Chapter 3
Project planning

3.1 Introduction

DRR programmes and projects vary widely in terms of size, aims, focus and methods, but all are similar in being a series of activities to achieve specific objectives and outcomes within a defined period of time. The basic principles and elements of good planning are common to most development and DRR projects, and are covered in standard manuals and guidelines. This chapter focuses on those aspects that are most directly relevant to DRR, either in stand-alone projects or as part of wider development, humanitarian or recovery initiatives: methods for assessing and analysing hazards, risk, vulnerability and capacity, and ways of adapting existing planning tools to take account of these factors. Chapter 18 looks at the monitoring and evaluation of DRR initiatives.

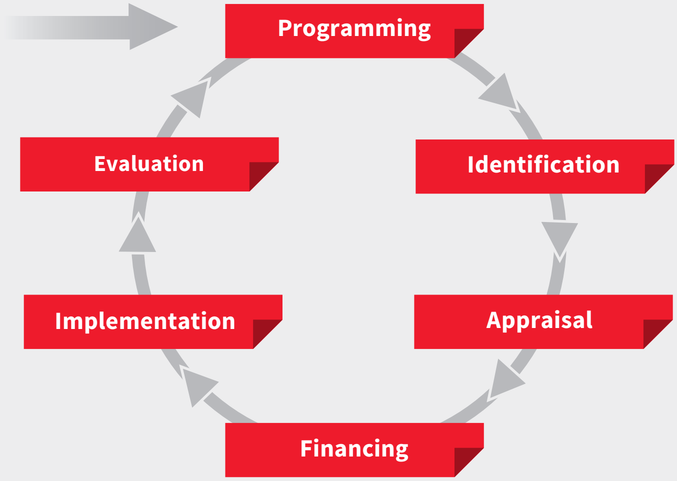
It is often argued that projects are an artificial and limited way of dealing with the complexities of risk, vulnerability and sustainable development. Recent thinking about development, resilience, systems and adaptation is exploring alternative forms of action outside conventional project boundaries, favouring planning that is integrated across sectors and involves more extensive partnerships. Nevertheless, programme and project management is still operational agencies' main approach.

Planning a project assumes that something will be done to address hazard and vulnerability problems. This may not always be the case, however. Conventional risk management approaches allow the option of ignoring identified risks, principally on the grounds that they are minimal; that the chance of a major disaster happening is too remote; or that there are other more immediate or significant problems to address. Only when a decision has been made to address the identified risks do other project planning processes come into play. The stages then are to identify and evaluate the different options for dealing with risks, select the options and approaches to be taken and prepare and implement plans.

3.2 The project cycle

Most agencies use a 'project cycle' management approach. The project cycle is a way of viewing the main elements that projects have in common, and how these relate to each other (see Figure 3.1: The project cycle).

Figure 3.1 The project cycle



- Programming. The establishment of general guidelines and principles for cooperation, agreement of focus areas and outlining ideas for projects.
- Identification. Within the programme framework, analyse problems, needs and stakeholder interests; identify and screen project ideas; decide whether or not to follow up the options developed.
- Appraisal/preparation. Study all significant aspects of the issue, taking into account stakeholders' views, relevance to problems, feasibility and other issues. Develop logical or results-based management frameworks and activity and implementation schedules, and calculate required inputs.
- Financing/funding. Decide whether or not to fund the project or seek funding for it (this may not be a separate stage: financial decisions may be taken at different points in the cycle).
- Implementation. Use the agreed resources to carry out the planned activities and achieve the objectives. Monitor progress and adjust to changing circumstances where necessary.
- Evaluation. Assess the project's achievements and impact (this leads to a decision to continue, change or end the project). Use lessons for planning and implementing other projects.

C. Benson and J. Twigg with T. Rossetto, *Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisations. Guidance Note 5: Project Cycle Management* (Geneva: ProVention Consortium, 2007), http://www.preventionweb.net/files/7511_toolsformainstreamingDRR.pdf.

3.3 Project planning

Many of the features of good project design set out in this section are common to project planning in general, as well as to DRR initiatives. Among the main issues to be considered in planning are:

- Process. Planning should be approached as a process, not merely the production of written documents. In particular, it should be seen as a process of continuous improvement, reflecting the idea of risk reduction as a long-term goal to be approached gradually. This means that one should not try to work out all the details at the outset.

- Clarity. There must be clarity about the overall goals, strategies and scope of the activities to be undertaken. Project plans should also be clear about how proposed activities are linked to broader strategic objectives: logical and other results-based frameworks may help here.

- Targets. Projects should set targets whose achievement can be verified by monitoring and evaluation. Evaluation of risk reduction work does present problems, as Chapter 18 shows, but that is no excuse for avoiding the issue. Targets should be realistic and understood by everyone involved in the initiative. Targets may also have to change because vulnerability and risk are not static.

- Analysis. The need for a thorough understanding of the problem cannot be overemphasised. Hazard, vulnerability and risk analysis are well worth the time and effort spent on them. The analysis should include thinking about what might realistically happen in the future, not just about what has happened in the past or what an assessment shows could happen in the present. The nature of communities' vulnerability can alter very quickly under external pressures and opportunities. Anticipate problems.

- Definition. There are many different dimensions of human vulnerability to disasters and many different ways of approaching the problem. It is very important to define clearly the nature of the project (e.g. activities, participants), its extent (time, location) and its outputs, together with performance criteria.

- Resources. Inputs and resources should be matched closely to the projected outputs – i.e. outputs should be realistic, given the resources available. Assess the implementing organisation, its capacity to address the risks and needs identified, and factors that support or impair its capacity to deal with those risks. An institutional assessment of the kind outlined in Chapter 2 will help here. Assess partner organisations' capacity as well (see below).

- Setting priorities. This is fundamental. All projects need to balance costs, benefits and opportunities. Should the project adopt an all-risks approach or be more selective, targeting specific risks? Is the project designed to reduce the direct, indirect or secondary impacts of disasters (see Box 18.3 for an explanation of these terms)? How does one set priorities regarding not only different hazards and vulnerabilities but also different vulnerable groups? What minor or remote risks are acceptable or tolerable? On what basis should such decisions be made (e.g. the magnitude and frequency of the potential disaster, beneficiary priorities, organisational capacity and resources)? The criteria for making such decisions may be operational, technical, financial, social, humanitarian, political or legal. Analysis of costs and benefits (discussed in Chapter 18) often forms part of this. In a development project, reducing risk will be only one of the project's goals, so the priority given to it must be agreed at the start.

- Generic approach. As a general rule, it is better to adopt a generic approach rather than one that is hazard/risk-specific – i.e. one that builds up capacities to deal with the range of threats that will affect a given community. Often, this does not happen in practice, with separate planning around different hazards. Such inefficiency leads to gaps in coverage of disaster threats, and sometimes to disputes between disaster management agencies. This does not mean that agencies should not have priorities, or that all hazard threats can be treated identically; rather, it means that the basic human and organisational problems of preparing for disasters are similar, whatever the hazard. However, one should not focus so much on one hazard that other significant risks are overlooked.

- Partnership and capacities. Agree roles and responsibilities within the organisation and with partners well in advance. No organisation or group can work alone. Understanding the capacities of individuals, communities and agencies who might be involved in a project is essential to good planning. Identify all relevant internal and external stakeholders, considering everyone who might be affected by an intervention, or who might have influence over it: what are their roles and capacities, how does the implementing organisation relate to them and how can its work complement or support theirs? Partners and stakeholders should be involved in the planning process, not simply written into the plans. Stakeholder partnerships are discussed in more detail in Chapter 4 (see also Box 3.1: Integrating science into project planning).

- Integration. Take an integrated approach to the problem. There is rarely, if ever, one single option for reducing risk. A package of measures will be required, based on an all-round view of hazards, vulnerabilities and livelihood options. Choices will have to be made according to local needs, the likely success of different interventions and the resources available. Integrating risk reduction into development programmes is very important.

Box 3.1 Integrating science into project planning

It is generally acknowledged that there is a need to integrate scientific knowledge and understanding of risk into the planning of humanitarian and development projects. In the past, this has happened infrequently and has been based on personal contacts and one-off activities more than systematic collaboration. Recent guidelines explain how the scientific community (natural and social science) and NGOs can engage more effectively with each other to reduce risk. They set out five main areas of activity for effective integration of science into DRR practice:

1. Defining the problem to be addressed. It is easier to build a dialogue around an initial set of questions than a vague concept. Having clear aims and objectives also helps subsequent monitoring and evaluation.
2. Accessing scientific information, knowledge and expertise. Ongoing partnerships with scientists and scientific organisations are recommended, as is the involvement of all relevant stakeholders and experts. These partnerships should be established before planning individual projects or managing crises.
3. Understanding the science and assessing its credibility. Scientific information should be trustworthy and representative of the real world. Practitioners and other users of science need to acquire the skills to determine its credibility and the level of uncertainty in scientific information and assessment. Seeking out more than one source of information, and appreciating that there may be scientific debate about particular issues, is advisable.
4. Applying scientific information and methods. Scientific information should be applied in an ethical and accountable manner. It is important to have an agreed set of values and to put accountability mechanisms in place.
5. Measuring the impact of science integration. It is essential to know what impact the application of scientific knowledge has had on vulnerable communities. Monitoring should take place throughout the project cycle.

The guidelines also note the importance of managing expectations in these partnerships, finding suitable entry points for scientific investigation and knowledge, ensuring the process of integration is well managed and benefits everyone involved, and engaging communities fully in the process so that they can make their own informed decisions. Emphasis is placed on the 'co-production' of scientific knowledge about risk by scientists, practitioners and communities.

M. Duncan et al., *Integrating Science into Humanitarian and Development Planning and Practice To Enhance Community Resilience: Full Guidelines* (London: CAFOD, 2014), http://www.ukcds.org.uk/resources. For a case study of successful collaboration between climate scientists, vulnerable communities and field agencies, see *Operationalising Climate Science: An Exchange Between Climate Scientists and Humanitarian and Development Policymakers: Senegal Demonstration Case Study* (London: Climate and Development Knowledge Network, 2012, http://www.humanitarianfutures.org/wp-content/uploads/2013/10/Operationalising-Climate-Science-Senegal.pdf.

- *Flexibility.* This is essential. It requires process, not blueprint, planning that can adapt according to changes in understanding and circumstances.

- *Assumptions.* These should be stated clearly at the outset so that all partners are aware of them. What external factors might affect the project's implementation and long-term sustainability? What are the risks – natural, social, economic, political – to the project?

3.3.1 Integrating DRR into development projects

This should be considered right from the start of the project cycle, with good situation analysis identifying risks, vulnerabilities and capacities at an early stage. DRR can be incorporated into standard project planning tools, such as logical frameworks, environmental assessments and social impact assessments, relatively easily and effectively.[1] It can also be built into the whole project cycle through the use of checklists and entry points. Checklists set out a series of questions relating to DRR, to be answered when developing project planning documents. The entry point approach focuses more on the planning process to ensure that relevant issues are considered throughout the project cycle. Most planning approaches combine the two.

3.4 Risk assessment

Development and disaster management practitioners use risk analysis or assessment methods when drawing up project plans and making operational decisions. Risk assessment analyses the risks that threaten a project and the options for reducing those risks. Hazards and vulnerability assessments (discussed in Sections 3.5 and 3.6) form a major part of an overall risk analysis, though they can be carried out separately. It is perhaps most helpful to see risk analysis in a broad sense, as an interpretation of all kinds of data on hazards, vulnerabilities and capacities. In practice, the difference between risk analysis, hazards analysis and vulnerability analysis is often blurred. The terms 'risk' and 'vulnerability' are used quite loosely, with some overlap. Many 'vulnerability' assessments include wider risk analysis, whilst many 'risk' assessments focus on vulnerability.

Project risk analyses cover various kinds of risk, including factors within the project's control (e.g. poor design or performance management); external factors in the wider policy and institutional environment that are outside the project's control (e.g. institutional weaknesses, lack of political support); and other risks that will have a damaging impact on project beneficiaries (e.g. environmental hazards, conflict, sudden changes in commodity prices).

1 C. Benson and J. Twigg with T. Rossetto, *Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisations*. Guidance Notes 6 (Logical and results-based frameworks), 7 (Environmental assessment) and 11 (Social impact assessment) (Geneva: ProVention Consortium, 2007), http://www.preventionweb.net/files/7511_toolsformainstreamingDRR.pdf.

Risk analysis may be based on quantitative or qualitative data, or a combination. Quantitative risk analysis requires extensive and accurate 'hard' data, and tends to focus only on those aspects of risk that can be most easily measured. It often needs to be combined with other forms of information and analysis to give a comprehensive view. Advanced scientific knowledge and computer modelling enable sophisticated quantitative risk analysis, but also require a high level of resources and technical skills and may not in any case be required; in the fire risk assessment in Vientiane (Case Study 3.1), much of the data needed was collected by visual surveys and a relatively straightforward scoring system was used. Qualitative analysis uses descriptive scales

Case Study 3.1 Fire risk assessment in Vientiane

A fire risk assessment in the city of Vientiane in Laos identified seven key risk factors and gave a numerical value to each to arrive at a total risk score for each geographical unit surveyed.

Risk factor	Total score
Building material type	25
Sources of flammable material	15
Fire-fighting scenario (availability of water and manoeuvring space for fire-fighters)	15
Quality of electrical wiring	5
Fire history	10
Building density	15
Accessibility (roads)	15
	Total: 100

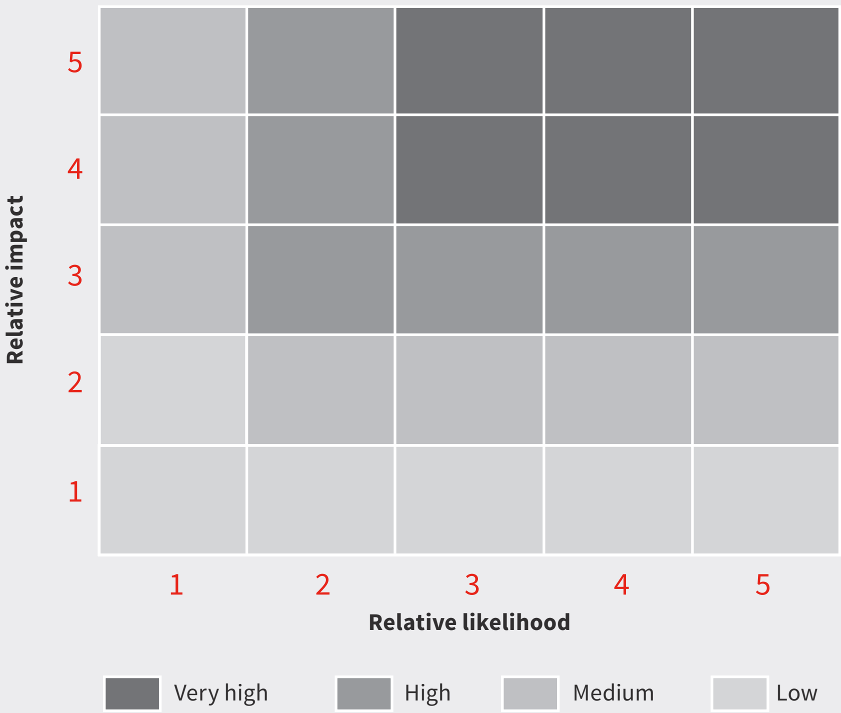
There was a sub-set of quantifiable features within each of the seven categories. Again, each carried a numerical score. For example, under 'fire history', there were four categories of risk: high (4 incidents of fire recorded during the past 5 years – score 10), moderate (3 incidents – score 5), low (2 incidents – score 3) and very low (1 incident – score 1).

P. Sounnalath et al., 'Fire Risk Assessment in Vientiane Lao PDR' in *Proceedings: Regional Workshop on Best Practices in Disaster Mitigation: Lessons Learned from the Asian Urban Disaster Mitigation Program and Other Initiatives, 24–26 September 2002, Bali, Indonesia* (Bangkok: Asian Disaster Preparedness Center, 2002), http://pdf.usaid.gov/pdf_docs/pnadk776.pdf, pp. 97–102.

for the likelihood and magnitude of risks. It is mostly used for initial screening, where the level of risk does not justify fuller assessment or there is insufficient data for more quantitative analysis. It often takes the form of a probability/impact matrix (see Figure 3.2).

One common limitation of risk analysis is that it does not take a broad view of human vulnerabilities and capacities, tending to focus on more visible and quantifiable elements, such as buildings and physical or financial assets and human lives. It is possible to capture less visible aspects through more qualitative, participatory risk analysis, and the results of such exercises can be valuable in understanding local perceptions and priorities (see Case Study 3.2: Risk mapping among East African pastoralists).

Figure 3.2 Probability/impact matrix



OECD, *Disaster Risk Assessment and Risk Financing: A G20/OECD Methodological Framework* (Paris: OECD, 2012), http://www.oecd.org/gov/risk/G20disasterrisk management.pdf, p. 43.

Case Study 3.2 Risk mapping among East African pastoralists

A team of researchers developed a simple but systematic approach to classifying and ordering the sources of risk faced by pastoralists in arid and semi-arid districts of southern Ethiopia and northern Kenya. The aim was to find a robust participatory method that was less costly and time-consuming than full surveys. There were two stages in the method: risk identification and risk ranking. The first stage was achieved using an open-ended questionnaire. The researchers emphasised to the pastoralists that they could list as many problems as they wished, and should identify these through discussions amongst themselves. The second stage used a simple numerical ranking method to group risks in order of severity. Risks thought to be equally severe could be ranked equally. After they had done the ranking, informants were asked to discuss each risk in turn, explaining how they used to deal with the problem, or why they no longer could, and how they would like to overcome it. Assessment of the incidence of risk was based on the proportion of participants who identified it. Severity of risk was assessed using a mathematical calculation that translated the informants' perceptions into a simple risk scale. Findings could be plotted on maps to identify areas and groups at risk. Disaggregation by age, gender, wealth and other socio-economic characteristics was also possible. The method was tested in the field over six months, involving 120 groups (59 groups of women, 61 of men). The responses identified 15 major sources of risk, ranging from availability of food and water to banditry. The most frequently mentioned problems were insecure access to food and water, livestock disease and access to health clinics. Food and water shortage were the only risks mentioned by a majority of informants, indicating that the extent of the other risks varied considerably across the region and its population, even though some (e.g. malaria, conflict) were certainly severe in places.

K. Smith, C. Barrett and P. Box, 'Participatory Risk Mapping for Targeting Research and Assistance: With an Example from East African Pastoralists', *World Development*, 28 (11), 2000.

3.5 Hazards assessment

Project planners and managers need to understand the hazards in the places where they work. Development and disaster workers do not need to be hazards specialists themselves, but they ought to understand hazards' main features, seeking help from experts where necessary. General information on different types of hazard is available in textbooks and manuals, but in field projects and programmes more location-specific data are needed. Hazards should also be seen in a broader context, as part of eco-systems and the environment in general.

To identify past, present and potential hazard events and estimate their impacts, planners need information on their characteristics, causes, location, frequency, magnitude and severity, and the damage they might cause to property, communities and the environment. They also need to be aware of hazards outside the project area that might affect it (e.g. by cutting off transport links or power supplies), and how hazards occur through natural physical processes and human activities (e.g. deforestation causing slope instability or rapid water run-off).

Hazard exposure and intensity will change over time. Planners should understand historical trends and probable future changes, as well as current situations. This is particularly relevant to climate change (see Chapter 1), which may have a significant effect on the frequency and intensity of some natural hazard events. Data collection and analysis should begin early in the project cycle and continue throughout, generating more detailed information in the process. Significant hazard threats should be identified at the earliest possible stage in order to set priorities. Hazard assessments must not stand alone but should be integrated into the overall planning process. The amount of information needed and its format will vary according to the type of hazard and project, the stage of the planning process and the accessibility and relevance of hazards data. Project planners want information that is accurate, reliable and intelligible, but must also be realistic about the time and resources needed to collect and analyse data, and the types and quantities of information required.

Hazards data are largely quantitative or spatial and can take many forms, such as geological hazard maps showing fault lines or unstable slopes liable to cause landslides; hydrological maps of flood-prone areas; wind, rainfall and sea-surface temperature data; recordings of seismic activity from monitoring stations; and local rainfall and flood level records. A high level of accuracy and detail can be obtained visually (for example in geological mapping and satellite images) and prediction (for instance modelling rainfall run-off, the movement of floodwaters and flood inundation areas). Maps are widely used in hazard identification and assessment. They can provide accurate records of the location, probable severity and occurrence of hazards, and display this information clearly. They can be at any scale or level, making them useful for national or local disaster planning. They can be technologically sophisticated (e.g. geographical information systems: see Chapter 8) or created by community participation using whatever local materials are to hand (see Chapter 6). Maps can also be useful for communicating hazards information to decision-makers and communities at risk, but they often need interpreting for non-specialists, who may not be used to seeing information presented in this form, and for educated users who may be unfamiliar with the particular formats and symbols used (see Chapter 10).

Project planners will usually need to collect different kinds of information to build up a comprehensive picture of the relevant hazards and their impacts. Hazards information can be found in many places and obtained in many ways. The principal types of information provider are:

- vulnerable communities and local stakeholders;
- state disaster management agencies, planning organisations and other ministries and departments;
- national and international scientific research and monitoring organisations (e.g. meteorological offices, volcano observatories, geological surveys);
- international development and disaster management agencies; and
- other non-state organisations (e.g. universities, research institutes, libraries, insurance companies, the media, NGOs).

Much information about the location, frequency and impact of hazards can be found in sources such as historical records (oral and written), archaeological findings, professional reports and research studies, damage reports and old newspaper and magazine articles. A great deal of such information is available online and from open-access sources (this includes geospatial information such as maps and satellite images). Even a basic atlas will contain some geological and meteorological data; information on weather and rainfall is generally distributed through media channels (press, TV, radio) and online; and data from academic research are often in the public domain. That said, specialists may be needed to interpret hazards information, and it is advisable, therefore, to bring scientific specialists into the planning process at an early stage.

In some countries information may be restricted. Access to information from official sources is usually controlled by disclosure regulations. Maps are sometimes considered militarily sensitive and high-resolution maps in particular may not be publicly available. Government or industry hazard and risk maps may be considered too commercially or politically sensitive to share. Even in countries with relatively open access to information, obtaining it may require time-consuming bureaucratic procedures. Information on technological hazards is likely to be hard to find because many of the sources of such hazards are commercial industrial operations such as factories. Official enquiries or health and safety assessments may have produced relevant reports, and environmental groups may be a useful source of information. Poor countries find it difficult to collect and maintain data sets because of cost and skills shortages; the provision and maintenance of seismic monitoring equipment, for example, may be beyond the resources of local or national governments.

It is important to identify gaps, inconsistencies or ambiguities in the evidence, and very important to remember that all hazards assessment contains an element of uncertainty. It can be a complicated process because it combines different kinds of information. For example, in studying a landslide-affected site, scientists would want to look at past history, slope steepness, bedrock type, rainfall and vegetation patterns and land use. In other cases, there may be limitations in the current state of scientific knowledge. Forecasting of volcanic eruptions, for example, is a highly advanced science, but volcanoes are complex geophysical phenomena and difficult to understand, so that even the most sophisticated monitoring systems may not be able to predict individual eruptions precisely. Experts may also disagree over interpretations of scientific evidence, including probabilistic calculations of hazard events.

In many cases project planners will have to use incomplete or out-of-date data sets. For example, in the 1990s the Kathmandu Valley Earthquake Risk Management Project accepted at the start the need to work in conditions where data were lacking. Instead of carrying out further research, the project used previously collected geological and seismological information, matched this to the current state of infrastructure and the built environment and adapted an existing loss estimation method to the Kathmandu context.[2]

It is not always necessary to rely on sophisticated technologies and outside specialists. Visual surveys by experienced people can identify areas at risk from landslides; simple stream gauges or flood marks can be used to monitor rising water levels and identify areas likely to be flooded; and local people's knowledge of hazards is often more accurate and extensive than outsiders appreciate (see Chapters 6 and 7). Many community projects carry out participatory surveys such as transect walks, community mapping and seasonal calendars to supplement more formal scientific information. It is increasingly recognised that the production and sharing of hazard and risk knowledge in these contexts should be a collective effort, including people at risk, implementing agencies and scientists, although considerable effort and patience may be necessary to create working relationships and increase levels of trust.[3]

Analysis of long-term trends and future uncertainty may also be required, for example in the context of climate change. Scenario planning may be helpful in understanding possible future changes, especially in the absence of predictions and reliable data; tools for carrying out participatory scenario planning with communities are available.[4]

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2 A. M. Dixit et al., 'Hazard Mapping and Risk Assessment: Experiences of KVERMP', *Proceedings: Regional Workshop on Best Practices in Disaster Mitigation: Lessons Learned from the Asian Urban Disaster Mitigation Program and Other Initiatives, 24–26 September 2002, Bali, Indonesia* (Bangkok: Asian Disaster Preparedness Center, 2002), http://pdf.usaid.gov/pdf_docs/pnadk776.pdf.

3 E. Visman, *Knowledge Is Power: Unlocking the Potential of Science and Technology To Enhance Community Resilience Through Knowledge Exchange*, Network Paper 76 (London: ODI, 2014), http://www.odihpn.org/hpn-resources/network-papers.

4 See for example A. Addison and M. Ibrahim, *Participatory Scenario Planning for Community Resilience* (Milton Keynes: World Vision UK, 2013), http://www.preventionweb.net/english/professional/publications/v.php?id=34947.

3.6 Vulnerability and capacity assessment

Vulnerability is complex. It has many dimensions – economic, social, demographic, political/institutional and psychological – that affect people's susceptibility to environmental hazards, in addition to their physical exposure to the hazards themselves. It is influenced by a number of factors, at different levels from the local to the global. It is also dynamic, changing under the pressure of these many different forces.

Vulnerability and Capacity Analysis/Assessment (VCA) identifies groups who are vulnerable, the factors that make them vulnerable, how they are affected and their needs and capacities, and ensures that projects, programmes and policies address these needs. VCA views vulnerability in the broadest sense, and therefore tries (where possible) to consider a wide range of environmental, economic, social, cultural, institutional and political pressures. It also considers the capacities, resources and assets people use to resist, cope with and recover from disasters and other external shocks.

VCA originated in the late 1980s and in one form or another is now widely applied around the world. VCA is a generic term: agencies attach many different names to the different VCA methods they develop (the term Community Risk Assessment is increasingly coming into use to comprise both VCA and risk analysis at community level). Operationally, VCA is used as a diagnostic tool (to understand problems and their underlying causes), a planning tool (to

Box 3.2 Defining vulnerability and capacity

There are many similar definitions of the terms 'vulnerability' and 'capacity' (or 'coping' or 'adaptive' capacity in a hazards/disaster context). The United Nations Office for Disaster Risk Reduction (UNISDR) defines them as follows:

Vulnerability: 'The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.'

Coping capacity: 'The ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters.'

2009 UNISDR Terminology on DRR (Geneva: United Nations Office for Disaster Risk Reduction, 2009), www.unisdr.org/files/7817_UNISDRTerminologyEnglish.pdf.

Case Study 3.3 VCA at national level

In 2012–13 the Mongolian Red Cross Society (MRCS) carried out a country VCA covering urban and rural settings. Some 2,500 individuals were involved, including government officials, staff in official health, agriculture, veterinary and weather forecasting services, the police, MRCS staff and volunteers and members of the public.

Data were collected from reviews of official and other documents, key informant interviews with more than 500 people, focus group discussions and field observations. A variety of analytical tools was used, including mapping, historical profiles, case studies, seasonal charts, problem ranking, problem trees and trend analysis.

The key risks identified and discussed in the VCA were fire, floods, winds and storms, road traffic accidents, air and dust pollution, soil pollution, *dzud* (extreme winter weather) and infectious diseases. Targets for intervention were identified in each of these areas.

The Vulnerability and Capacity Assessment Study 2012–2013, Mongolia (Ulaanbaatar: IFRC and Mongolian Red Cross Society, 2013).

prioritise and sequence actions and inputs), a risk assessment tool (to help assess specific risks) and a tool for empowering and mobilising vulnerable communities. VCA can be applied at many different levels, from national and programme to community and household. Most VCAs are local, but many higher-level analyses have been produced (e.g. Case Study 3.3: VCA at national level). VCA can also perform a range of functions: scoping or screening, programme or project design, research, baseline studies and monitoring and evaluation.

Organisations working in DRR use VCA principally for problem identification, because reducing vulnerability is one of their prime objectives. In development projects it is applied mainly in the project appraisal or preparation phase as part of risk analysis or social appraisal, focusing on a particular geographical area or sector. Other project planning tools, such as social analysis and social impact assessment, and especially sustainable livelihoods approaches, may address similar issues. They may also use similar data collection and assessment methods, and their results can feed into a VCA.

There are many ways to approach and implement VCA. Some guidelines are prescriptive, requiring all VCAs to be done in the same way, but many supply a 'toolkit' of methods, which allows greater flexibility to adapt to different needs and contexts. These should be consulted

Box 3.3 VCA toolkits and guidelines

Participatory Vulnerability Analysis: A Step-by-Step Guide for Field Staff (London: ActionAid International, 2005), http://www.actionaid.org.uk/sites/default/files/doc_lib/108_1_participatory_vulnerability_analysis_guide.pdf.

VCA Toolbox with Reference Sheets (Geneva: IFRC, 2007), http://www.ifrc.org/Global/Publications/disasters/vca/vca-toolbox-en.pdf.

Participatory Vulnerability and Capacity Assessment (PVCA) (London: Christian Aid, 2010), http://community.eldis.org/.59e79141/1.

Participatory Capacity and Vulnerability Analysis: A Practitioner's Guide (Oxford: Oxfam GB, 2012), http://policy-practice.oxfam.org.uk/publications/participatory-capacity-and-vulnerability-analysis-a-practitioners-guide-232411.

Community Based Resilience Analysis (CoBRA): Conceptual Framework and Methodology (Nairobi: UNDP Drylands Development Centre, 2013), http://www.disasterriskreduction.net/drought-online/documents/detail/en/c/2693.

for detailed advice on how to plan and carry out a VCA (examples of well-tested and widely used toolkits are given in Box 3.3; there are many more).

Figure 3.3 outlines the main steps in carrying out a VCA. This is just one standard model; organisations may follow their own, different, approaches. However, it should be remembered that vulnerability is specific to time and place and to particular hazard threats and groups of people. In practice, each VCA should be planned as a distinct exercise, according to its purpose, using the most appropriate approach.

It is essential to establish a clear, shared understanding of what is to be analysed. Designing or selecting an appropriate analytical framework is key to the assessment. The framework should be user-friendly and adaptable. It does not have to be complicated, but it should cover all significant relevant issues, identify the most vulnerable and consider underlying causes of vulnerability, as well as the current situation. These issues are complex, and building up a comprehensive view of vulnerabilities and capacities requires time. Vulnerability analysis should not be rushed. It should also be carried out well before a potential disaster, allowing hazards and risks to be set within a broader socio-economic picture. It can also be done as part of long-term rehabilitation after a disaster, and in long-term development. As well as time, vulnerability

Figure 3.3 Basic steps in VCA

1. Select a framework for analysis to establish clear and shared understanding of what is to be analysed, and the role of the VCA

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2. Select unit/level of analysis to facilitate planning the scope and focus of the VCA and selection of the methodology

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3. Identify stakeholders to provide expert knowledge and ensure ownership of findings

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4. Select approach for data collection and analysis appropriate to the scale, scope and purpose of the VCA

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5. Collect data using a series of data-gathering methods to build up evidence

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6. Analyse data in order to link different dimensions of vulnerability to present a full picture and reveal cause–effect linkages

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7. Decision-making and action: feed findings into risk assessment and project design and make appropriate modifications to reduce vulnerability

C. Benson and J. Twigg with T. Rossetto, *Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisations.* Guidance Note 9: Vulnerability and Capacity Analysis (Geneva: ProVention Consortium, 2007), http://www.preventionweb.net/files/7511_toolsformainstreamingDRR.pdf, p. 106.

analysis can require considerable resources. Many field agencies lack sufficient experience and skills to implement analyses effectively, and staff training in the requisite methods will probably be needed, though there are still few trainers in vulnerability analysis methods.

There are many different indicators of vulnerability and capacity. Some are more helpful than others, and some (such as indicators of coping ability) are particularly hard to obtain. Do not rely on only a few indicators, or those that are most easily identified. Careful triangulation of the different indicators is needed to build up an overall picture. Data may be unavailable, too difficult to collect, of poor quality and inconsistent. VCA teams often have to make the best use of what they can find. Data limitations should be acknowledged in VCA reports. Because vulnerability is not simple, and the data will be diverse, it may be difficult to reach agreement on priorities. Organisations carrying out vulnerability analysis may have to put significant effort into reaching a consensus on how to proceed. Finally, VCA should be an ongoing process, not a one-off, because vulnerability is dynamic and ever-changing. There should always be an up-to-date vulnerability analysis for the district or communities being assisted. In practice this rarely happens because agencies lack the resources to carry out repeated vulnerability analysis exercises. VCA is typically undertaken only at the start of a project or programme.

In terms of process, *how* the vulnerability analysis is done is as important as its findings. VCA is not just an information-gathering exercise: if done properly, with vulnerable people themselves taking part, it can raise awareness and increase knowledge of the risks people face and their ability to deal with them. VCA depends on the involvement of a wide range of stakeholders in providing and analysing data (be it at national or community level). As well as supplying more valid data through local expert knowledge and perspectives, this ensures wider ownership of the findings. The collaborative involvement of vulnerable people and external stakeholders (e.g. government officials) can stimulate a shared understanding of the issues and appropriate solutions, as well as having the potential to influence policy and practice elsewhere.

VCAs often fail to pay enough attention to the 'capacities' dimension. Identification and assessment of existing coping capacities is the starting point for building community resilience and can motivate community action. Engagement of communities in the VCA process is in itself an act of capacity building. The capacities of excluded or marginalised groups (e.g. children, older and disabled people) should not be overlooked (see Chapter 5). It is essential that the views of all groups in the community are heard – particularly those of women and the most vulnerable. VCA guidelines emphasise this and organisations working in DRR claim to be targeting marginalised vulnerable groups. However, there is evidence that these good intentions are not always put into practice: local men may dominate, vulnerable people may be overlooked (for example, disabled people are often invisible in VCAs)[5] or local elites may attempt to control the process in order to benefit from the projects planned on

5 J. Twigg, 'Attitude before Method: Disability in Vulnerability and Capacity Assessment', *Disasters*, 38(3), 2014.

Case Study 3.4 Local elites and VCA

A series of VCAs in six villages and the capitals of two rural districts in Malawi in 2008 revealed a number of issues relating to local power relationships. In each village, the team conducted interviews with the village head, focus group meetings with community members and members of the Village Development Committees (VDCs), together with other interviews and group meetings with local government officials and field staff of local NGOs.

At village level in rural Malawi, VCA teams generally have to choose between two established social communications channels to manage community participation and ensure they collect complete and accurate information. Both options are linked to local power structures. The first involves the village heads: traditional authorities, holding office for life, with power over customary property such as land, water and natural resources. The second involves the Village Development Committee, a representative structure set up by the state.

In poor areas, association with NGOs and their projects can give local power holders access to resources such as vehicles or well-paid jobs, or it can be used to strengthen their power base by allowing them to control distribution of goods such as food aid, seeds and fertilisers and the management of local development infrastructure (such as irrigation systems or grain storage facilities). They therefore seek to develop long-term NGO connections, starting with involvement in the VCAs.

Village headmen wanted the VCA assessments to be carried out under customary rules, with the village head convening and chairing community meetings. Village Development Committee members claimed the right to participate in the assessments separately, as the only representative structure at the local level. They seemed to perceive NGOs as allies in their struggle for public space, and saw the VCAs as opportunities to raise their profile and gain legitimacy in the community.

J. L. Penya and J. Nyrongo, *Who Controls Development? NGOs, Accountability and Power in Rural Malawi* (London: Aon Benfield UCL Hazard Centre, 2011), http://www.ucl.ac.uk/hazardcentre/resources/working_papers/working_papers_folder/wp28.

the basis of the assessment (see Case Study 3.4: Local elites and VCA). Specific governance analysis is often valuable in order to understand the roles and influence of different organisations within and outside the community.

The types of data collected and the way they are collected must be appropriate to the VCA's scale, scope and purpose. Ideally, the information-gathering methods used should be comprehensive enough to capture the different elements of vulnerability and capacity without the exercise becoming too complex and burdensome. An initial scoping exercise can give a general picture of vulnerability in the project area, highlight key issues and identify information gaps. This usually relies on secondary data that are publicly available (e.g. social and economic surveys by governments, disaster impact data, the news media, analyses commissioned or carried out by international aid agencies and reports or research papers on past disaster events). Subsequently, additional primary data will be collected to complement and challenge the secondary data findings.

VCA will use a variety of sources and types of quantitative and qualitative information to capture the complexity of vulnerability in the project area (see Table 3.1 for examples of the range of methods and sources of information that might be used).

Agencies usually base their understanding on local-level data. At this level, VCA relies heavily on participatory techniques and tools (secondary sources of information – maps and other documents – can easily dominate the investigation and are often best used to cross-check information generated in the field). Such approaches give relatively limited coverage, geographically and in terms of the numbers involved. Because the methods used and data collected vary according to time and place, the results are not standardised and it can be difficult to compare findings. However, these drawbacks are outweighed by the advantages, including more detail and better insights into the multiple pressures that communities face and the causal links between them, local needs and priorities, people's understanding of their own vulnerability, indigenous methods for dealing with risks and community capacity (actual and potential).

Many other kinds of quantitative and qualitative information can be used, such as general social and economic surveys by governments and other agencies, drought and food security early warning systems, situation reports by operational agencies, news media stories, analyses commissioned or carried out by international and bilateral donors and anthropological studies. VCAs often use basic national-level indicators of socio-economic development (e.g. size of land holdings, per capita income, literacy levels, mortality and morbidity rates, access to clean water) for background information. These give insights into vulnerability, but the picture may not be complete, comprehensive or directly relevant to the location and communities the VCA is aimed at. Small agencies are unlikely to have the resources or capacity required for meaningful national-level analysis, and will usually have to rely on the work of larger agencies. Key informants can be very helpful in explaining

Table 3.1 Tools for assessing socio-economic vulnerability

Methods	Application to vulnerability
Secondary data collection and review (official reports, economic surveys, census data, household surveys and other official statistics, research, early warning systems, reports by other agencies, etc.)	Contextual information on a variety of issues including population characteristics, external shocks and stresses (e.g. rainfall and temperature trends), health (morbidity and mortality), the impact of previous disasters
Geospatial data (e.g. maps, satellite images, social mapping, transect walks)	Identify physical and environmental features (including hazards), land use, other resources and infrastructure, location of populations and vulnerable sub-groups
Environmental checklists	Questions to gain information about environmental conditions and concerns, revealing the relationship between vulnerable people and their environment (e.g. What role do environmental resources play in resilience? How do environmental hazards, degradation and changes affect communities?)
Sample surveys	Quantitative data on dimensions of vulnerability (e.g. education, employment, health, nutritional status, household economies)
Interviews (individuals, households, community groups, key informants), focus groups	Information from different perspectives (among communities, other local stakeholders, external experts) on events and trends that cause stress, differential vulnerability and the effectiveness of adaptive behaviour
Individual and household case studies; oral histories	Data on different experiences of vulnerability and abilities to withstand environmental hazards and other shocks
Timelines	Historical occurrence and profiles of longer-term events or trends (e.g. floods, droughts, epidemics, environmental trends and cycles)
Seasonal calendars	Describe seasonal events and trends, identifying vulnerability context, livelihood assets and strategies (e.g. rainfall, food levels at different times of year, crop planting and harvesting schedules, food prices, changes in health status)
Preference, matrix and wealth ranking	Reveal vulnerability of different groups' assets to shocks and stresses, and strategies against this
Problem tree	Identifies problems and their causes, and indicates possible solutions
Venn diagrams and other institutional appraisal/ mapping methods	Social capital, relations between groups, institutional and policy environment
Scenarios and computer simulations	Explore possible future outcomes and model social-environmental interactions over time

Source: C. Benson and J. Twigg with T. Rossetto, *Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisations*. Guidance Note 9: Vulnerability and Capacity Analysis (Geneva: ProVention Consortium, 2007), http://www.preventionweb.net/files/7511_toolsformainstreamingDRR.pdf.

systems and filling knowledge gaps, but may have individual biases. A number of online datasets provide information on disaster mortality, economic impact, hazards and other aspects of vulnerability and capacity (see Box 3.4: Disaster, risk and vulnerability datasets). The VCA may need to draw on several such indicator sets.

Case studies of recent events are a valuable supplementary source of information on the impact of disasters, people's vulnerability and agencies' capacities. It may not be easy to find good-quality case studies, however: the published literature may be limited or hidden in academic journals. Agencies' situation reports generated during major disasters are more accessible[6] but may only have a limited amount of information that is useful for vulnerability analysis.

At both national and local levels, it is essential to understand the 'enabling environment' of policies, institutions, laws, regulations and funding that can support or restrict a project's aims. Assessing the capacity of government and civil society to manage disaster risk can be challenging, although there are a number of widely used indicator sets to assess progress in DRR at national and local levels, including relevant aspects of the institutional environment (see Chapter 18).

VCAs tend to generate more information than is needed and identify more issues than local-level agencies can address. Excessive data collection is expensive and – if not used – wasteful. The task of processing large volumes of information puts pressure on organisations of all sizes. This shows the importance of setting clear and realistic targets for a VCA exercise. To be fair, it is not always easy to judge how much information will be necessary at each stage of project design and implementation, or for whom (community organisations, NGO field staff and headquarters staff will have different information needs). Some fieldworkers have suggested that a picture of vulnerability could be built up gradually through a series of smaller assessment exercises rather than a single intensive, complex VCA. This would also enable an operational agency to fit its work around community activities, thereby reducing disruption. The main drawback to this approach is that the agency might be drawn into one area of intervention before the whole picture is clear and, as a result, find itself unable to address more significant problems should they appear later.

Data analysis usually presents more problems than data collection. Data sets contain a variety of evidence and indicators that are not easily triangulated, collated or analysed. Methodological guidelines have relatively little to say on the subject of analysis. This causes problems for many staff who have used VCA. In addition, organisations tend not to allow sufficient time and human resources for thorough analysis. As a result, the findings of some VCAs are more descriptive than analytical, especially where the evidence is mainly qualitative: this makes it difficult to set priorities for intervention. Where organisations

6 Many are online, on the ReliefWeb site at http://www.reliefweb.int.

Box 3.4 Disaster, risk and vulnerability datasets

Online datasets such as those listed below provide national (and sometimes sub-national) data on aspects of risk and vulnerability:

- Centre for Research on the Epidemiology of Disasters, EM-DAT database (disaster impact and loss data): http://www.emdat.be.
- Munich RE, Natcat Service (disaster impact and loss data): http://www.munichre.comnce/business/non-life/natcatservice/index.htmlnatcat.
- South Pacific Applied Geoscience Commission/United Nations Environment Programme (SOPAC/UNEP) Environmental Vulnerability Index (environmental indicators): http://www.sopac.org/index.php/environmental-vulnerability-index.
- Transparency International Corruption Perception Index (http://www.transparency.org/cpi2013/results) and Country Corruption Profiles (http://www.transparency.org/country).
- UNICEF State of the World's Children Reports (socio-economic indicators) http://www.unicef.org/sowc.
- United Nations Development Programme (UNDP) Human Development Reports (socio-economic indicators): http://hdr.undp.org/en.
- United Nations Office for Disaster Risk Reduction (UNISDR)
  - Desinventar (disaster impacts and loss data): http://www.desinventar.net
  - PREVIEW Global Risk Data Platform (hazard events, exposure and risk data): http://preview.grid.unep.ch/index.php?preview=home&lang=eng
  - Risk Data Platform (hazard events and exposure data): http://risk.preventionweb.net
- World Bank World Development Reports (economic, social, environmental indicators): www.worldbank.org/wdr.
- World Health Organisation Global Health Observatory (health indicators): http://www.who.int/gho/en.
- World Wide Fund for Nature (WWF) Living Planet Index (biodiversity indicators): http://wwf.panda.org/about_our_earth/all_publications/living_planet_report.

follow an open-minded, participatory approach, the selection and weighting of indicators are usually left to participants in the VCA process, but this too causes problems for many field staff, who need appropriate training and guidance. Assessment teams should identify and focus on the most useful indicators, remembering that the indicators that are easiest to measure are not necessarily the most useful for analysis.

VCA should lead to action, but in some cases it is seen as an exercise in gathering information for its own sake. Specific actions resulting from VCAs might include:

- preparation of community DRR action plans;
- establishment or strengthening of community organisations to implement DRR initiatives;
- repair, strengthening or redesign of vulnerable infrastructure and facilities;
- relocation of vulnerable communities and facilities;
- new land use, planning or building regulations and practice;
- institutional and community strengthening to implement recommended actions and provide a basis for initiating future actions;
- shift of emphasis to different economic and livelihood activities;
- introduction of economic support mechanisms (e.g. micro-credit, cash for work) and social support systems to increase resilience; and
- formal contributions to policy debates, especially regarding the underlying pressures contributing to vulnerability in the project area.

For many practitioners, one important question will be how much information and analysis is really needed before a project can start. There is an inherent tension in project work between the need for knowledge gathering and understanding on the one hand, and the pressure to act on the other. A rapid VCA can be done in a few days, even occasionally a few hours, although a more deliberative and participatory process is generally desirable. More extensive VCAs may take weeks or months depending on the type of project and the methods used.

Carrying out a VCA can raise community expectations that the organisation concerned will intervene to solve all the problems identified. This is rarely possible. It is therefore very important to discuss its purpose and likely outcomes with communities and other stakeholders at the outset. If this is not done, there is a risk that communities will be disillusioned or even angry, and the organisation's reputation will be damaged as a result. Anecdotal evidence suggests that such problems do arise, possibly quite often. It may also be helpful to consider potential barriers to implementing DRR interventions recommended by a VCA and to identify ways of overcoming these.