

# Evaluating Disaster Risk Reduction Initiatives

## Guidance Note 13

*Tools for Mainstreaming Disaster Risk Reduction is a series of 14 guidance notes for use by development organisations in adapting programming, project appraisal and evaluation tools to mainstream disaster risk reduction into their development work in hazard-prone countries. The series is also of relevance to stakeholders involved in climate change adaptation.*

*This guidance note is an introduction to evaluating disaster risk reduction. It sets out the main steps in planning evaluations, collecting and analysing data, and using the results; and it discusses issues associated with these activities. The note is aimed principally at programme or project managers responsible for designing, supervising and implementing different kinds of disaster risk reduction initiative, either free-standing or within wider development or post-disaster recovery activities. It should also be of use to evaluation teams.*

*A comprehensive source book on monitoring and evaluation in disaster risk reduction is under development by the ProVention Consortium (see Further reading).*

## 1. Introduction

An evaluation is “an assessment, as systematic and objective as possible, of an on-going or completed project or policy, its design, implementation and results”.<sup>1</sup> Evaluations are analytical exercises, focusing on project outputs and especially outcomes or impact.<sup>2</sup> Good evaluation is essential for effective project and programme management.

### Box 1 Purpose and value of evaluation

The two main purposes of evaluation are:

- To improve future aid policy, programmes and projects through feedback of lessons learned.
- To provide a basis for accountability, including the provision of information to the public.

Other benefits include:

- Evaluations are the key means by which agencies seek to learn lessons from their work and incorporate them into policy and practice.
- Organisational learning (through evaluation) is a prerequisite for knowledge transfer between agencies.
- Evaluation is often the only consolidated source showing how a project or programme progressed.
- Evaluations are a means of retaining and building institutional memory.
- Evaluations question and test basic assumptions and create a space for lesson learning.
- Learning from experience is particularly valuable at times of policy uncertainty.

Sources: OECD-DAC (1991); Hallam (1998), pp 23–4.

<sup>1</sup> OECD-DAC (1991).

<sup>2</sup> Outputs are the immediate results the project achieves (sometimes called ‘deliverables’). Impact (or outcome) is significant or lasting change brought about by the project. Many development agencies evaluate projects according to the OECD-DAC’s five criteria of efficiency, effectiveness, impact, sustainability and relevance (modified for humanitarian work to seven criteria: relevance/appropriateness, connectedness, coherence, coverage, efficiency, effectiveness and impact).

## Current state of the art

The range of monitoring and evaluation (M&E) approaches and methods in development and relief has grown considerably in recent years. Far less thought has been given to M&E methods specifically for disaster risk reduction (DRR). Organisations working in this field have paid relatively limited attention to evaluation. Progress has been hindered by both institutional and methodological obstacles: the latter include the scope and complexity of DRR as a comprehensive approach to reducing vulnerability and the threat of disasters (see Table 1).

**Table 1 Components of disaster risk reduction**

<i>Thematic area</i>	<i>Main components</i>
<b><i>Governance</i></b>	<ul style="list-style-type: none"> <li>■ Policy and planning</li> <li>■ Legal and regulatory systems</li> <li>■ Resources and capacities</li> <li>■ Integration with development</li> <li>■ Institutional mechanisms, capacities and structures</li> <li>■ Political commitment</li> <li>■ Accountability and participation</li> </ul>
<b><i>Risk assessment</i></b>	<ul style="list-style-type: none"> <li>■ Hazards/risk data and analysis</li> <li>■ Vulnerability and impact data/indicators</li> <li>■ Early warning systems</li> <li>■ Scientific and technical innovation</li> </ul>
<b><i>Knowledge and education</i></b>	<ul style="list-style-type: none"> <li>■ Information management and sharing</li> <li>■ Education and training</li> <li>■ Public awareness</li> <li>■ Learning and research</li> </ul>
<b><i>Risk management and vulnerability reduction</i></b>	<ul style="list-style-type: none"> <li>■ Environmental and natural resource management; climate change adaptation</li> <li>■ Sustainable livelihoods</li> <li>■ Social protection</li> <li>■ Financial instruments</li> <li>■ Structural and technical measures</li> <li>■ Planning regimes</li> </ul>
<b><i>Disaster preparedness and response</i></b>	<ul style="list-style-type: none"> <li>■ Organisational capacities and coordination</li> <li>■ Preparedness and contingency planning</li> <li>■ Emergency response mechanisms</li> <li>■ Participation and voluntarism</li> </ul>

Sources: Adapted from UN/ISDR, *Hyogo Framework of Action 2005–2015*. Geneva: United Nations International Strategy for Disaster Reduction, 2005. Available at: <http://www.unisdr.org/eng/hfa/hfa.htm>; UN/ISDR. *Living with Risk: A global review of disaster reduction initiatives*. Geneva: United Nations International Strategy for Disaster Reduction, 2004, I: 393–395. Available at: [http://www.unisdr.org/eng/about\\_isdr/bd-lwr-2004-eng.htm](http://www.unisdr.org/eng/about_isdr/bd-lwr-2004-eng.htm)

However, interest is increasing rapidly. A number of recent and ongoing evaluation and indicator initiatives focus on different dimensions of DRR (see Box 2).

## Box 2 DRR evaluation and indicator initiatives

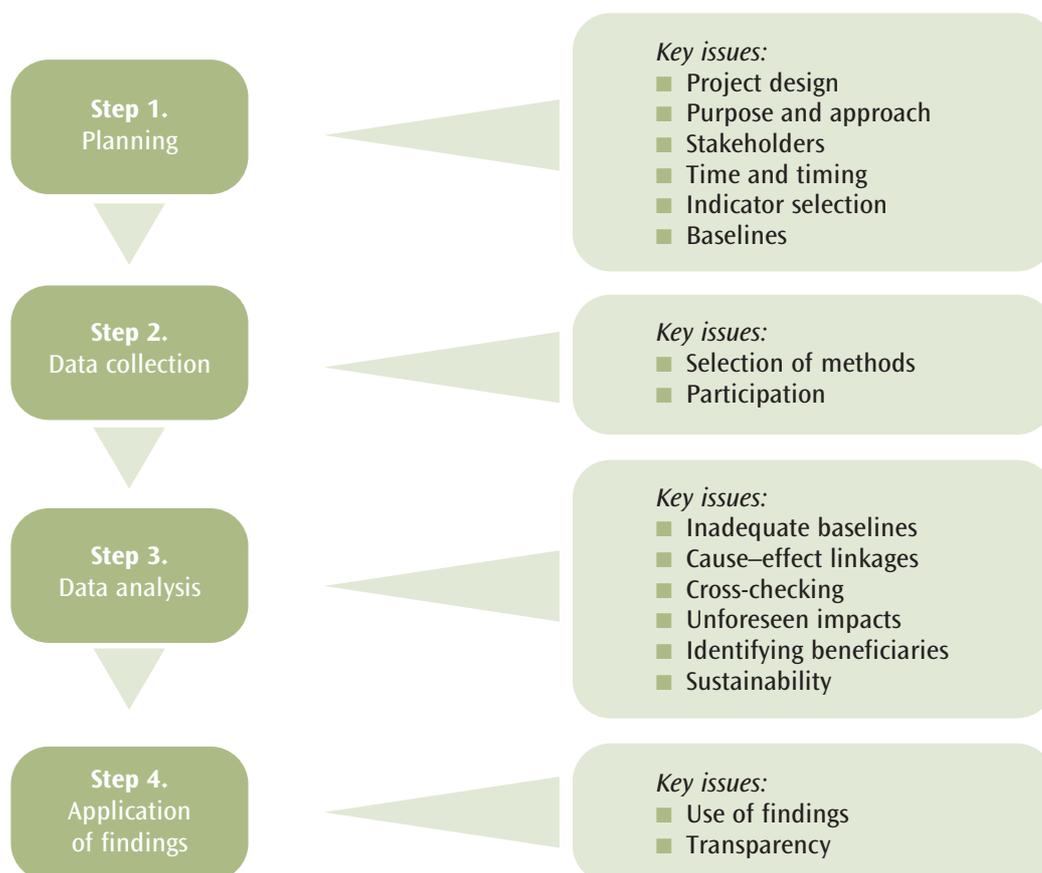
- The United Nations' International Strategy for Disaster Reduction (UN/ISDR) and Office for Coordination of Humanitarian Affairs (OCHA) are developing indicator sets for measuring progress towards the Hyogo Framework of Action 2005–2015 agreed at the World Conference on Disaster Reduction in January 2005.
- The ProVention Consortium commissioned work on risk reduction indicators which fed into the Tsunami Recovery Impact Assessment and Monitoring System (TRIAMS) programme.
- The World Bank recently published a comprehensive evaluation of its disaster assistance efforts over the past 20 years (see Box 11).
- A group of international non-governmental organisations has commissioned work on indicators of DRR at community level.

Sources: UN/ISDR, *Hyogo Framework of Action 2005–2015*. Geneva: United Nations International Strategy for Disaster Reduction, 2005. Available at: <http://www.unisdr.org/eng/hfa/hfa.htm>; ProVention Consortium (2006); World Bank (2006); 'Indicators of Community-Level Disaster Risk Reduction' web page, [http://www.benfieldhrc.org/disaster\\_studies/projects/communitydrindicators/community\\_drr\\_indicators\\_index.htm](http://www.benfieldhrc.org/disaster_studies/projects/communitydrindicators/community_drr_indicators_index.htm)

## 2. Steps in evaluating disaster risk reduction

In this guidance note, the evaluation process is broken down into four basic steps. This is a deliberate oversimplification to present actions and issues more clearly. In reality, every evaluation is distinct in its aims and methods, because every project and programme is different. Careful planning will ensure that the evaluation process matches the objectives and needs of the initiative being assessed.

Figure 1 Steps in evaluating disaster risk reduction



## Step 1. Planning

The evaluation process begins at the project design stage, when goals and objectives are set and logical or other results-based frameworks are developed, to which later evaluations will relate (see **Guidance Notes 5 and 6**). Use of such planning frameworks also facilitates agreement by all stakeholders about the project's aims and approach.

Evaluations do not have to be formal, externally-led actions at the end of a project or afterwards, although donors often require this. They can take many other forms, including real-time evaluations, after-action reviews with communities, strategic reviews and internal or self-evaluations by project staff and partners. Good monitoring is an integral component of the evaluation system: it assists ongoing lesson-learning by managers during the project, as well as providing data for evaluation teams and external accountability.<sup>3</sup>

A range of factors, including balance between internal and external evaluators, the range of technical and local knowledge required and gender balance, will guide the selection of participants in evaluations. Involvement of communities is essential (see Step 2). Where the process is led throughout by project teams, in partnership with other stakeholders, there is stronger and more widespread ownership of the results and lessons feed into the ongoing implementation, or where necessary redesign, of the project.

Time and timing are important factors. If insufficient time is allocated to carry out evaluations, quality is likely to suffer. Evaluations can take place at any point in the project cycle (mid-term, end of project or post-project). They are most useful when the project is sufficiently advanced to assess effectiveness or outcomes. Longer-term, post-project assessments provide a more comprehensive picture of impact (see Box 3). Ideally, there should be a series of evaluation exercises during and after the project, to permit longitudinal analysis, although this rarely happens.

### Box 3 Long-term impact assessment

An independent participatory evaluation of a rainwater-harvesting initiative in an arid district in Kenya begun over ten years previously covered many different aspects of the project's impact on reducing vulnerability:

- Impact on average sorghum yields and comparison of yields between traditional sorghum gardens and those improved by rainwater harvesting, in both good and bad rainfall years.
- How the sorghum harvest was used in good and bad years (e.g., to purchase food, seeds or livestock, sell for cash or give to relatives and friends).
- Impact on diet.
- Impact on wealth.
- Gender issues in control and decision-making (relating to decisions about whether to improve a garden, when to begin planting, division of labour and control over disposal of the harvest) and impact on women's status.
- How the creation of new sorghum gardens affected traditional land tenure arrangements.
- Positive and negative impacts on the environment (water run-off, soil erosion, soil fertility).

Source: Watson, C. and Ndung'u, B. *Rainwater Harvesting in Turkana: An Evaluation of Impact and Sustainability*. Nairobi: ITDG (now Practical Action), unpublished evaluation report.

*Indicator selection.* Selection of appropriate indicators is central to project design and evaluation. Indicators are objective ways of demonstrating that progress is being made. They can be used to assess progress and outputs or outcomes and impact, relating to the project's aims and objectives. Indicators can be quantitative or qualitative. They may measure changes directly or, where this is not possible, measure things that represent or approximate changes ('proxy indicators'). Identification and validation of appropriate impact indicators is a methodological challenge in all evaluations, including those of DRR projects.

Indicators are first identified in the results-based frameworks used for project design (see above); they may be modified or added to as the project proceeds. Box 4 is an example of a results-based framework and hierarchy of indicators developed for a recent DRR initiative.

<sup>3</sup> Monitoring usually addresses inputs, activities and outputs; it takes place throughout the project cycle. Traditionally, monitoring was seen as relatively distinct from evaluation, but they are increasingly seen as part of a single process directed towards lesson-learning and accountability.

## Box 4 Results-based framework for disaster risk reduction

The Asian Disaster Preparedness Center's multi-country Asian Urban Disaster Mitigation Program (AUDMP) developed a Strategic Objective and Results Framework with targeted results and indicators to guide and assess progress and achievements (summarised in an objectives and results tree; see diagram).

**Programme goal: Reduced national disaster vulnerability of urban populations, infrastructure, lifeline facilities and shelter in Asia**

### Programme objective:

Establishment of sustainable public and private sector mechanisms for disaster mitigation in Asia

### Indicators:

- 1 Number of operational plans developed with resources identified by national collaborating institutions to carry out mitigation measures after demonstration activities end
- 2 Number of replications or adaptations of mitigation skills and procedures promoted in AUDMP demonstration activities by other organisations, communities or countries in Asia
- 3 Amount of investment from non-AUDMP funding sources attracted by programme and demonstration activities
- 4 Number of households potentially benefiting from AUDMP-sponsored activities to reduce disaster vulnerability

### Result no. 1

Improved capacity of municipal officials to manage risk and apply mitigation skills and technologies

#### Indicators:

- 1.1 Number of new or improved assessment methods and guidelines/standards used for public and private sector development
- 1.2 Number of emergency preparedness and response plans written or revised to reflect improved information on hazards and vulnerability

### Result no. 2

Improved access to hazard mitigation information and skills (e.g., techniques, methodologies, experience) throughout the region

#### Indicators:

- 2.1 Percent of public and private sector professionals with AUDMP-initiated disaster mitigation training who are employed and using knowledge gained in fields impacting disaster management or urban development
- 2.2 Number of institutions where AUDMP-initiated training and professional development course modules are institutionalised
- 2.3 Level of participation in the AUDMP regional information and contact network

### Result no. 3

Improved policy environment for disaster mitigation

#### Indicators:

- 3.1 Number of policies established or revised to facilitate action, regulation, enforcement and/or incentives

The framework also specified targets, baseline information, data sources and critical activities. For example, under Result no. 2, Indicator 2.1 (percentage employed and using knowledge gained), these were:

- Standard/target: 75 per cent of the public and private sector professionals trained in AUDMP-initiated mitigation courses held during the programme period.
- Baseline: Number trained estimated to be 150 (counting participants in regional and national core courses, but not those taking project-specific skills training).
- Data sources: ADPC and national partner training organisation records. Surveys of individuals and employers, conducted approximately six to nine months following the training, to track whether the knowledge conveyed is being put to use. Activity reports showing number trained and number of trainees working in related jobs, course schedules, course participant lists with names and position information.
- Critical activities: Development of training materials/curriculum, conduct of courses; follow-up survey/assessment tool.

Sources: AUDMP web pages <http://www.adpc.net/AUDMP/M&E.html> and <http://www.adpc.net/AUDMP/ME-framework.html>

In essence, measuring DRR is about assessing positive and negative changes in vulnerability and capacity or resilience brought about by project interventions. A baseline vulnerability and capacity analysis can be used to identify key indicators of this at the outset (see **Guidance Note 9** and below, section on baseline data). However, vulnerability and resilience, like DRR, are complex and multi-faceted.

In practice, most projects and programmes focus on a few specific aspects of DRR, being unable to tackle every factor contributing to people’s vulnerability. In planning individual evaluation exercises, decisions are needed to focus the assessment and ensure its objectives are realistic. The priority will be to collect the data needed for understanding progress towards the project’s aims and objectives, while at the same time remaining aware of the wider context in which the project is located.

Indicators should be measurable in some way, but the indicators that are easiest to measure are not necessarily the most useful. Evaluators therefore look for a range of indicators that give a comprehensive, balanced view of the key issues. Indicators should also be easily understood, by communities and implementing organisations alike.

Evaluation is designed to measure change (positive and negative). DRR can present problems because of what has been called its ‘reverse logic’: i.e., the success of an intervention is that something – the disaster or a particular form or level of loss in the event of a disaster – does *not* happen. However, evidence from subsequent disaster events and the response to them is a strong indicator of the impact of pre-disaster mitigation and preparedness measures. It can demonstrate, for instance, the effectiveness of early warning and evacuation systems, the capacity of response agencies and the resilience of houses and infrastructure.

## Step 2. Data collection

Most DRR project evaluations adopt a mix of data collection methods (see Table 2 for examples). Selection depends on the nature and scale of the project, the type of information required and the frequency, ease and cost of collection.

**Table 2 Data collection methods**

<i>Method</i>	<i>Examples of application to DRR evaluation</i>
Formal surveys of beneficiaries and other stakeholders <sup>4</sup>	<ul style="list-style-type: none"> <li>■ Survey of builders and occupants of hazard-resistant housing to ascertain application of skills and increased security (see Box 5)</li> <li>■ Household survey on food production, availability, consumption and marketing to identify patterns and shifts in vulnerability</li> </ul>
Structured and semi-structured interviews with staff, partners, beneficiaries and other stakeholders	<ul style="list-style-type: none"> <li>■ Individual stakeholder interviews building up picture of level of understanding of the project, agency–community working relationships, effectiveness of coordination mechanisms and outcomes of DRR interventions</li> </ul>
Group discussions with stakeholders, especially beneficiary communities (e.g., participatory workshops, focus groups)	<ul style="list-style-type: none"> <li>■ Beneficiary workshop to identify and assess benefits of particular DRR interventions and unforeseen impacts</li> <li>■ Expert workshop to assess potential effectiveness of new DRR methods or approaches</li> <li>■ Feedback workshop with beneficiaries and other stakeholders to test/confirm evaluation findings</li> </ul>
Rapid assessments	<ul style="list-style-type: none"> <li>■ Post-disaster telephone or field survey to indicate effectiveness of warning and response mechanisms and factors affecting them</li> </ul>
Direct observation and visual surveys	<ul style="list-style-type: none"> <li>■ Visual surveying of structural mitigation measures to determine quality of design and workmanship, take-up of technologies or techniques – disaster resilience inferred from this or assessed through post-disaster surveys</li> <li>■ Observation of coping strategies and other risk-reducing behaviour – before, during and after disasters</li> </ul>

<sup>4</sup> Such information can also be generated by interviews and group discussions.

<b>Method</b>	<b>Examples of application to DRR evaluation</b>
Case studies	<ul style="list-style-type: none"> <li>■ Personal or group accounts of use of skills, materials and organisational capacity acquired from disaster management training courses during subsequent events</li> </ul>
Simulations	<ul style="list-style-type: none"> <li>■ Group simulation or exercises (table-top or field) of disaster management activities or responses to disaster events, to test plans, skills, equipment, etc.</li> </ul>
Documentary evidence	<ul style="list-style-type: none"> <li>■ Content analysis of educational material on risk reduction and management produced by project</li> <li>■ Quantitative and qualitative data about project delivery, effectiveness, impact and costs, from project documentation</li> <li>■ Secondary data collection to complement or validate information collected by the evaluators in the field</li> </ul>

### **Box 5 Use of surveys to assess reduced risk**

An evaluation of a housing finance and improvement programme in Andhra Pradesh, India, surveyed a sample of 100 beneficiaries from five villages through individual interviews, using a formal questionnaire which covered a range of issues.

Ninety-four per cent of the interviewees strongly agreed with the questionnaire statement that having a proper house had brought increased security from theft, cyclones and monsoon rains. In additional comments, many also stated that the risk of fire in a traditional hut, which was a constant threat, was now greatly diminished. Others commented that they had greater peace of mind when they left the house to work in the fields and were no longer fearful of theft occurring in their absence.

Source: Platt, R. *Ensuring Effective Provision of Low Cost Housing Finance in India: an in-depth case analysis*. Working Paper No. 9725. Bradford, UK: University of Bradford Management Centre, 1997, p. 40.

The choice between participatory and non-participatory methods is a key decision. The value of participatory approaches in DRR is now generally accepted; this applies equally to evaluation. Participatory evaluation enables the voices of project stakeholders, especially beneficiary communities, to be heard, draws on their local and expert knowledge and creates ‘ownership’ of the evaluation’s findings.

In participatory projects it is crucial that the community is involved in evaluation, not merely data collection, and is empowered to make appropriate decisions about future activities as a result. Although external agencies and donors need evaluation reports, collection of data solely for external use can undermine the participatory process. Experience with participatory M&E systems suggests that communities must develop their own targets, indicators and priorities, as these may differ considerably from those of agency staff.

Adoption of a participatory approach does not prohibit the use of more formal, extractive data collection methods such as secondary data, project documentation, questionnaire surveys and formal interviewing. These can complement information gathered through participatory processes or help to validate it. Each method should be selected according to its value in helping to understand the project’s impact.

### **Step 3. Data analysis**

This is usually the most complex and difficult part of the evaluation process. The principal challenge concerns indicators: the use and value of different indicators and developing an analysis from different indicator sets.

*Quantitative and qualitative indicators.* Evaluations usually combine quantitative and qualitative indicators.

Quantitative indicators are widely used to assess progress towards stated targets (e.g., the number of community disaster response teams and their members trained and equipped, the number of hazard-resistant houses built or

public buildings retrofitted and the number of disaster mitigation plans developed and individual actions taken under those plans).

Evaluators can be tempted to place too much reliance upon quantitative data. Numbers alone do not measure quality or effectiveness. For example, knowing the number of people trained in disaster management does not reveal the quality of that training, nor its value when applied to real-life disaster risk reduction. (However, these may have some value as proxy indicators: see below.)

Qualitative indicators are extensively used in DRR evaluations, particularly to demonstrate increased capacity to manage disaster risk. Qualitative data typically comprise stakeholders' views collected through workshops, focus groups and semi-structured interviews (see Table 2). Simple qualitative indicators can give a good impression of progress and achievement, especially if checked on a regular basis.

Participatory methods tend to generate qualitative information. In cases where quantitative data would have been valuable but are not readily available, participatory methods can provide relative data through ranking and comparison. They are also used to assess the take-up and effectiveness of mitigation strategies.

*Baseline data.* Evaluation relies on good baseline data. Creation of baselines is an important element in project design (see Step 1).

A vulnerability and capacity analysis (VCA) should provide good baseline data and guide interventions (see **Guidance Note 9**). A repeat VCA during or after the project should provide evidence about impact. To date, VCA has not been used for evaluation, perhaps because it is still a new technique for many agencies or they consider it expensive.

Although it is impossible to predict all the information that might be needed later, lack of adequate baseline data often presents a problem to evaluators of DRR projects. It may be necessary to reconstruct baselines from project documents, interviews with key informants and data from other organisations (see Box 6). Findings from previous evaluations can also be used, if available.

### Box 6 Reconstructing a baseline

The University of Delaware Disaster Research Center's evaluation of the United States government's Disaster Resistant Communities Initiative ('Project Impact') created a retrospective baseline: an 11-point checklist of possible disaster mitigation actions that could have been taken by the seven pilot communities before the project began. In-depth interviews with key stakeholders and project documentation were then used to form judgements about how much progress was being made during the project. A simple quantitative score was used to assess in which areas mitigation activity was taking place. An increase in the range or type of mitigation activities then became an indicator of progress. This overview was supplemented by more detailed follow-up on the progress of individual activities in each community, and the reasons for this.

Source: Nigg, J.M. et al. *Disaster Resistant Communities Initiative: Evaluation of the Pilot Phase Year 2*. Newark, USA: University of Delaware, Disaster Research Center. Available at: <http://www.udel.edu/DRC/projectreport41.pdf>

*Identifying causality (linking process to impact).* Analysis of the relationship between process (activity and output) indicators and outcome or impact indicators makes it possible to understand cause-effect linkages. This can be difficult, especially where DRR initiatives are complex, comprising a range of structural and non-structural measures.

Process indicators often have to act as proxy indicators of impact for DRR interventions, especially where the hazards concerned are infrequent (e.g., earthquakes). Actions during a project can be used as indicators of potential effectiveness. In a community disaster preparedness project, for example, process indicators might include: recruiting, training and establishing a community disaster management team; organising public meetings to identify threats and the most vulnerable households; building relevant structures; and ongoing evacuation drills. Potential impact may be inferred from different kinds of data (see Box 7).

### Box 7 Indicators of potential DRR impact

An evaluation of a food security project in Cambodia concluded that distribution of 86.8 tonnes of rice seed to 3,750 families in 98 villages, together with the rehabilitation of small-scale irrigation systems, might have a significant positive impact on food security the following year.

The conclusion was not based on distribution figures alone, but drew on more qualitative evidence. In participatory meetings, the target villagers had selected the most vulnerable beneficiary families (the elderly, disabled, those with little or no land or with insufficient rice seed for planting following previous floods). The government's Department of Agriculture, Forestry and Fisheries had provided technical assistance: a market survey of available seed and quality-control testing of potential seed varieties.

Using such evidence, the evaluation was able to make informed assumptions about potential impact on food security the following year.

Source: Tracey, R. *Food Assistance through Small-Scale Infrastructure Rehabilitation*. Geneva: International Federation of Red Cross and Red Crescent Societies/Cambodian Red Cross/European Community Humanitarian Office, unpublished paper.

When using process indicators, evaluators assess the quality of the process and ask what it is leading to. Where project design is based on results-based frameworks of some kind (see Step 1), there should already be a clear hierarchy of indicators, allowing evaluators to form judgements at all levels (activity → output → outcome → impact). At the community level, participatory methods such as impact trees can also be used to identify cause–effect linkages.

*Cross-checking data.* Cross-checking (triangulation) of different data sets and sources is helpful in isolating factors affecting success or failure. This is particularly important for qualitative data collected through stakeholder interviews, where much of the evidence may be individual and subjective. Triangulation of interview data or documents can also reveal differences in partners' aims and expectations. Feedback workshops with stakeholders provide a combined triangulation–validation mechanism, but if these are held towards the end of the evaluation it may be too late for further data collection or cross-checking.

In the field, direct observation is a useful way of identifying discrepancies between what people say and what they do (see Box 8), although evaluators do not always have enough time to do this.

### Box 8 Use of direct observation to cross-check findings

People living on the banks and islands of the Jamuna River in Bangladesh are very vulnerable to floods and erosion. Researchers who asked them about their views of these risks found that a significant proportion explained them as the 'will of god' and saw prayer as the best response. The researchers concluded that the people were largely fatalistic and that their strategies for managing risk were limited.

An anthropologist on the mid-river islands obtained a similar response when using a standard questionnaire. However, when living on the islands during the 1998 floods, she observed that people followed a variety of strategies that had been used for generations. They built platforms out of reeds and banana stalks for their animals, fixed beds below the roofs of their houses, cooked on portable ovens, lived off stocks of food saved from the winter harvest, switched temporarily to other sources of income and referred to their wide networks of relatives.

At the same time, the people expressed their faith in god, interpreting the floods as his way of showing his power and testing their belief. God was thought to have sent the floods, but he also gave believers the strength to survive them.

Source: Schmuck, H. '“An Act of Allah”: Religious Explanations for Flood in Bangladesh as Survival Strategy', *International Journal of Mass Emergencies and Disasters*, 2000, 18(1): 85–95. Available at: [http://www.ijmed.org/PDF\\_Files/March\\_2000.pdf](http://www.ijmed.org/PDF_Files/March_2000.pdf)

*Unforeseen impacts.* Tracking unforeseen impacts is a major methodological challenge. Indicators chosen to verify impact can only identify expected change and will only reflect changes that have been made explicit or agreed by the stakeholders. But M&E systems need to be sensitive to the problem of change that is unexpected, was not agreed by stakeholders or where a particular group did not reveal an area of change that was important to them.

For smaller projects, it may be enough for staff to identify and monitor unexpected impacts as they appear, but more formal methods will be needed in larger and more complex initiatives. Box 9 illustrates one method used to deal with the problem of unforeseen impacts.<sup>5</sup>

### Box 9 Group-based assessment of change

This method, piloted by ActionAid in Vietnam, works without predetermined indicators. By keeping questions as open as possible, it produces unexpected but important information that might have been missed in a more defined evaluation. Representative samples from groups of poor people supported by a project are asked how well the other members have fared during the past year, in particular:

- Which members' households have experienced improvement in their situation, which have experienced deterioration and which have remained in the same condition?
- For households whose situation has improved or deteriorated, how has their situation changed?
- For households whose situation has improved or deteriorated, why has their situation changed?

Individual answers are collated to gain a picture of change within the group. Repeat exercises give a fuller picture of the dynamics of change.

Intended to give a comprehensive picture of local livelihoods, the piloting of the method in Vietnam shed light on vulnerability to hazards by indicating the relative significance of harvest failure due to a recent drought among those households whose situation had deteriorated. The low importance assigned to this factor surprised the facilitators (and was perhaps misleading, since other data from the exercise showed that food production deficits were an important aspect of deterioration).

Source: Smith, W. *Group based assessment of change: method and results 1998. RDA 2 Can Loc district, Ha Tinh province.* Hanoi: ActionAid Vietnam, 1998.

*Control groups.* Some development project evaluations use control groups for comparison. In disaster reduction (and particularly humanitarian response), agencies may be uneasy about studying at-risk groups that the organisation is not attempting to protect. However, this method can be useful. Some evaluations interview community members not involved in projects, though usually to identify reasons for non-participation. Talking to groups that have dropped out of a project can also provide valuable information about the way the project was implemented.

The University of Delaware Disaster Research Center's evaluations of Project Impact (see Box 6) held focus group interviews with members of communities that had joined the scheme and those that were not involved, to find out if experiences and approaches used in the seven pilot initiatives would be transferable without substantial government seed funding.

*Beneficiaries.* The importance of identifying who benefits from a DRR initiative cannot be overemphasised. Evaluators should not assume that benefits are spread evenly across a community. They should assess the socio-economic characteristics of beneficiary communities, considering gender issues and people who are vulnerable due to other factors such as ethnicity, age and disability.

Considerable guidance is now available on incorporating gender aspects into risk and vulnerability analysis and project planning. However, tools for evaluating gender-specific outcomes of disaster reduction actions are not widely available.<sup>6</sup>

<sup>5</sup> Approaches such as this, without predefined indicators, are becoming more widely used. One of the best developed is the 'Most Significant Change' method: see Davies, R. and Dart, J. *The 'Most Significant Change' (MSC) Technique: A Guide to its Use.* Cambridge: privately published, 2005. Available at: <http://www.mande.co.uk/docs/MSCGuide.htm>

<sup>6</sup> One potentially useful tool is the 'Gender equality results and indicators for disaster-related programmes' indicator framework, developed recently by an evaluation team: Gander, C. et al., 'Evaluation of PAHO's Disaster Preparedness Programme in Latin America and the Caribbean' (London: Department for International Development (UK), unpublished evaluation report), reproduced in Benson and Twigg (2001), pp 124–125.

Evaluators should not be content with limited indicators of activity – for example, the number of women taking part in project activities such as emergency preparedness training – as evidence of greater gender equity in DRR.

*Sustainability.* It may be difficult to judge the probability of a project's long-term sustainability and replication during its lifetime, but this can be inferred from other evidence. As in the development sector, DRR initiatives are more likely to be sustainable where extensive time and effort have gone into preparatory work with communities, partners and other local and national stakeholders. Another indicator that has been used is the level of stakeholder contributions of financial and other resources to the project, on the assumption that sustainability is linked to the degree of local ownership.

In community-based projects, the strength of community organisation is the central factor. Evaluations often place great emphasis on creation or revival of local groups such as disaster management committees. But the mere existence of such groups is a weak indicator of their capacity to manage risk and attitudinal analysis may only demonstrate short-term enthusiasm. Therefore, evidence of group activity should be collected (e.g., risk assessments, preparation of emergency plans, purchase of equipment, building of mitigation structures such as embankments). The frequency, nature and quality of such activities and the degree of community involvement can be monitored and evaluated internally or by outsiders.

Evaluators should consider external factors that may affect sustainability, such as changes in official policy or funding regimes, staff turnover and economic downturns.

*Structures, systems and organisations.* Most M&E methods address relatively discrete or small-scale projects, but larger-scale (e.g., national-level or system-wide) interventions also have a vital role in DRR. Evaluation of national and other higher-level DRR systems requires a comprehensive perspective covering policy and institutions as well as practice (see Table 1). It also needs to consider the roles of different actors in DRR: national and local government, the private sector, civil society and inter-governmental and regional institutions.

Methodological guidance on assessment in these contexts is limited and there is little documented evaluation experience, making it difficult to specify good practice. However, a few methods have been developed recently to assess national-level progress in DRR and to help set goals and targets (see Further reading). National-level risk and vulnerability indices (see **Guidance Note 4**) can also be used here.

The processes by which DRR might be effectively 'mainstreamed' into development organisations' policy and practice are not well understood, although some promising assessment tools have appeared recently (see Further reading). A broad perspective is required, which will probably cover the following areas of an organisation's work:

- Policies
- Strategies or business plans
- Operational guidelines for planning and implementing projects and for running the organisation itself
- Geographical and sectoral plans
- Programme and project design and proposals
- Organisational structures, systems and capacities
- External relations

#### **Step 4. Application of findings**

Evaluation reports are potentially valuable documents: they enable practical lessons to be learned and applied, provide a basis for discussion about better practice and policy, feed into strategic planning and build up institutional memory. Willingness to learn from experience is essential. Evaluation should be embedded within an organisation's systems and regular practice to ensure that learning takes place.

## Box 10 Institutional take-up of evaluation findings

An evaluation in 2003–2004 of the Inter-American Development Bank's policy and operational experience related to natural disasters demonstrated disasters' significant impact on development prospects, which was not adequately addressed by the countries concerned, while the Bank's own approach was largely reactive to events. The evaluation's findings stimulated the development of a four-year action plan (2005–2008) for improving the Bank's disaster risk management, based on new approaches to country programming and business management; changes to policies, procedures and financial products; and an organisational approach focusing on pre-disaster risk reduction. Making the plan a reality has required securing the support of senior management, obtaining financing and resources and engaging technical staff in the process.

Source: Clarke, C.L. *From Evaluation to a Renewed Business Model: The IDB Experience. Presentation to 'Disaster Risk Management: Conference on Taking Lessons from Evaluation and Evaluators' Roundtable*. Paris, 20–21 November 2006. Available at: [http://www.worldbank.org/ieg/naturaldisasters/paris/presentations/IADB\\_Clarke.pdf](http://www.worldbank.org/ieg/naturaldisasters/paris/presentations/IADB_Clarke.pdf)

The evaluation process should be as open as possible and the results made widely available. Feeding findings back to all project stakeholders before reports are submitted allows for discussion and clarification. Participatory evaluations that create ownership of the final product among stakeholders increase the likelihood that lessons will be acted upon.

Reviews of collected individual evaluations can identify salient lessons and themes that are more widely applicable in policy and operations (see Box 11). In some cases, joint reviews by agencies might be carried out to encourage mutual learning, knowledge sharing and transparency.

## Box 11 Wider lesson-learning

An International Federation of Red Cross and Red Crescent Societies (IFRC) review in 1999 drew on evaluations of disaster preparedness programmes in three continents to generate lessons relating to six issues: appropriateness of a regional approach; integration with other activities; partnerships and capacity building; programme communication; impact and issues concerning disaster preparedness delegates; and volunteers. These issues appeared in all or most of the programmes evaluated and echoed findings in the IFRC's international strategy. The review therefore assisted reflection on strategy within the IFRC.

In 2006, the World Bank's Independent Evaluation Group published a comprehensive evaluation of the Bank's assistance to countries affected by natural disasters. Based on analysis of 528 projects since 1984, the evaluation made numerous recommendations relating to the nature and effectiveness of the Bank's response to disasters, the integration of risk management into development strategies and internal and external coordination.

Sources: Mitchell, J. *Learning from the Past: a look back at evaluations and reviews of disaster preparedness programmes*. Geneva: IFRC, unpublished paper, 1999; World Bank. *Hazards of Nature, Risks to Development: An IEG Evaluation of World Bank Assistance for Natural Disasters*. Washington, DC: World Bank, Independent Evaluation Group, 2006. Available at: [http://www.worldbank.org/ieg/naturaldisasters/docs/natural\\_disasters\\_evaluation.pdf](http://www.worldbank.org/ieg/naturaldisasters/docs/natural_disasters_evaluation.pdf)

## 3. Critical factors for success

- Realistic and practical planning, with clear aims and objectives.
- Adequate resources (time, personnel and budget) allocated to M&E in project planning.
- Use of a mix of data collection methods that are appropriate to the project and the aims of the evaluation.
- Involvement of key stakeholders, especially beneficiaries, in evaluation – as genuine participants in the process, not merely providers of information.
- Identification and selection of relevant indicators, which demonstrate impact as well as cause–effect relationships between project processes (activities and outputs), outcomes and impact.
- Recognition that project benefits may not be shared equally; identification of impacts on different sections of the community.
- Application of lessons learned to improve practice and policy.
- Transparency in the process, and sharing of findings with other stakeholders.

## Box 12 Hazard and disaster terminology

It is widely acknowledged within the disaster community that hazard and disaster terminology are used inconsistently across the sector, reflecting the involvement of practitioners and researchers from a wide range of disciplines. Key terms are used as follows for the purpose of this guidance note series:

A *natural hazard* is a geophysical, atmospheric or hydrological event (e.g., earthquake, landslide, tsunami, windstorm, wave or surge, flood or drought) that has the potential to cause harm or loss.

*Vulnerability* is the potential to suffer harm or loss, related to the capacity to anticipate a hazard, cope with it, resist it and recover from its impact. Both vulnerability and its antithesis, *resilience*, are determined by physical, environmental, social, economic, political, cultural and institutional factors.

A *disaster* is the occurrence of an extreme hazard event that impacts on vulnerable communities causing substantial damage, disruption and possible casualties, and leaving the affected communities unable to function normally without outside assistance.

*Disaster risk* is a function of the characteristics and frequency of hazards experienced in a specified location, the nature of the elements at risk and their inherent degree of vulnerability or resilience.<sup>7</sup>

*Mitigation* is any structural (physical) and non-structural (e.g., land use planning, public education) measure undertaken to minimise the adverse impact of potential natural hazard events.

*Preparedness* is activities and measures taken before hazard events occur to forecast and warn against them, evacuate people and property when they threaten and ensure effective response (e.g., stockpiling food supplies).

*Relief, rehabilitation and reconstruction* are any measures undertaken in the aftermath of a disaster to, respectively, save lives and address immediate humanitarian needs; restore normal activities; and restore physical infrastructure and services.

*Climate change* is a statistically significant change in measurements of either the mean state or the variability of the climate for a place or region over an extended period of time, either directly or indirectly due to the impact of human activity on the composition of the global atmosphere or due to natural variability.

## Further reading

### Monitoring and evaluating disaster risk reduction

Benson, C. and Twigg, J. *Measuring Mitigation: Methodologies for assessing natural hazard risks and the net benefits of mitigation – a scoping study*. Geneva: ProVention Consortium, 2001. Available at: [http://www.proventionconsortium.org/mainstreaming\\_tools](http://www.proventionconsortium.org/mainstreaming_tools)

ProVention Consortium. *Risk Reduction Indicators*. TRIAMS Working Paper. Geneva: ProVention Consortium, 2006. Available at: [http://www.proventionconsortium.org/themes/default/pdfs/TRIAMS\\_full\\_paper.pdf](http://www.proventionconsortium.org/themes/default/pdfs/TRIAMS_full_paper.pdf)

ProVention Consortium: Details of the Consortium's forthcoming *Monitoring and Evaluation Sourcebook* will be posted on its Tools for Mainstreaming Disaster Risk Reduction web page: [http://www.proventionconsortium.org/M&E\\_sourcebook](http://www.proventionconsortium.org/M&E_sourcebook)

Twigg, J. *Disaster Risk Reduction: mitigation and preparedness in development and emergency programming*. Good Practice Review no.9. London: Overseas Development Institute, Humanitarian Practice Network, 2001. Available at: <http://www.odihpn.org/publist.asp>

World Bank. *Hazards of Nature, Risks to Development: An IEG Evaluation of World Bank Assistance for Natural Disasters*. Washington, DC: World Bank, Independent Evaluation Group, 2006. Available at: [http://www.worldbank.org/ieg/naturaldisasters/docs/natural\\_disasters\\_evaluation.pdf](http://www.worldbank.org/ieg/naturaldisasters/docs/natural_disasters_evaluation.pdf)

### Tools for evaluating national-level DRR systems

Mitchell, T. *An Operational Framework for Mainstreaming Disaster Risk Reduction*. London: Benfield UCL Hazard Research Centre, 2003. Available at: [http://www.benfieldhrc.org/disaster\\_studies/working\\_papers/workingpaper8.pdf](http://www.benfieldhrc.org/disaster_studies/working_papers/workingpaper8.pdf)

<sup>7</sup> The term 'disaster risk' is used in place of the more accurate term 'hazard risk' in this series of guidance notes because 'disaster risk' is the term favoured by the disaster reduction community.

World Bank. *Natural Hazard Risk Management in the Caribbean: Revisiting the Challenge*. Report no. 24166, vol. 1. Washington, DC: World Bank, Caribbean Country Management Unit, 2002. Available at: <http://www.worldbank.org>

World Bank. *Natural Hazard Risk Management in the Caribbean: Good Practices and Country Case Studies. Technical Annex*. Report no. 24166, vol. 2. Washington, DC: World Bank, Caribbean Country Management Unit, 2002. Available at: <http://www.worldbank.org>

#### **Tools for assessing DRR mainstreaming in organisations**

IFRC. *Characteristics of a Well-Prepared National Society*. Geneva: International Federation of Red Cross and Red Crescent Societies, 2001. Available at: [http://www.ifrc.org/docs/pubs/disasters/Checklist\\_WPNS.pdf](http://www.ifrc.org/docs/pubs/disasters/Checklist_WPNS.pdf)

La Trobe, S. and Davis, I. *Mainstreaming disaster risk reduction: a tool for development organisations*. Teddington, UK: Tearfund, 2005. Available at: <http://tilz.tearfund.org/Research/Climate+change+and+disasters+policy>

Wamsler, C. *Operational Framework for Integrating Risk Reduction for Aid Organisations working in Human Settlement Development*. London/Lund, Sweden: Benfield Hazard Research Centre/Lund University, Housing Development and Management, 2006. Available at: [http://www.benfieldhrc.org/disaster\\_studies/working\\_papers/workingpaper14.pdf](http://www.benfieldhrc.org/disaster_studies/working_papers/workingpaper14.pdf)

#### **Gender issues in DRR**

Enarson, E. et al. *Working with Women at Risk: Practical guidelines for assessing local disaster risk*. Miami, USA: Florida International University; International Hurricane Research Center, 2003. Available at: <http://www.ihrc.fiu.edu/lssr/workingwith-women.pdf>

#### **Monitoring and evaluating development**

Gosling, L. *Toolkits: A practical guide to planning, monitoring, evaluation and impact assessment*. London: Save the Children, 2003.

OECD-DAC. *Principles for Evaluation of Development Assistance*. Paris: Organisation for Economic Co-operation and Development, Development Assistance Committee, 1991. Available at: <http://www.oecd.org/dataoecd/21/41/35343400.pdf>

Roche, C. *Impact Assessment for Development Agencies: Learning to Value Change*. Oxford: Oxfam/Novib, 1999.

#### **Monitoring and evaluating humanitarian assistance**

Active Learning Network for Accountability and Performance in Humanitarian Action (ALNAP) website: <http://www.alnap.org/index.html>

Hallam, A. *Evaluating Humanitarian Assistance Programmes in Complex Emergencies*. Good Practice Review no. 7. London: Overseas Development Institute, Humanitarian Practice Network, 1998. Available at: <http://www.odihpn.org/publist.asp>

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*Tools for Mainstreaming Disaster Risk Reduction* is a series of 14 guidance notes produced by the ProVention Consortium for use by development organisations in adapting project appraisal and evaluation tools to mainstream disaster risk reduction into their development work in hazard-prone countries. The series covers the following subjects: (1) Introduction; (2) Collecting and using information on natural hazards; (3) Poverty reduction strategies; (4) Country programming; (5) Project cycle management; (6) Logical and results-based frameworks; (7) Environmental assessment; (8) Economic analysis; (9) Vulnerability and capacity analysis; (10) Sustainable livelihoods approaches; (11) Social impact assessment; (12) Construction design, building standards and site selection; (13) Evaluating disaster risk reduction initiatives; and (14) Budget support. The full series, together with a background scoping study by Charlotte Benson and John Twigg on *Measuring Mitigation: Methodologies for assessing natural hazard risks and the net benefits of mitigation*, is available at [http://www.proventionconsortium.org/mainstreaming\\_tools](http://www.proventionconsortium.org/mainstreaming_tools)



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