintain soil quality, minimise erosion (reducing the risk of desertification) ☐ Cattle destocking and restocking ☐ Disaster management plans **Strengthening local and national governance** ☐ Community forest management and reforestation ☐ Conservation areas: forests, coastal zones, wetlands ☐ Advocacy to reduce deforestation / encourage reforestation ☐ Support scientific and technological development ☐ Enforced land-use and planning regulations and building codes ☐ Management committees to control burning of grassland ☐ Community natural resource management ☐ Waste reduction targets for urban settlements ☐ Local environmentally sustainable policy and funding frameworks ☐ Afforestation and sustainable forest management programmes

	Examples of climate and environmental impacts	Examples of adaptation options (Add your own)
Land and biodiversity – landslides, sea level, coast	☐ Loss of trees and agricultural land from deforestation or landslides ☐ Loss of homes and livelihoods due to landslides in urban areas ☐ Coastal land used for agricultural purposes is lost to the sea from erosion, dredging, tidal surge, sea-level rise, impacting livelihoods and food security **NOTE** What other impacts will affect agriculture, coastal regions, crops and forests?	**Preparing for uncertainty** ☐ Community education on natural environment and ecosystems ☐ Community education on risk areas and activities ☐ Community participation and information-sharing on environmental management practices ☐ Local government experts train communities on long-term environmental management and renewal **Strengthening livelihoods** ☐ Sustainable construction training ☐ Skills training for alternative livelihoods **Preparing for extreme events (eg disasters)** ☐ Indigenous flood and landslide control ☐ Mangrove protection / planting for coastal protection ☐ Tree planting to strengthen river banks ☐ Grass planting to stabilise slopes ☐ Early warning systems ☐ Disaster-resilient construction ☐ Flood barriers **Strengthening local and national governance** ☐ Environmentally sustainable local planning policies and regulation ☐ Afforestation and sustainable forest management ☐ Designated ecosystem conservation areas
Land and biodiversity – fish stock	☐ Fish breeding grounds such as coral reefs and mangrove swamps damaged by rising sea temperatures, levels and ocean nitrification ☐ River and canal siltation reducing navigation, fishing and abstraction ☐ Water pollution killing fish stock ☐ Poor nutrition on coastal fishing communities increasing poverty, illness, mortality ☐ Increased water temperatures reducing oxygen levels, impacting fish stocks, breeding, habitats and harvests ☐ Unsustainable fishing practices, eg small aperture drag nets, explosives, poison **NOTE** What other impacts will there be on fish stocks?	**Preparing for uncertainty** ☐ Training in sustainable fishing techniques ☐ Sustainable aquaculture such as fish farming in ponds using crop by-products for feed and integrated livestock-fish farming to improve the supply of protein-rich food in the area ☐ Ensure access to good-quality data on fish stock, risks and hazards to support local-level assessments and facilitate fish stock monitoring and data-sharing between communities ☐ Education and awareness-raising on alternative fish consumption **Strengthening livelihoods** ☐ Alternative livelihoods ☐ Saline-resistant fish farming **Preparing for extreme events (eg disasters)** ☐ Mangrove and coral reef protection or restoration **Strengthening local and national governance** ☐ Participatory fishing rights planning ☐ Build linkages with national and regional institutions ☐ Water Body Management Committees for fish stock management

Health, nutrition and well-being

Examples of climate and environmental impacts	Examples of adaptation options (Add your own)
☐ Less availability and quality of water and food lead to malnutrition, sickness, famine and increased mortality ☐ Children in particular become malnourished and sick ☐ Lack of access to safe water spreads water-borne diseases such as dysentery and cholera ☐ Poor sanitation access increases diarrhoeal disease, particularly increasing vulnerabilities for children, people living with HIV and AIDS ☐ Air pollution (smog, acid rain) may cause eye irritation, respiratory disease, eczema and asthma, cancers ☐ Reduced access to health services, nutrition and safe water impacts on pregnant women and unborn children ☐ Impacts of lack of access to family planning services	**Preparing for uncertainty** ☐ Community-level use of Water Safety Plans ☐ Hygiene promotion ☐ Radio and other media information programmes ☐ Access to meteorological information for early drought warning ☐ Community health record-keeping, analysis and learning ☐ Awareness-raising in communities about climate change causes and its impacts on children, women and men and vulnerable people ☐ Promote green spaces in urban environments ☐ Map resources, skills, assets, knowledge, coping mechanisms ☐ Awareness-raising among health professionals about the impacts of climate change and environmental change on disease patterns **Strengthening livelihoods** ☐ Encourage churches and community groups to care for and serve the poor and marginalised in their societies, including families affected by HIV and AIDS ☐ Point of use water treatment such as bio-sand filters or SODIS (solar disinfection) ☐ Kitchen gardens ☐ Establish and maintain communal vegetable gardens **Preparing for extreme events (eg disasters)** ☐ Community risk maps, including slow-onset (eg land degradation) ☐ Community risk reduction strategies, including emergency preparedness and response plans, including child protection **Strengthening local and national governance** ☐ Public health structures integrated into disaster planning ☐ Feeding programmes to boost infant nutrition ☐ Health participatory assessment and prevention programmes ☐ Support improved services in the health areas affected ☐ Local health, nutrition and well-being education programmes ☐ Advocacy for funding community-based health adaptation

Health – climate change risks

Examples of climate and environmental impacts	Examples of adaptation options (Add your own)
☐ Increased heat-related stress and mortality ☐ Higher prevalence of flies, mosquitoes and other disease vectors spreading diseases such as malaria, West Nile virus and Lyme disease ☐ Increased risk of infections, eg meningitis, skin diseases and respiratory infections, malnutrition and famine ☐ Increased risk of food-borne infections such as salmonellosis ☐ Spread of disease to new areas ☐ Reduced access to antiretroviral drugs for people living with HIV and AIDS ☐ Urban migration and over-population, sub-standard living conditions, pressure on sanitation systems, poor hygiene increasing health risks such as diarrhoea and the spread of diseases such as cholera ☐ Increase in the frequency of cardio-respiratory diseases from changes in air quality ☐ Worsening education levels if children are too sick to attend school or needed at home, eg to collect water, carry out agricultural work, or care for sick family ☐ Disruption to health services ☐ Children disoriented and separated from their families ☐ Disruption of social networks, loss of family members and friends and loss of property and jobs with psychological effect on people, increasing depression and suicides ☐ Increased risk of injuries, diseases and death as a result of extreme weather events such as heat, flooding, mud slides, storms and hurricanes ☐ Increased displacement-related effects ☐ Standing water increasing vector-borne disease, eg malaria, dengue fever ☐ Food shortage from loss of crops, livestock, food stocks and transport disruption ☐ Sewage systems damaged, contaminating floodwater and water sources, impacting human health	**Preparing for uncertainty** ☐ Train health workers and others in responding to illnesses and injuries caused by climate- or environment-related impacts ☐ Map resources, skills, assets, knowledge, coping mechanisms ☐ Increasing communities' awareness of health risks and responses, eg mosquito nets, trees for shade, cooking food thoroughly, hand-washing ☐ Nutrition improving activities such as training in healthy eating ☐ Disease spread modelling and contingency planning ☐ Strengthening health services and systems **Strengthening livelihoods** ☐ Kitchen gardens ☐ Alternative crops ☐ Participatory planning for alternative livelihoods ☐ Microcredit schemes ☐ Self-help groups **Preparing for extreme events (eg disasters)** ☐ Education programmes including disaster response, eg cyclones, floods, evacuation procedures, health protection. Prioritise amongst vulnerable people, people living with HIV and AIDS, children, women, men ☐ Emergency planning systems providing buffer stocks of medicine ☐ Community health-disaster guidance and counselling, psychosocial counselling ☐ Early warning systems including community radio ☐ Emergency response and evacuation plans ☐ Health protection measures ☐ Storm shelters, mosquito nets, flood escape routes ☐ Non-perishable food and emergency equipment stores ☐ Community disaster response strategies to help the most vulnerable, eg children, pregnant women, disabled, elderly, infirm, people living with HIV/AIDS ☐ Child reception centres feeding, registering and caring for separated children, child safe spaces, emergency schools ☐ Issue health workers with emergency response equipment, eg phones, torches, stretchers, medical kits, boats ☐ Disaster preparedness and first aid training ☐ Appoint emergency response coordinators ☐ Community hazard-awareness training, eg faulty electrical wiring ☐ Rescue awareness-raising, eg if trapped, avoid kicking up dust, cover mouth with material, tap or whistle to attract rescuers ☐ Local disaster response resource mapping **Strengthening local and national governance** ☐ Local authority effective community outreach health services ☐ Government, private sector and civil society organisation collaborate on health crisis mitigation and management ☐ Government, emergency service, NGOs collaborate to build local capacity on health risks

Examples of climate and environmental impacts	Examples of adaptation options (Add your own)
☐ Flood or storm damage to toxic waste sites may result in illness from chemical pollution ☐ Rodent migration spreading disease **NOTE** In what other ways will climate change and environmental degradation affect the health of children, women and men?	**Strengthening governance (continued)** ☐ Waste reduction targets for urban settlements ☐ Monitoring and surveillance of disaster-related diseases, mapping risks and community vulnerability to prioritise responses ☐ National immunisation programmes ☐ Legislation ensuring the right of people to be informed and obtain information about risks ☐ Train local authorities to coordinate relief activities ☐ National disaster management plans ☐ Water quality, food safety, sanitation and hygiene initiatives ☐ Precaution plans for clean-up activities ☐ Vector-borne disease and chemical hazard protective measures ☐ Community and relief worker mental health and well-being support

Livelihoods

NOTE
See the next section for more impacts and adaptation options related to agricultural livelihoods.

Examples of climate and environmental impacts	Examples of adaptation options (Add your own)
☐ Rural livelihood failure from extreme weather, flooding, drought, cyclones, storms, temperature rise, disease ☐ Livelihood failure from natural resource and biodiversity loss ☐ Livelihood failure from lack of diversification and over-emphasis on a single activity, eg rain-fed agriculture ☐ Livelihood failure from poor access to alternative resources, technologies, skills and financial reserves ☐ Agricultural livelihoods fail from changing weather patterns and impacts ☐ Urban work places destroyed by flooding or landslides ☐ Livelihood failure leading to people engaging in unsafe livelihood activities or hazard-vulnerable activities ☐ Livelihood failure preventing loan repayments ☐ Urban over-population from excessive urban migration as a result of failure of rural livelihoods	**Preparing for uncertainty** ☐ Inter-community knowledge transfer visits ☐ Mutual assistance systems and social networks for risk reduction ☐ Rural access to urban market pricing data ☐ Alternative livelihoods training ☐ Urban livelihoods training including renewable energy, sustainable construction, waste recycling ☐ Education and awareness-raising ☐ Improved local record-keeping on environmental change and livelihood impacts ☐ Awareness-raising on cultural customs and practices ☐ Permaculture / intercropping **Strengthening livelihoods** ☐ Skills training in income-generation methods ☐ Market gardening ☐ Micro-finance initiatives to support alternative income-generation ☐ Community accessible micro-insurance ☐ Livelihood diversification ☐ Support diversified household and community asset bases ☐ Improve market access and direct engagement ☐ Community-led agriculture: eg organic cooperatives, farm shares ☐ Moving 'up the value chain' with higher-value processing and marketing of crops ☐ Entrepreneurs grants, loans and awards ☐ Micro-finance, cash transfer, credit and loan guarantees available to communities, especially after disasters to restart livelihoods **Preparing for extreme events (eg disasters)** ☐ Traditional seed banks ☐ Indigenous knowledge banks / mapping **Strengthening local and national governance** ☐ Awareness-raising on climate / environmental gendered impacts ☐ Regional, local and community development plans, ensuring fair access and benefits for all ☐ Advocacy for fair domestic and international trading rules ☐ Social safety nets including insurance, pensions and state benefits ☐ Improve community access to basic social services ☐ Natural resource management plans and regulations ☐ Indigenous people's land rights ☐ Forests and biodiversity protection / sustainable management ☐ Local government policies, strategies and implementation plans ☐ Democratic decision-making and accountability ☐ Advocacy for adequate and fair wages guaranteed by law ☐ Financial and other incentives to reduce unsafe livelihood activities ☐ Local policies supporting gender equality and development ☐ Sustainable participatory resettlement programmes

NOTE
What other impacts will there be on livelihoods?

Agriculture – irrigation, land access and productivity

Examples of climate and environmental impacts	Examples of adaptation options (Add your own)
☐ Lack of land rights for women, minority groups or indigenous people, preventing them from managing land sustainably, or causing them to be displaced from land they have managed ☐ Government or industry displacement of people for mining, dam-construction, forestry, infrastructure development ☐ Increased poverty and vulnerabilities from agricultural livelihoods failure and food shortages ☐ Lack of water, eg due to drought, hotter seasons, river dams or diversion ☐ Flooding and sea-level rise causing salinisation of soil and irrigation water, harming crops and reducing agricultural land ☐ Waterlogging of agricultural land	**Preparing for uncertainty** ☐ Training women in livelihood skills ☐ Women's self-help groups ☐ Farmer Field Schools ☐ Sustainable agriculture to improve food security during dry periods ☐ Build local agricultural organisations' capacity to adapt to climate and environmental change ☐ Build women and men's capacity to manage land and production ☐ Demonstration projects, eg year-round vegetable gardening ☐ Exchange / exposure visits to new initiatives and practices ☐ Community awareness-raising on climate and environmental change, impacts on men, women and children ☐ Improve weather and climate forecasting and projections ☐ Grey water re-use; treat wastewater for re-use in agriculture **Strengthening livelihoods** ☐ Income-diversification measures for women and men ☐ Local enterprise development schemes for both women and men that are tolerant of worsening land productivity, drought etc ☐ Seed banks for replanting if crops fail, are damaged or destroyed ☐ Water rights for small-scale farmers ☐ Efficient irrigation systems ☐ Rainwater harvesting **Preparing for extreme events (eg disasters)** ☐ Salt- / drought- / flood-resistant crops ☐ Traditional / sustainable farming and land management methods ☐ Participatory assessment of coping mechanisms, assets and resources ☐ Community assessment of disaster risk reduction activities such as tree planting, river bank strengthening, agroforestry techniques ☐ Develop community skills in famine risk assessment and reduction ☐ Efficient irrigation for water conservation ☐ Grass waterways, dykes, contour bunding etc to divert floods / increase infiltration ☐ Re-/afforestation of water catchment areas to improve groundwater ☐ Flooding early warning systems **Strengthening local and national governance** ☐ Sustainable Natural Resource Management ☐ Advocacy on women's land tenure, access and inheritance rights ☐ Community 'watch-dog' groups to press for change ☐ Participatory community and stakeholder policy development ☐ Watershed management

Agriculture – crops

Examples of climate and environmental impacts	Examples of adaptation options (Add your own)
☐ Crop damage from intense /uneven rainfall ☐ Loss of seeds from crop damage ☐ Reduced crop yields from disease, pests, soil degradation, increased salinity, lack of irrigation water, overuse of chemical fertilisers ☐ Invasive species, wildlife encroachment ☐ Lack of rainfall hinders seed cultivation and germination ☐ Extreme weather destroys biodiversity habitats, nests, eggs, damaging the local food chain / ecosystem balance ☐ Heavy frosts leading to crop losses ☐ Increased temperature reducing crop yields ☐ Small temperature and rainfall changes impact agricultural product quality: fruit, rice, vegetables **NOTE** In what other ways will agriculture be impacted?	**Preparing for uncertainty** ☐ Access to local weather forecasts and climate projections ☐ Optimum sowing dates information collecting and sharing ☐ Training on crop diversification, intercropping, permaculture, agroforestry, biodiversity reintroduction, traditional knowledge ☐ Farmer Field Schools ☐ Community agriculture exposure visits ☐ Extension worker capacity building for farmer assistance ☐ Local reporting on invasive species and changes in growing patterns ☐ Awareness-raising on climate change and seasonal variation ☐ Develop technology and productivity access-and-sharing networks between government, technologists, service providers **Strengthening livelihoods** ☐ Farmer Field Schools ☐ Farmer seed fairs for display, exchange and diversification ☐ Livelihood diversification, eg pottery, food processing, crafts ☐ Revolving funds for non-agricultural enterprises ☐ Savings and income-generation activities, crop rotations, organic fertilisers and compost, biological pest control, cover cropping, appropriate seed choice ☐ 'Moving up the value chain' with higher-value processing and marketing of crops **Preparing for extreme events (eg disasters)** ☐ Drought-, flood- or salt-resistant crops ☐ 'Closed loop' agriculture to maximise crop use and soil quality ☐ Animal integration into cropping systems allowing recycling of manure and providing animal protein ☐ Emergency planning, eg food buffer stocks ☐ Grain banks to ensure seed is saved for replanting if a harvest is lost ☐ Household extreme-event preparedness plans, eg drought, floods ☐ Traditional crops, permaculture, intercropping **Strengthening local and national governance** ☐ Civil society, NGO, private sector and community consultation by government for developing policies and enforcement ☐ National and local environmental monitoring and reporting systems ☐ Government, private sector, civil society organisations joint food crises mitigation plans ☐ Establish and protect wildlife reserves, national parks whilst protecting local people

Agriculture – livestock

Examples of climate and environmental impacts	Examples of adaptation options (Add your own)
☐ Reduced livestock production from disease, pests, drought, temperature increase, travel for pasture and water ☐ Reduced grazing land from drought and degradation; reduced livestock ☐ Livelihood failure and increased vulnerability from livestock loss ☐ Increased livestock mortality from heat stroke, water stress, changed disease spread, invasive species ☐ Cattle raiding, tribal conflict **NOTE** What other impacts will there be on livestock?	**Preparing for uncertainty** ☐ Mapping traditional livestock management practices ☐ Mapping historical environmental change ☐ Market-based early warning systems and social networks ☐ Farmer Field Schools ☐ Establish agriculture knowledge networks ☐ Sustainable pasture-land management ☐ Awareness-raising at national, regional and local levels ☐ Sustainable pasture, livestock and grazing management ☐ Community-based animal health management **Strengthening livelihoods** ☐ Establish self-help groups ☐ Community destocking, replenishment and diversification ☐ Training rural community vets **Preparing for extreme events (eg disasters)** ☐ Grain banks to ensure seed is saved for replanting if a harvest is lost ☐ Livestock shelters, fixation sites **Strengthening local and national governance** ☐ Local peace-building committees for conflict resolution ☐ Community grazing management committees ☐ Support community grain distribution strategies ☐ Agriculture programmes for livestock clinics, experts and drugs

Industry, infrastructure and housing

Examples of climate and environmental impacts	Examples of adaptation options (Add your own)
☐ Intense rainfall, wildfires, cyclones, floods or heatwaves degrading urban and rural infrastructure: roads, bridges, water and electricity systems ☐ Disruption of settlements, commerce, transport and access to services, eg markets, health centres and schools ☐ Transport disruption reducing market access ☐ Loss of homes, infrastructure, livestock sheds from, eg flooding, intense rainfall, cyclones, storms ☐ Mudslides from intense rainfall and flooding and vegetation stripping ☐ Migration or over-population causing urban infrastructure failure: water, electricity, sewerage ☐ Increased displacement from loss of homes and infrastructure **NOTE** How else can you help build adaptive resilient development? Use your experience, ask communities, NGOs and local government.	**Preparing for uncertainty** ☐ Community, government and industry knowledge exchange trips **Strengthening livelihoods** ☐ Strengthening rural infrastructure and livelihoods to prevent urban over-population ☐ Protect livelihoods, eg raised internal platforms and storage as flood mitigation measure, portable stoves and livestock shelters ☐ Community-based infrastructure maintenance and repair livelihoods **Preparing for extreme events (eg disasters)** ☐ Education and awareness-raising about risks, cultural taboos and gender inequality hindering disaster survival ☐ Allocate local transport for emergency use ☐ Early warning systems ☐ Site buildings and infrastructure flood levels, away from steep slopes ☐ Disaster-resistant building and infrastructure ☐ Dykes, dams, sea walls; flood diversion channels; storm shelters ☐ Relocate threatened buildings. ☐ Demarcate hazardous areas ☐ Regular maintenance of hazard control structures ☐ Establish transport repair capacity within community ☐ Emergency facilities, eg shelters, non-perishable goods **Strengthening local and national governance** ☐ Improved building codes ☐ Coastal community-led strategies to adapt to rising sea levels ☐ Require infrastructure hazard and vulnerability assessments ☐ Effective inspection and enforcement regimes ☐ Emergency communications infrastructure and access routes ☐ Water Safety Plans

Further examples of adaptation options and coping strategies

- National Adaptation Programme for Action (NAPA) http://unfccc.int/national_reports/napa/items/2719.php
- Practical Action – from the left-hand menus select 'Technical enquiries' then 'Adaptation to climate change' for examples of adaptation options http://practicalaction.org/
- UNFCCC local coping strategies database http://maindb.unfccc.int/public/adaptation/
- UNFCCC, climate change: impacts, vulnerabilities and adaptation to climate change in developing countries http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/txt/pub_07_impacts.pdf (see Table V-5 on page 31)
- World Resources Institute, *Weathering the storm – options for framing adaptation and assessment* www.wri.org/publication/weathering-the-storm (see annex starting on page 43).
- PACE adaptation case studies http://www.paceproject.net/
- Tearfund studies on adaptation www.tearfund.org/CEDRA/CaseStudies

FORM 2

Community and Stakeholder Questions

This document is on the CD-Rom in the back of the CEDRA book or can be downloaded from: www.tearfund.org/CEDRA/Forms

NOTE
We recommend you complete this table on your computer using the Word document from the download link. Alternatively, expand the boxes before you print the document, or continue your notes on clearly labelled paper.

How to use these questions

The questions shown are for you to adapt. They should help you ask communities and external stakeholders such as local / national government, universities, scientists or other NGOs which impacts have already occurred and which are likely to occur in the future. They are also intended to help you find out how communities have coped with or adapted to these impacts, or how other stakeholders recommend communities could do so.

These questions are written as a starting point for you. The list of questions can never be totally relevant to every country or agency. Add your own questions and delete or change questions that are not relevant. Refer back to Section 1.4 if you want further guidance.

Some of the questions will be relevant for all stakeholders, but you may also want to put different questions to different people, and certainly the words you use and the way questions are framed may change depending on whom you are talking to.

Use the Sources column to record which communities, stakeholders and internet sources you intend to consult to answer each of your questions.

Questions	Answers	Sources
How would you define climate change?		
What climate change impacts have already impacted our country / district / location? • Do you have any evidence / records of these impacts?		
How would you define environmental degradation?		
What environmental degradation impacts have already impacted our country / district / location? • Do you have any evidence / records of these impacts?		

Do you have information about past and present changes regarding the following?		
• Annual and seasonal rainfall – amount, duration		
• Annual and seasonal average temperatures		
• Annual and seasonal average storms – frequency, severity, eg wind / sandstorms		
• Annual and seasonal flooding or sea-level rise – frequency, severity, area covered		
• Occurrences of mudslides and landslides or wildfires		
• Frequency of drought recurrence		
• Changes in the water table (annual records)		

Questions	Answers	Sources
• Soil quality / fertility		
• Desertification		
• Deforestation		
• Crop yields / food (in)security / famine		
• Decline in biodiversity – plants, fish and animals (migratory patterns, declining fish and animal populations)		
• Fresh water availability and quality, including details about pollution		
• Salinisation of soil		
• Availability and quality (eg pollution) of irrigation water		
• Crop pests and disease carriers		
• Land degradation due to chemical fertilisers		
• Air pollution levels / acid rain / smog		
• Destruction of coastal protection		
• Seasons, eg when do rainy seasons or planting seasons start and end?		
• Population movements		
• Changes in health risks related to climate change and environmental degradation		
Add your own questions to this list		

Do you have information about changes in extreme events related to the above? (rainfall, temp, wind etc) increasing or decreasing in frequency?		

Do you have information about future projected changes in the above for the next		
• 5 years?		
• 10 years?		
• 20 years?		
• 50 years?		

Do you have records of which types of people are being most impacted by any of these changes, eg in terms of health, mortality rates, livelihoods, well-being?		
• specific locations		
• women		
• children		
• people living with HIV and AIDS etc		

FORMS 3+4

CEDRA Assessment and Action Plan templates

CEDRA Assessment

This document is on the CD-Rom at the back of the CEDRA book and can also be downloaded from: www.tearfund.org/CEDRA/Forms

How to fill in the CEDRA Assessment

The blank assessment on the following pages is provided for your use. You may want to add or remove rows / columns or change column headings to suit your way of working. The notes below are provided to give you guidance on how to complete the different parts of the table. You can also follow the exercises contained in CEDRA Steps 1 to 5 to help you complete the table. Examples of completed parts of an Assessment are provided on pages 31, 41, 48, 59 and 60, and further examples can be found on our website at: www.tearfund.org/CEDRA/ExampleAssessments

Part 1a Background information – Science

Write here a summary of the conclusions of your scientific and other stakeholder research. Include references to where you found this information so it can be regularly updated.

Part 1b Background information – Community experiences

Write here a summary of what the representative communities you consulted told you about their experiences of climate and environmental change and how they say they have coped, adapted or not coped with these impacts.

Record whether community experience and coping mechanisms agree with scientists and local/national government records and advice.

Include references to which communities told you which information, and where you have kept your records of community interviews and participatory assessment tools such as maps, timelines and seasonal calendars.

Part 2 Project risk assessment

COLUMN A – LOCATIONS OR SECTORS Write down every distinct location where you currently work, on a separate row. Or, if you prefer, you can list sectors in this column rather than locations.

COLUMN B – PROJECTS Write down the names of each type of project that you currently implement against each of the locations where you work. Write each project on a new row. If you have listed sectors in Column A, you can list the projects within each sector in Column B.

COLUMN C – CLIMATE CHANGE AND/OR ENVIRONMENTAL DEGRADATION IMPACTS
Write down all the different climate or environmental impacts you can think of in this column,

against each project and location. You can add more rows to add more impacts. You can record what communities and external stakeholders have told you. You can also consult the Impacts and Options Checklist in the pocket at the back of the CEDRA book.

You are likely to find that you write down many of the same impacts for several locations and projects. That is to be expected.

COLUMN D – SIGNIFICANCE (HOW BIG THE IMPACT ON THE PROJECT WILL BE) Write a number between 1 (low) and 4 (high) to indicate the significance of each impact in Column C.

COLUMN E – LIKELIHOOD (HOW LIKELY THE IMPACT IS TO HAPPEN) Write a number between 1 (low) and 4 (high) to indicate the likelihood of each impact in Column C.

COLUMN F – RISK Multiply the two numbers in Columns D and E and write the result in Column F to indicate the risk of each impact in Column C.

COLUMN G – ADAPTATION OPTIONS At this stage, write down every single possible adaptation option you can think of that might strengthen projects and communities. There are no right or wrong answers yet. You will prioritise and reduce this list later.

Really good adaptation options are those that help you adapt to multiple impacts, or those that are low cost, familiar, easy to implement and readily acceptable to local communities. However, sometimes we have to find new, unfamiliar solutions.

Part 3 New projects

CEDRA is primarily concerned with helping local development agencies review their existing projects and ensure they are strong enough to cope with existing and future climate and environmental change. However, you will identify new impacts and adaptation options during your CEDRA Assessment. You should record here any new projects you are recommending to your agency or network that you would like to undertake in the future – bearing in mind, of course, that you may need to fundraise to be able to implement these activities.

You can also record here if you have made any decisions to move any of your existing work to new locations if, for example, you have identified more vulnerable communities during your CEDRA research and Assessment.

Even though you have decided to implement new projects in response to climate change and environmental degradation impacts, you should still review whether these new projects will be affected by other impacts or need strengthening.

CEDRA ASSESSMENT PART 1a: Background information – Science

Findings

CEDRA ASSESSMENT PART 1b: Background information – Community experiences

Locations	Findings

CEDRA ASSESSMENT PART 2: Project risk assessment

Sig = Significance of impact: (4= high; 1= low) **Lik**= Likelihood of impact: (4= high; 1= low) **Rsk**= Risk = Significance X Likelihood (Multiply figures D and E)

A Locations or sectors	B Projects (by sector)	C Climate and environmental impacts	D Sig	E Lik	F Rsk	G Possible adaptation options to strengthen projects and communities

CEDRA ASSESSMENT PART 3: New projects

Sig = Significance of impact: (4= high; 1= low) **Lik**= Likelihood of impact: (4= high; 1= low) **Rsk**= Risk = Significance X Likelihood (Multiply figures D and E)

A Locations or sectors	B Projects (by sector)	C Climate and environmental impacts	D Sig	E Lik	F Rsk	G Possible adaptation options to strengthen projects and communities

Action Plan

This document is on the CD-Rom at the back of the CEDRA book and can also be downloaded from: www.tearfund.org/CEDRA/Forms

How to fill in the CEDRA Action Plan

Full instructions on how to use the Action Plan are included in Step 6.

Review your CEDRA Assessment impacts and risks on the communities and projects you work with. Review your list of possible adaptation options and any proposed new projects. Write the adaptation options and new projects in the Action Plan. Also, write down any new actions you propose for yourself or your office, as well as actions at the district, regional and national level. Finally, add all the actions you would like to encourage others to engage with. Write down who you are hoping may carry out these actions. Now, make a plan to meet with these stakeholders and present your findings and recommendations to them. Refer to the example in Section 6.2.

Example **Action Plan – showing headings for different levels of action**

CEDRA ACTION PLAN

Proposed action	Who	Where	When	How
Proposed strategic / organisational actions				
Proposed project actions				
Proposed office actions				
Proposed community actions				
Proposed personal actions				
Proposed district actions				
Proposed national or regional actions				

NOTE
The blank Action Plan form for photocopying is on the next page.

CEDRA ACTION PLAN

Proposed action	Who	Where	When	How

CEDRA CD-Rom

Workshop resources, film, forms and related documents

tearfund

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