

Disaster Risk Management in East Asia and the Pacific

MONITORING AND EVALUATION IN DISASTER RISK MANAGEMENT

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This knowledge note addresses the importance of quality monitoring and evaluation in the disaster context. It provides an overview of how each can be used differently in the ex ante and ex post disaster scenarios. Finally, general guidance is given on how to construct a logical framework for evaluating disaster risk management projects by presenting best practices from three recent projects.

INTEGRATING MONITORING AND EVALUATION INTO THE PROJECT CYCLE

Monitoring and evaluation (M&E) are complementary systems that allow project managers to assess the progress and impact of program activities. Monitoring, or process evaluation, is the routine observation and assessment of ongoing activities, focusing on project inputs, activities, and outputs. In contrast, impact evaluation is used strictly to gauge the final welfare outcome for project beneficiaries, and subsequently for appraising the effectiveness and efficiency of interventions. In M&E, the output of a project is the product, while the outcomes are the effects or changes as a result of the output. An example of this relationship would be monitoring the output of restoring a water supply system versus evaluating how many people had improved access to water.

Monitoring and evaluation perform best when integrated into the project cycle, rather than being independent exercises. Mid-implementation changes in program targeting, timeline, or activities could require modifications to the impact evaluation, and consistent monitoring will alert the Task Team Leader (TTL) or lead evaluator if this is required.

Ideally, an intervention and its M&E system should have a testable and clearly stated hypothesis that answers the questions of what needs to be monitored, which indicators should be chosen, and what data needs to be collected, by whom, and at what intervals. There are ten basic steps to building a results-based monitoring and evaluation system.

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The most critical steps are establishing the indicators and baseline information to be used in the performance framework. All project participants need to agree on the desired performance outcomes and the indicators that will be measured to gage the impacts of program interventions. It is important that indicators emphasize real, measurable changes in the lives of beneficiaries. As identified in results-based frameworks for project design, indicators are the objective measures used to demonstrate progress in relation to the project objective. At times when the direct measurement of change is not possible, proxy indicators may be used to represent or approximate changes.

Box 1. Ten Steps to Build a Results-Based M&E System

1. Conduct a readiness assessment of participants
2. Agree on performance outcomes to monitor and evaluate
3. Select key indicators
4. Gather baseline data
5. Set realistic interim targets
6. Build a monitoring system
7. Use evaluation information
8. Report findings
9. Use findings
10. Sustain the M&E system within the organization

Source: Morra-Imas and Rist (2009).

In Disaster risk management (DRM) activities, indicators should reflect the actions taken to reduce vulnerability and losses, whether through ex ante preparedness or ex post recovery. When selecting the type of indicators, qualitative or quantitative, the decision depends on the type of data that is available. If both are available, a combination may be the best way to provide a comprehensive view of critical issues. Quantitative measurements in DRM could include such indicators as the number of buildings retrofitted against seismic threat or the number of disaster responders trained. While helpful at creating a quick and easily measured picture, quantitative measures do not discuss the quality or depth of the activity. Qualitative indicators, such as the stakeholders' assessment of a workshop or activi-

ties, are much more effective in describing the quality of program activities, which are valuable when assessing the methodology of program activities. Additionally, asking beneficiaries to compare their situation ex ante and ex post, known as perception indicators, can be very helpful in the design of other projects through the transmission of lessons learned.

When selecting indicators, evaluators must keep in mind that the development of a perfect system should not stand in the way of an operationally effective system. The most appropriate monitoring system depends on the level of development in the country, the size of the disaster, the number of major players involved in program spending, the quality of their own reporting, and existing capacity of the agencies tasked with the monitoring and evaluating role. Despite this, practitioners should strive to build rigorous M&E systems focusing on outcomes rather than outputs.

When building a quality M&E system with long range objectives, it is important to set realistic interim targets. Disaster risk reduction (DRR) focuses on reducing vulnerability, and this is a complex, long term goal. Establishing quantifiable interim targets allows project evaluators to determine if progress is on track. With the performance framework established, the next step is to monitor implementation and results relative to indicators, targets, and outcomes.

As a final note on general M&E system design, it is important to incorporate counterfactual analysis, or a control group that demonstrates what would have happened to the beneficiaries without the intervention. This can be not only difficult but expensive in disaster-related projects, due to the inherent desire to include all vulnerable groups in risk reduction and recovery; nevertheless, it is an important element to creating an argument for causation. One possibility for counterfactual analysis would be to consider typically underserved groups as an informal control group.

M&E OF EX ANTE RISK REDUCTION EFFORTS

Disaster risk actions fall into two categories. Ex ante actions are those which are carried out prior to any disas-

ter to reduce risk. The other category, *ex post*, is those carried out after a disaster strikes, designed to recover from the impacts, as well as reduce future vulnerability.

The collection of decent quality statistics in the absence of a natural disaster provides a baseline for not only post disaster programs, but all development activities. This information will increase the capacity of implementing agencies to evaluate the most effective methods to reduce risk in hazard-prone areas. *Ex ante* disaster preparedness programs may be independent or imbedded in a larger development program.

The Second Northern Mountains Poverty Reduction Project (NMPRP-2), in Vietnam, is an example of a recent World Bank-financed project that incorporates DRM in the design of infrastructure investments. The development objective of NMPRP-2 is to enhance the living standards of project beneficiaries through improved access to infrastructure, institutional capacity of governments and communities, and business innovations. Recognizing that the project area and local livelihoods are highly vulnerable to the impacts of landslides, flash floods, and severe cold weather, key stakeholders will be trained in the application of disaster risk management concepts. The following information describing the evaluation of the DRM components is drawn from the NMPRP-2 Project Appraisal Document (PAD).

The M&E system for NMPRP-2 was modeled after the broadly successful NMPRP-1 program. Regular monitoring will be done through a project-specific management information system linked directly to the Government of Vietnam's quarterly monitoring system of development projects. Qualified M&E staff will be incorporated into the management offices at the district, provincial, and central levels to manage the project M&E system and ensure timely reporting on outputs and outcomes.

Counterfactual analysis is incorporated into the evaluation of project outcomes and impact evaluations through a randomized sample baseline and an end-of-project survey that includes a control group of non-treatment villages.

Qualitative data collection and participatory monitoring methods will also be used in the monitoring of

project results. This includes the application of citizen report card methods at the mid-term and final project review, a "most significant change" model to track groups of beneficiaries (one group per district) over the course of the project, and the use of photo stories to record community-level results.

The project monitoring website will be managed from the central level, and the Ministry of Planning and Investment will contract with an independent monitoring agent to conduct specialized studies and surveys to closely monitor the intermediate results of the pilot livelihoods activities and to rapidly assess project implementation and outcome issues.

Box 2. Sample Ex Ante DRM Indicators

Second Northern Mountains Poverty Reduction Project

- At least 60 percent of villages and communes have natural disaster mitigation plans and implement readiness exercises on an annual basis.

National Cyclone Risk Mitigation Project

- Proportion (%) of targeted coastal population covered by the Early Warning Dissemination System
- Proportion (%) of people having access to emergency shelter
- Number of people and hectares of land protected by strengthened and improved embankments
- Increased awareness about warnings and emergency response.

The DRM-relevant indicators for NMPRP-2 may be found in Box 2, along with indicators for the *ex ante* specific project, the Indian National Cyclone Risk Mitigation Project (NCRMP). The project development objective of the latter is to reduce the vulnerability of communities to hydro meteorological hazards such as cyclones. NCRMP will be developed in three stages, with the first focusing on coastal communities in Andhra Pradesh and Orissa.

A Management Information System (MIS) is being developed to provide regular updates on the project status between the National Disaster Management Authority and the state level implementation units. The MIS will allow the implementing agencies to consolidate imple-

mentation and feedback data in the field, and will be complemented by a third party quality auditor.

In ex ante projects that are not followed by a disaster, the results of risk reduction may not be directly observable. Simple proxy indicators related to the project may therefore be the easiest way to measure “reduced risk” or “increased preparedness.” In the case of the National Cyclone Risk Mitigation Project, many of the sample indicators are proxies for increased disaster preparedness.

M&E OF DISASTER RECOVERY

After a disaster and corresponding rapid response activities, some governments conduct an assessment of damage, loss, and needs. This government-led activity, known as a Post Disaster Needs Assessment (PDNA), may provide a timely baseline for recovery activities. Typically performed two to four weeks post disaster, PDNAs collect data for the impacted sectors and assess what is needed to bring those sectors back to pre-disaster levels. The Government of Haiti recently used the 2010 Earthquake PDNA to produce the Action Plan for National Recovery and Development of Haiti. As outlined in the Emergency Development Policy Operation document, the PDNA informed the four pillars of long term recovery: territorial, economic, social, and institutional rebuilding.

Immediately after a disaster, participatory planning among stakeholders to establish priority areas, monitoring responsibilities, and program indicators can help communities reduce the impact of natural hazards. The capacity of a country largely defines the type and level of monitoring and evaluation undertaken in disaster-related activities. Large scale disasters may overwhelm in-country systems for recovery and management.

After the 2004 tsunami that affected large proportions of Indonesia and Sri Lanka, separate reconstruction agencies were established with the purpose of coordinating and monitoring the reconstruction implementation undertaken by government line agencies and NGOs. In Aceh and Nias, the post tsunami reconstruction was successfully monitored through the collection and communication of results at three-month intervals for the first two years. In this case, relatively low tech, labor

Box 3. Sample Ex Post DRM Indicators from the Community-Based Settlement Rehabilitation and Reconstruction Project (CBSRRP) in Yogyakarta

Key Outcome Indicators

- At least 80 percent of the houses were occupied by project completion
- Beneficiaries' (men and women) stated satisfaction with reconstructed housing
- Beneficiaries' (men and women) stated satisfaction with community infrastructure.

Output Indicators

- Number of completed houses meets satisfactory seismic-resistant standards
- Number of households living in seismic-resistant, community-built permanent housing
- Percentage of target villages that have restored basic community infrastructure.

Intermediate Indicators

- Percentage of roof structures conforming to pre-agreed specifications
- Number of trained Housing Task Force teams operational in target villages
- Percentage of community surveys and group implementation plans completed
- Number of housing groups (KPs) formed in line with requirements of the guidelines
- Number of grants disbursed for housing reconstruction
- Percentage of houses using legal timber
- Percentage of community settlement plans (CSPs) prepared in line with the guidelines
- Percentage of infrastructure proposals approved
- Number of emergency preparedness projects implemented
- Level of beneficiaries' (men and women) awareness of entitlements and project processes
- Number of trained Housing Task Force teams mobilized
- Number of construction training programs carried out
- Percentage of complaints resolved within three months.

intensive data collection and analysis based on a robust methodology was shown to be superior to technologically advanced information systems based on self-entry.

Information sharing and lessons learned related to the post tsunami reconstruction of Aceh, Indonesia (2005) contributed to the successful and timely reconstruction of Yogyakarta a year later using similar M&E methodology. Following the 2006 earthquake in Yogyakarta, Indonesia, the government drove recovery and reconstruction efforts through the establishment of standards and interagency coordination. One of the main advantages in Yogyakarta was having a set of trained agency staff and a wide range of partners actively thinking about reconstruction and recovery issues following Aceh. While the direct lesson might not be easily replicable, it allows us to think about ways to rapidly scale up staff and community capacities and establish effective partnerships, and highlights the importance of new DRM interventions drawing on previous experience. The value of such assets was well proven in Yogyakarta's rapid recovery: over 100,000 houses and key infrastructure were built in one year. Monitoring and evaluation was carried out at the village and program level, using facilitators and an electronic format for the entire process; it led to a 90 percent satisfaction level among beneficiaries. This high satisfaction level was largely due to the fact that stakeholders found the reports and other outputs to be useful for their own activities.

The Community-Based Settlement Rehabilitation and Reconstruction Project (CBSRRP) PAD for Yogyakarta specified key outcome indicators, as well as general output and intermediate indicators which would be used to evaluate project progress. A list of sample indicators may be found in Box 4. Each indicator was paired with annual targets for a period of three years. The PAD clearly delineated the agency responsible for monitoring each indicator, and the source for information.

Quantitative and qualitative assessments were used together very effectively to perform post Nargis impact monitoring in Myanmar in 2008. The initial evaluation took place immediately through Village Tract Assessments (VTA) and PDNA (ECLAC methodology), designed to deliver a clear, comprehensive, and objective picture of immediate needs. Social Impact Monitoring was integrated for the first time into the post disaster damage and loss assessment in this context, with the aim of assessing the social impacts of the disaster and

Box 4. Existing DRM Indicators for Impact Evaluation

How can we measure progress? A wide range of indicators is available for risk evaluation. Below are several initiatives that highlight impact evaluation of DRM projects:

- The World Bank Independent Evaluation Group's Hazards of Risk, Risks to Development: An IEG Evaluation of World Bank Assistance for Natural Disasters (2006) <http://go.worldbank.org/DY788B9DVO>
- The United Nations' International Strategy for Disaster Reduction (UNISDR) has produced a guide to using the Hyogo Framework for Action as a tool to measure progress in disaster risk reduction (2008). www.preventionweb.net/english/professional/publications/v.php?id=2259
- The ProVention Consortium commissioned work on the Tsunami Recovery Impact Assessment and Monitoring System (TRIAMS) (2006). www.proventionconsortium.org/?pageid=32&projectid=25

Additional DRM M&E Web Resources

- The Active Learning Network for Accountability and Performance in Humanitarian Action (ALNAP) is dedicated to improving humanitarian performance through increased learning and accountability. www.alnap.org
- The Good Enough Guide, created by the Emergency Capacity Building Project (ECBP), offers general guidelines on how to be accountable to local people and measure program impact in emergency situations. www.ecbproject.org/goodenoughguide
- The XCeval listserv was established for the exchange of ideas associated with international and cross-cultural evaluation <http://dir.groups.yahoo.com/group/XCeval/?v=1&t=directory&ch=web&pub=groups&sec=dir&slk=6>
- The Humanitarian Impact Studies sponsored by the Fritz Institute are good examples of broader situational evaluations to understand how communities become safer over time. This approach allows for a better understanding of how the real world operates, especially in a disaster risk management setting where isolating causality is very difficult. www.fritzinstitute.org/prgHumanitarianImpact.htm

determining how key dimensions of village life changed six months ex post. In-depth qualitative fieldwork was conducted in more than 40 villages over the course of

one month. These qualitative assessments, used later in the recovery period, helped to form a more holistic view of how disaster, recovery aid, and local responses are shaping the social aspects of village life.

IMPLICATIONS FOR FUTURE APPLICATION

Monitoring and evaluation are invaluable to agencies working to reduce the impacts of disasters. They allow implementing agencies the ability to orient their projects and deduce whether these projects are reaching the established goals. When designing a risk reduction or recovery project, there are several key things to keep in mind.

First, coordination between stakeholders to determine baselines and indicators will establish a foundation for program activities. This early synchronization of indicators and coordination will allow for the comparison and aggregation of information, reducing overall information collection costs. Indicators should demonstrate effectiveness, efficiency, and impact. Disaster risk management (DRM) programs tend to have long term horizons, yet many practitioners tend to evaluate too early to see a real impact. It is helpful to set realistic interim goals, so that all stakeholders have a clear vision of project development yet evaluate long term impacts of disaster preparedness and recovery.

Second, participation from all stakeholders, ranging from governments, donors, beneficiaries, and implementing agencies will improve the quality of monitoring and evaluation. Governments and other stakeholders must demonstrate that they are ready to participate in the design and fulfillment of a comprehensive M&E program. Understanding the level of involvement from government and other stakeholders may help practitioners determine whether to design a consultant-driven, dedicated M&E system or one that is more institutionalized and would build medium term capacity.

Finally, during and after a project, it is important to share lessons learned and contribute to global knowledge and capacity in the area of disaster risk reduction. Sharing information throughout the process can lead to higher levels of stakeholder satisfaction, as the outputs

can be used to improve the program and other related activities. There are many different venues for practitioners to share evaluations and lessons.

One of the methods for evaluating World Bank operations is through the Independent Evaluation Group (IEG). Reporting directly to the World Bank Group's Board of Directors, the IEG is an independent unit that assesses what works, what does not, and the lasting contribution of the World Bank Group to the overall development of a country (<http://www.worldbank.org/ieg/>).

Internal to the World Bank, Task Team Leaders may share and find evaluation information for projects through individual Project Appraisal Documents in the Operations Portal (<http://go.worldbank.org/GX-Y6NXX1J0>). All of the relevant project documents mentioned in this note are available in the Operations Portal.

At the project level, some DRM projects have chosen to operate independent websites, making indicators and project information open to donors, stakeholders, and the general public. The Yogyakarta CBSRRP program created a website in the local language devoted to project activities, including monitoring (www.rekompakjrf.org).

END NOTES

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