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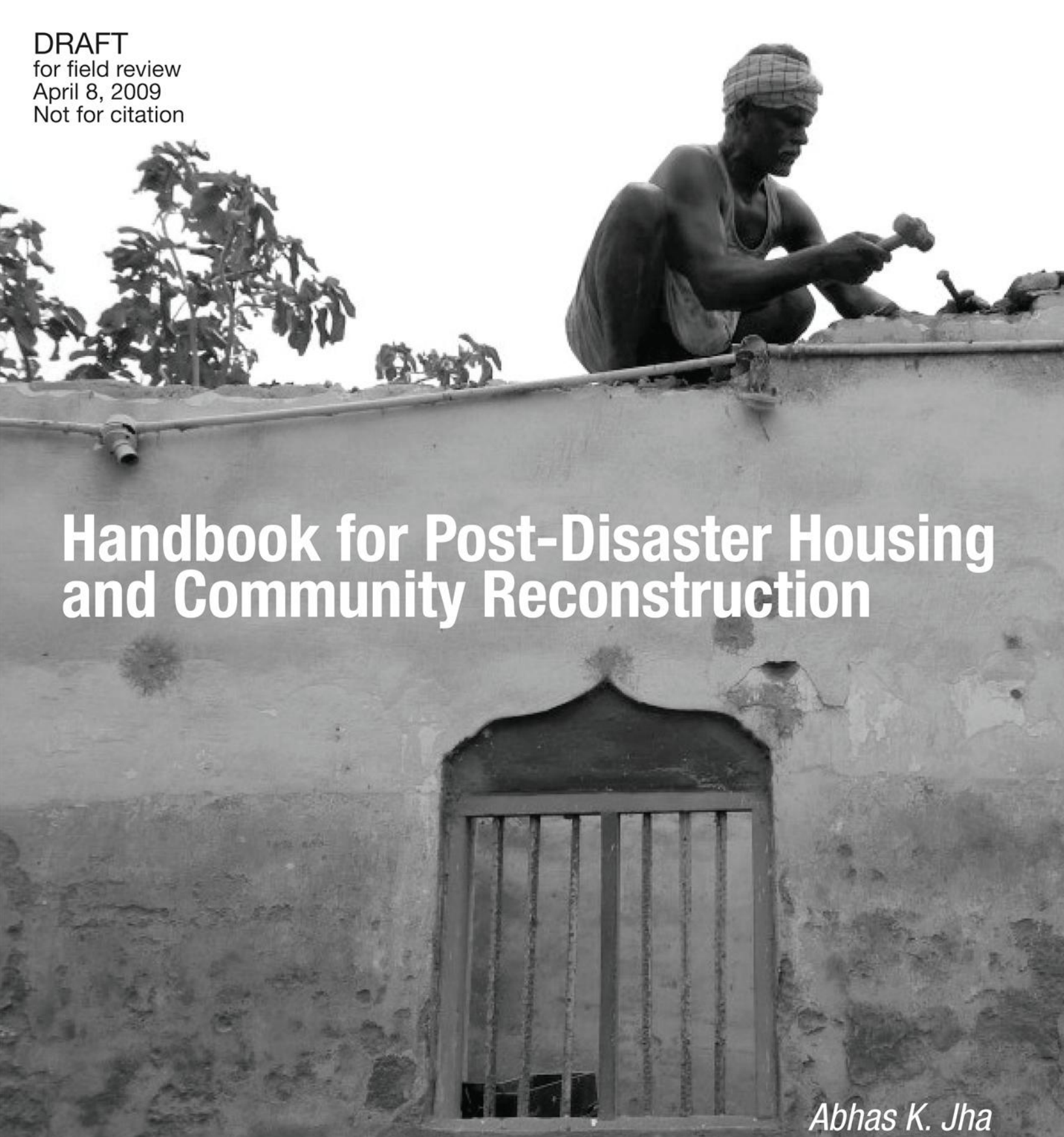

Handbook for Post-Disaster Housing and Community Reconstruction

Abhas K. Jha

International Strategy for Disaster Reduction

Global Facility for Disaster Reduction and Recovery

THE WORLD BANK

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Handbook for Housing and Community Reconstruction

[Field Guide]

[Note: The Field Guide will published with the handbook as a brief guide to key decisions and solutions in housing and community reconstruction with references to the handbook]

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Guiding Principles

Principle 1: Don't Just Reconstruct Houses, Reactivate Communities.

Housing reconstruction is key to disaster recovery, but it must be responsive to the fact that households and communities are economic and social systems, not just occupiers of physical spaces. In planning and implementing reconstruction, capitalize on the linkages between restoration of the built environment and social recovery, livelihoods reactivation, environmental restoration, and strengthening of institutional and community capacities.

Principle 2: Put Owners in Charge of Reconstruction and Address Needs of Tenants and Squatters.

Owners are almost always the best managers of their own housing reconstruction; they know how they live and what they need. In planning reconstruction, be responsive to differences in building culture, and include mechanisms that ensure availability of materials and the safety and quality of construction methods. But remember that not all affected people are owners; so make sure assistance policies also address the situation of landlords, tenants, and squatters.

Principle 3: Provide an Effective Organizational Structure.

Best practice is to pre-plan reconstruction management and work through existing government structures, but where government is weak or unprepared, or the scale of the disaster demands it, create a new dedicated agency. In either case, ensure that line ministries and departments are not sidelined in the process. The lead agency needs to coordinate policy decisions and establish a working environment in which local, national, and international agencies can effectively coordinate their responses.

Principle 4: Use Reconstruction to Rethink the Future and Conserve the Past.

What has been built over centuries cannot be replaced in a few months. Take time to design or update land use and physical plans, and use the planning process and stakeholder input to set local economic and social development goals, to identify cultural assets for conservation, and to envision more sustainable post-disaster settlements. Update development regulations to reduce vulnerability and, where informal tenure is prevalent, incorporate and regularize extralegal land uses and work to improve land administration systems.

Principle 5: Collaborate with Communities Rather than Just Inviting Their Participation.

People affected by a disaster are not victims; they are first responders during the emergency and the most critical partners in reconstruction. Collaborating with the community in reconstruction allows its members to realize their aspirations and contribute their knowledge and skills. It also assists psychosocial recovery, helps reestablish social cohesion, and increases the likelihood of satisfaction with the results.

Principle 6: Promote Civil Society Engagement Consistent with Reconstruction Policy.

The contribution of civil society and the private sector to reconstruction can be underestimated. Besides managing core programs, nongovernmental entities may also provide technical

guidance, advocate for the vulnerable, or finance activities government cannot afford. Government should encourage these initiatives and participate as a partner, while requiring accountability and consistency with reconstruction policies and goals.

Principle 7: Use Assessment and Monitoring to Improve Reconstruction Outcomes.

Avoid a perfunctory approach to assessment and monitoring; instead use them both to improve the effectiveness of reconstruction interventions. Don't conduct unnecessary assessments, and share assessment data and analyses with others. Let the community lead the assessment and define desired outcomes, and involve the community in the monitoring process. Monitor results, not just outflows, both immediately and over time.

Principle 8: Use Reconstruction to Mobilize Disaster Risk Management Policy Reform.

Safe rebuilding is a combined effort requiring political will and technical expertise. Use the expertise gathered for disaster recovery and the international focus on the disaster to promote the establishment or updating of building codes, zoning and land use regulations, and disaster management plans. Ensure vulnerability is not rebuilt by educating builders and creatively adapting vernacular building methods and materials.

Principle 9: Manage Financial Resources and Stabilize Family Finances.

Housing can attract enormous quantities of reconstruction funding, which must be allocated fairly and managed and monitored carefully. But unless households reestablish financial stability, reconstruction will stall when official assistance tapers off. Therefore, simultaneously resolve the need for careful management of government reconstruction funds and the financial requirements of families. Establish broad controls to minimize corruption.

Principle 10: Avoid Relocation or Mitigate All Its Impacts.

Avoid community relocation unless it is essential for safety. If unavoidable, carefully select sites using a participatory process, and provide sufficient budget support to mitigate social and economic impacts.

Principle 11: Avoid Sacrificing Hard-Won Policies to Facilitate Reconstruction.

The housing and community reconstruction strategy should be consistent with existing policies and plans (both national and local), developed in consultation with those affected, and made public. Beginning with the decision on who gets a house, incorporate government officials responsible for housing, land use, public services, social compensation, and other relevant areas of public policy into reconstruction planning and implementation.

Principle 12: Establish Environmental Sustainability as a Reconstruction Objective.

Environmental risks and opportunities pervade the housing and community reconstruction process. Empower all those involved to apply best sustainable environmental management practices in their aspect of reconstruction. Don't allow the desire for speed to override existing environmental law or the need for coordination to address environmental issues.

READ THIS FIRST

A NOTE TO THE USER OF THE HANDBOOK

This handbook has been written to assist public officials and World Bank staff engaged in large-scale post-disaster housing reconstruction programs in making some of the most difficult decisions that have to be made following a disaster, decisions regarding how to reconstruct disaster-affected housing and communities. As the handbook demonstrates, this is not one decision, but a complex series of interrelated decisions that, taken together, will directly affect the lives of those who have been touched by the disaster for many, many years.

Others working in the housing and community reconstruction field will benefit from the information in this handbook, especially if they are collaborating with public officials and World Bank staff in post-disaster reconstruction.
This handbook attempts to fill an important gap in the "disaster literature," by focusing on reconstruction rather than humanitarian assistance and by speaking to decision makers in the public sector, more than to the voluntary sector, where the understanding of best practices is already advancing rapidly. The handbook attempts to use a common language with the humanitarian sector and shows how the humanitarian work that comes before reconstruction sets the stage for the reconstruction strategy.

Because the focus is on the public sector, one of the central messages of the handbook is that policy makers should make a concerted effort to maintain consistency with existing public policies in the corresponding sectors, as they make decisions about the post-disaster reconstruction strategy. This includes decisions related to housing and community development, infrastructure, environmental management, disaster risk reduction, and public finance, among others. At the same time, a disaster may point out weaknesses in the policy or institutional framework that will need to be addressed either during reconstruction or once the emergency phase has passed.

The handbook is divided into four parts:

Part 1: Reconstruction Tasks and How to Undertake Them is the heart of the handbook and begins by providing information on cross-cutting issues, such as disaster risk management and governance. The section then follows the project cycle through assessment, planning, project development and implementation, and monitoring and information management. Within each subsection are chapters on technical issues that must be addressed in each phase. Each technical chapter gives an **Introduction;** provides **Guiding Principles**; identifies critical

Risks and Challenges; briefly discusses the most important **Technical Issues** associated with the topic; shows how the decisions in each technical area relate to **Existing Public Policy**; and finally provides some **Recommendations**, tools, and other **Resources** to support decision making. Some of the most essential topics are covered in the Planning Reconstruction subsection, which has chapters on Land Use and Physical Planning, Infrastructure and Services Delivery, Environmental Planning, Reconstruction Approaches, Housing Design and Construction Technology, and Cultural Heritage Conservation.

Part 2: Cross-Cutting Issues discusses the context for reconstruction projects, and other issues that arise throughout the reconstruction process, such as the need for community participation, financial support for households and addressing the risk of corruption in reconstruction.

Part 3: Information Relevant to World Bank Staff includes information targeted at World Bank personnel, but which will also be useful to government counterparts. This information includes guidance on application of Bank environmental and social safeguards in post-disaster operations and on the financial resources available from the Bank following a disaster.

Part 4: Technical and Other Key References includes a primer on disaster risk management and the handbook's glossary.

The handbook is complemented by a Web site, which is located at www.housingreconstruction.org. The Web site contains additional materials related to each chapter and other relevant topics. Copies of the handbook can also be downloaded from the Web site.

This handbook will be updated periodically as comments are received from users and as the disaster reconstruction field and its best practices evolve. Users are invited to comment on the handbook chapters at the Web site. User comments are most appreciated and will be taken into consideration in the next update of the handbook.

PART 1
RECONSTRUCTION TASKS AND HOW TO UNDERTAKE THEM

Section 1
Assessing Impact and Defining Reconstruction Policy

Chapter 1
Post-Disaster Needs Assessment

Introduction

Assessments establish the extent of post-disaster damage, loss, and needs and are therefore fundamental for reconstruction planning. Many assessment methodologies exist; numerous efforts are under way to improve and standardize them. The most comprehensive assessment is referred to as the post-disaster needs assessment (PDNA). A PDNA measures the impact of disasters on the society, the economy, and the environment of a disaster-affected area.

The principal trade-off in conducting any assessment is timeliness versus accuracy and completeness. Early data will be more subject to revision over time, but having early information on damage and needs and estimates of reconstruction costs facilitates a fast response and donor coordination.

This section mentions four types of post-disaster assessments—comprehensive PDNAs, local and sector-specific assessments, community-led assessments, and assessments of housing condition—and covers a range of issues related to carrying them out and using the results.

Guiding Principles

- Timely presentation of the initial assessment takes precedence over exhaustive analytical precision.
- Multi-donor assessments and standardized assessment methodologies produce significant benefits in terms of efficiency, quality, and common understanding of results.
- Data collected during assessments—especially within sectors—should be treated as public information to reduce duplication of efforts; however, specialized assessments are often unavoidable.
- While physical damages are empirically verifiable, the estimation of needs and rights reflects policy decisions and value judgments.
- Consultation with affected people is essential and is possible even in rapid-onset emergencies.
- The particular needs of different groups and individuals (e.g., men, women, the elderly, children) should be evaluated during assessments. Marginalized groups must be sought out and their needs and interests incorporated.
- Information collected in assessments will reflect the biases of both the informants and the assessors. Results can include “fact” (definitely true), “opinion” (perspective of the person giving the information), or “rumor” (unverified information).
- The assessment design and the data collection process should anticipate how the information will be used.

Key Definitions

Term	Definition[1]
Damage assessment	Analyzes the total or partial destruction of physical assets, both physical units and replacement cost.
Loss assessment	Analyzes the changes in economic flows that occur after a disaster and over time, valued at current prices.
Needs assessment	Estimates (usually based on the damage assessment) the financial, technical, and human resources needed to implement the agreed-upon programs of recovery, reconstruction, and risk management. Also evaluates and "nets out" resources available to respond to the disaster.
Rights-based assessment	Evaluates whether people's basic rights are being met. Has its origins in the UN Universal Declaration of Human Rights.
Rapid assessment	Undertaken after a major event, and conducted in one week or less. Provides immediate information on needs, possible intervention types, and resource requirements.
Detailed assessment	Undertaken when more detailed information is required or when planning a project in a new area. Takes about one month, depending on the size and complexity of the disaster and the resources available for the assessment.

Risks and Challenges

1. Over- or underestimation of needs caused by failure to establish an explicit reconstruction strategy before assessing reconstruction needs.
2. Inaccuracies in the damage assessment caused by the lack of baseline data (the original condition of infrastructure or quality of housing).
3. Focusing principally on damage and not taking into account social and institutional impacts or the resources available to the disaster survivors.
4. Conflicts among agencies caused by misunderstandings over the purpose of an assessment, repeated data collection, or questioning of early data that was admittedly preliminary using later assessment results.
5. Assessment fatigue among the affected population because of repetitive assessments and the failure of agencies to share assessment data. At the same time, false expectations are created among the population being assessed ("I told you what I needed; now I expect to get it").
6. Inadequate assessment quality because assessors are sent to the field without proper training and the assessment process is under-budgeted.

1. Charles Kelly, 2008, *Damage, Needs or Rights? Defining What Is Required After Disaster*, Benfield UCL Hazard Research Centre Disaster Studies and Management Working Paper no. 17 (London: Benfield UCL Hazard Research Centre). http://www.reliefweb.int/rw/lib.nsf/db900sid/FBUO-7HWHG9/$file/Benfield-Jul2008.pdf?openelement; and *Guidelines for Emergency Assessment, International Federation of Red Cross and Red Crescent Societies*, October 2005, http://www.proventionconsortium.org/themes/default/pdfs/71600-Guidelines-for-emergency-en.pdf.

7. Local requirements not reflected because locally collected or validated data is not incorporated in the national assessment.
8. Owners damage their own housing in order to qualify for compensation when the assessment of housing condition takes place after compensation scheme is announced.
9. Assessments being carried out simply to justify program decisions, not to inform them.

Technical Issues

Purposes and Types of Assessments

Post-disaster needs assessment is carried out to determine:

- Nature and extent of the disaster
- Primary and secondary damage
- Population and demographics
- Community needs
- Resource availability (including nonfinancial resources) and response capacity
- Needs for financial support, including international assistance
- Options for relief assistance, longer-term recovery, reconstruction, and development[1]

Specialized assessments are often carried out to refine the results of an initial PDNA in a particular region or sector, or to develop data needed for project planning. Though sometimes criticized, these specialized assessments are often justifiable.

Specialized assessments related to housing and community reconstruction include site-related risk assessments and house-by-house damage assessments. A full housing sector assessment covers such topics as demographic information, housing types, housing tenure situations, settlement patterns before and after the disaster, government interventions in the housing sector, infrastructure access, construction capacity, and market capacity to provide materials and labor for reconstruction.

Terminology identifying the types of assessments is not uniform from one disaster to the next or among organizations. Even so, there are frequently applied assessment methodologies whose output may prove useful for planning housing and community reconstruction. These are discussed in the table below.

Methodology	Purpose	Application
Handbook for Estimating the Socioeconomic and Environmental Effects of Disasters (ECLAC Methodology)[a] *Developed by the Economic Commission for Latin America and the Caribbean (ECLAC)*	A detailed assessment that estimates the direct economic impact (lost wealth), indirect economic impact (effect on GDP), and secondary effects (fiscal impacts) of a major natural disaster. Provides guidelines for social sectors (including housing), infrastructure, economic sectors, and damage assessment.	The reference methodology for post-disaster needs assessments. Increasingly used by the World Bank and regional development banks for donor coordination and commitments and for setting emergency loan amounts. WB is developing cadre of experts trained in its use.

Methodology	Purpose	Application
Initial Rapid Assessment[b] (IRA) *Developed by the UN Inter-Agency Standing Committee (UN IASC) Health, Nutrition, and WASH Cluster*	Provides rapid overview of emergency based on multi-sector data. Identifies immediate impacts and estimate needs and vulnerabilities of population.	Is designed primarily for new rapid-onset crises. Conducted within 72 hours of an emergency. Define the priorities for action in the first three weeks and paves the way for future assessments.
Rapid Health Assessment *Used by the World Health Organization*	A rapid assessment methodology that analyzes environmental and health conditions in the affected area.	Conducted as soon as possible after a disaster (one week). Sometimes includes monitoring movements of those displaced by disaster, data that may be useful in analyzing post-disaster housing demand.
Early Recovery Assessment (ERA) *Developed by UN Cluster and the International Recovery Platform (IRP)*	A detailed assessment methodology that analyzes sectors important to the transition between relief and recovery (livelihoods, employment, shelter, and governance) and capacity to plan and carry out early recovery.	Methodology is in use but still being systematized. Requires highly disaggregated data on disaster losses at the local level.
Rapid Environmental Impact Assessment (REA) *Various methodologies and sponsors*[c]	Identifies, defines, and prioritizes potential environmental impacts in a disaster situation. (See Chapter 7, "Environmental Planning" for more information on REAs.)	Should be conducted within 120 days of the event. Analysis covers numerous issues relevant to housing reconstruction, including water and sanitation.
Other Humanitarian and Sector-Specific Assessments *Numerous methodologies and sponsors, including integrated rapid livelihood assessment, community-level assessment, and poverty and social impact assessment*	Quantify the extent of the humanitarian disaster during the response phase and provide data for recovery and reconstruction planning. May be rapid or detailed.	May provide data of use in assessing housing reconstruction requirements, such as shelter needs and state of basic services. Strategies adopted after these assessments (transitional shelter approach and relocation) affect later reconstruction decisions.

a. http://myanmar.humanitarianinfo.org/nutrition/Technical%20Guidance/IRA%20Tool%20Feb08.doc
ECLAC/ Handbook for Estimating the Socio-economic and Environmental Effects of Disasters: http://www.eclac.cl/cgi-bin/getProd.asp?xml=/publicaciones/xml/4/12774/P12774.xml&xsl=/mexico/tpl-i/p9f.xsl&base=/mexico/tpl/top-bottom.xsl
b. United Nations Inter-Agency Standing Committee (UN IASC), Health Cluster, Nutrition Cluster, WASH Cluster. 2008. Initial Rapid Assessment (IRA) Tool: Field Assessment Form.
http://myanmar.humanitarianinfo.org/nutrition/Technical%20Guidance/IRA%20Tool%20Feb08.doc.
c. Guidelines for Rapid Environmental Impact Assessment in Disasters, 2005, Benfield Hazard Research Centre, University College London and CARE International, Charles Kelly.

[Reviewers: The methodologies and terminology related to damage and needs assessments are in a state of flux. Please provide feedback on the best approach to covering this important matter.]

An Assessment should be Based on a Pre-Defined Reconstruction Strategy

Decisions regarding a reconstruction strategy affect the assessment results, particularly the quantification of needs. The strategy should outline whether reconstruction should rebuild or improve upon pre-disaster conditions, the type of investment to be made, and the standards to be applied by sector. So that the assessment team members have a common understanding of the results that are expected from reconstruction, the strategy should be defined by government and properly communicated to the assessment team prior to conducting the assessment.

While existing policy in the affected sectors should serve as the framework for defining the reconstruction strategy, it may not be possible to implement major strategic investment and reform goals during post-disaster reconstruction. Therefore, governments may need assistance to define interim reconstruction goals that are economically and politically feasible, and consistent with strategic goals in the sector and the compensation scheme. For example, there may be a 10-year national goal to provide all houses with access to sewerage systems. Accomplishing this with reconstruction funds may be unrealistic, but the government can require housing designs that provide the connection for when sewerage systems are later constructed.

HOW TO DO IT
Post-Disaster Needs Assessment

The handbook will include specific instructions on how to organize and carry out a Post-Disaster Needs Assessment.

Data Management Issues in Assessment

Different organizations and agencies collect post-disaster data independently at different periods and on different scales, often duplicating efforts and collecting data in a way that hampers data integration and comparison. Multiple assessments may fail to yield comprehensive, accurate, reliable, and timely assessments that are adequate to support a smooth transition between relief, recovery, and reconstruction. In response to the Paris Declaration on Aid Effectiveness, donors, including the World Bank, have signed agreements to improve collaboration in carrying out damage and needs assessments.[2] The ECLAC PDNA methodology is increasingly used as one of the principal joint assessment tools (see below).[3]

2. In September 2008, the EU, the World Bank and the United Nations signed the "Joint Declaration on Post-Crisis Assessments and Recovery Planning" to strengthen the collaboration among the agencies in crisis and emergency situations, including the use of a common methodology for post-disaster needs assessments. http://www.undg.org/docs/9419/trilateral-JD-on-post-crisis-assessments-final.pdf.

3. Economic Commission for Latina America and the Caribbean (ECLAC, *Handbook for Estimating the Socio-economic and Environmental Effects of Disasters* (Mexico: Economic Commission for Latina America and the Caribbean). http://www.eclac.cl/cgi-bin/getProd.asp?xml=/publicaciones/xml/4/12774/P12774.xml&xsl=/mexico/tpl-i/p9f.xsl&base=/mexico/tpl/top-bottom.xsl.

Duplication is reduced when disaster damage data are shared, and an effort is under way in the UN to promote this. Useful disaster data includes geo-referenced information, such as risk maps.[4] Generators of data should attempt to make it available to other organizations in the field. (See Chapter 14, "Information and Communications Technology in Reconstruction.")

Community-Led Assessments Complement Traditional Methodologies

After any disaster, affected communities are the primary actors in early relief efforts. Yet once organized relief operations get under way, communities may not be consulted on important aspects of the relief and recovery. An evaluation of the response to the 2004 Indian Ocean tsunami noted that the involvement of the communities in needs assessment, planning, and implementation was never made a priority.[5]

Traditional methodologies complemented with community-led assessments will provide a more authentic and pragmatic view of the needs and capacities of the affected population. Assessments should capture the social and psychological impacts on a community, including livelihoods, and the resources available to survivors. These factors will affect reconstruction, so they should not be overlooked; reconstruction can only begin once the household is stabilized. The community assessment team must include representation of all the communities and groups in the area being assessed and must be coordinated by a trusted agency. Among numerous participatory or community-led assessment methods, the CDADA, summarized in the table above, is especially noteworthy.[6] The following table describes an effective methodology for community-led assessments.

Methodology	Purpose	Application
Community Damage Assessment and Demand Analysis (CDADA) Developed by All India Disaster Mitigation Institute	Obtains a full appraisal of how a community is affected by a disaster.	Multidisciplinary, multi-sectoral, multicultural assessment adaptable to every type of disaster. Applies the Sphere Project[a] principles and Red Cross Code of Conduct[b] and emphasizes the role of affected communities, local governments, and community-based organizations. Coordinating body should be trusted by all groups (local government, national agency, local or international NGO).

a. Sphere Project. 2004. Humanitarian Charter and Minimum Standards in Disaster Response. Geneva: Sphere Project. http://www.sphereproject.org/handbook/index.htm.
b. International Red Cross and Red Crescent Societies, Code of Conduct. http://www.ifrc.org/publicat/conduct/.

The Needs of Vulnerable Groups Require Special Attention

Vulnerable groups include displaced people, women, the elderly, the disabled, orphans, and any group subject to discrimination. Vulnerable groups may be omitted from damage and needs

4. A variety of assessment tools are available at: United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA). Information Management Website. http://www.humanitarianinfo.org/IMToolBox/index.html.
5. Tsunami Evaluation Committee, 2006, *Joint evaluation of the international response to the Indian Ocean tsunami: Synthesis Report* (London: The Active Learning Network for Accountability and Performance in Humanitarian Action). http://www.tsunami-evaluation.org/.
6. Mihir R. Bhatt and Mehul Pandya, 2005, All India Disaster Mitigation Institute, *Community Damage Assessment and Demand Analysis (*Ahmedabad: All India Disaster Mitigation Institute). http://www.proventionconsortium.org/themes/default/pdfs/AIDMI_ELS-33.pdf.

assessments unless an effort is made to ensure their involvement. This is not just a quantitative issue, but a qualitative one, since addressing the post-disaster needs of these groups may require special measures. Good practices include:

- involving vulnerable group members in assessment and in all stages of decision making;
- obtaining information about the needs of the affected group from both men and women;
- collecting data disaggregated by sex, age, health status, economic class, etc., and then using the disaggregated data in both program planning and monitoring;
- paying special attention in assessments to groups that experience social exclusion (such as widows and female heads of household); and
- assessing disaster impact on the informal social systems that vulnerable groups depend on, not just the "bricks and mortar" impacts.

Issues and Methodologies for Assessing Housing Damage

Carry out housing damage assessment before announcing compensation scheme or eligibility criteria. To avoid possible biases in assessing physical damage and damage to property by owners, it is critical that the assessment of housing condition be carried out before the compensation strategy and eligibility criteria are established.

HOW TO DO IT
Housing Damage Assessment

The handbook will include specific instructions on how to organize and carry out a Housing Damage Assessment.

Establish a clear system of damage categories for housing. A clear and systematic categorization of damages must be established to provide damage data that can be effectively used for planning housing reconstruction. UN HABITAT has established five damage categories based on visual survey (G1 to G5) that can be used as a reference and adjusted according to specific needs and objectives.[7] To ensure equitable and objective compensation, the criteria and categories used for the damage assessment should be coordinated with the compensation scheme. The interpretation of damage categories may have to be adjusted to the various types of houses; for example, the cultural value of heritage buildings may justify major repair efforts, even if damage is extensive.

Carefully manage the housing damage assessment. Objectively assessing damage is a complex task, especially with respect to structural safety and vulnerability to risks. Thus, it is crucial to provide training and to carefully monitor the damage assessment process. The process for the collection, storage, and analysis of data must be well organized so that transparency and accessibility to data for all involved in reconstruction is provided. The assessment process must include a system for marking damaged houses, particularly important when there is a risk of structures collapsing. Risks associated with damaged buildings must be properly communicated to the local population, with particular attention to children, while the assessment process takes place. Physical barriers may need to be put in place. (See Chapter 14, "Information and Communications Technology in Reconstruction.")

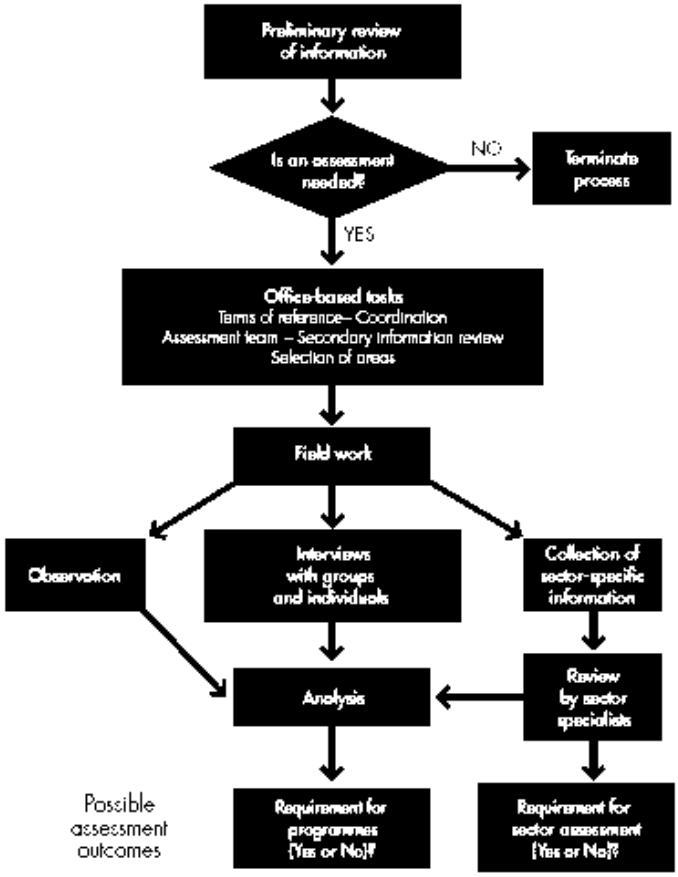
7. UNHCR damage assessment forms for assessments undertaken in the Balkans (2000).

Sequence of Disaster Assessment Activities

Assessment is generally seen as part of the first phase of a disaster response, concurrent with the initial response. As the event unfolds, however, disaster response planning and decision making often require that a series of assessments be conducted in phases, with corresponding reports written.

Four types of assessment reports are often referred to, corresponding to different phases of the post-disaster assessment process: flash report, initial report, interim report, and final report. The figure (below) shows a sound protocol for conducting assessments.

Protocol for Conducting an Assessment



Source: International Federation of Red Cross and Red Crescent Societies, Guidelines for Emergency Assessment, 2005

Relation to Existing Public Policy

The reconstruction strategy should be based on existing sector strategies and capital investment plans in the sectors affected by the disaster, such as housing, infrastructure, health, education, and transport. Government should coordinate with international agencies to review program decisions that are based on the results of specialized assessments, so that expenditures and investments made by these agencies in the reconstruction phase are consistent with sector policies (for example, compensation schemes and infrastructure designs). Government should

also require that data collected during specialized assessments be recorded in a format that allows them to be consolidated and disclosed to government or another coordinating agency so that it becomes public information.

Recommendations

1. Conduct multi-donor PDNAs whenever possible, using standardized assessment methodologies.
2. Treat national and sector-specific data collected during assessments as public information to reduce duplication of data collection efforts.
3. Evaluate the needs of different groups and individuals (such as men, women, the elderly, and children) during assessments. Seek out marginalized groups and evaluate their needs and interests as well.
4. In designing the assessment and data collection, take into consideration how the information will be used.
5. Be aware of the range of assessments that may be in process, and don't assume that every initiative requires a new assessment. Be respectful of affected groups in collecting information.
6. Define the reconstruction strategy prior to conducting a needs assessment, since it will affect the outcome.
7. Consider using community-led assessments to complement the information gathered from traditional assessment methodologies.
8. Establish a clear system of damage categories for housing, and carry out housing damage assessments before announcing any compensation scheme.

Case Studies

2007 Cyclone Sidr, Bangladesh

Rapid initial assessment reveals immediate priorities in Bangladesh

Within one week of Cyclone Sidr in Bangladesh, the United Nations conducted a rapid initial assessment. The report, dated November 22, 2007, estimated that 4.7 million people were affected and that food, shelter, and cash were the highest priority areas for assistance. Sanitation, drinking water, and the restoration of communications and electricity were also identified as high priorities. The report noted the importance of incorporating sound DRR elements into the rebuilding efforts, since many of the most damaged houses were located very close to shorelines and in open, wind-exposed areas, and rebuilding in these areas would only contribute to future vulnerability.

[Reviewers: Please provide additional case studies on good and bad practices in conducting needs assessments.]

Resources

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Chapter 2
Who Gets a House? Social Dimension of Housing Reconstruction

Introduction

Pre-disaster housing conditions vary widely, from the exquisite to the ramshackle, but no type of housing is immune to the unpredictable effects of disasters. In addition, in a post-disaster environment, households have different kinds and levels of resources to rely on for rebuilding; some have their own resources, while others are totally dependent on government intervention. It might also be beneficial in a post-disaster environment for government to provide assistance to households that weren't even affected by the disaster.

When post-disaster housing assistance is being awarded, policy makers have to address the following critical questions:
1. Who is entitled to housing?
2. What type of housing solution are they entitled to receive?
3. How much housing assistance will they receive?[1]

These questions have no "right" answer. While all post-disaster housing assistance is intended to help recipients solve disaster-related housing problems, the approach must be fine-tuned to the circumstances, culture, and available resources. This chapter provides guidance on making these decisions and discusses some of their consequences.

Guiding Principles

- All sectors of an affected population need to have a voice in determining the post-disaster housing policy.
- Decisions regarding selection criteria, standards for defining acceptable housing solutions, and levels of assistance should be objective and transparently disclosed.
- Whatever a project's goals—compensation for damages, satisfaction of needs, or fulfillment of rights—they should be defined objectively and transparently disclosed.
- Different households have different capacities to respond; therefore, accomplishing similar outcomes (a durable solution within one year, for example) will require different interventions.2
- Post-disaster housing policy must address the situation of formal owners, renters, and people without formal tenure status, including squatters.
- Families have distinct housing requirements depending on their income level, cultural practices, social status, location, capacity, size, composition, and other characteristics.
- Post-disaster housing reconstruction can be an opportunity to address shortcomings in pre-disaster housing, whether or not that housing was directly affected by the disaster.
- Government must set policy for the allocation and use of public disaster funds and must coordinate with private and nongovernmental entities on the use of their housing funds.

1. The mechanics of compensation distribution are discussed in Chapter 9, "Compensation and Household Finances."
2. The need for a system to support households with reconstruction is discussed in Chapter 14, "Reconstruction Approaches."

Risks and Challenges

1. Inappropriate or inequitable housing assistance program designs created by an inaccurate understanding of the social context and of local needs and capacities.
2. A mismatch between housing demand and supply due to housing assistance programs driven by the availability of funding rather an accurate assessment of need.
3. Social conflicts created by a failure to establish sound and consistent program rules, apply them objectively and predictably, and/or communicate them clearly to the affected population.

Technical Issues

Government as Insurer

In many countries, government acts as an insurer after a disaster. This is especially the case when there is an inadequate property insurance system, certain social classes cannot afford insurance, or disaster damage exceeds whatever insurance coverage people may have had. But when government plays this role, the compensation terms are not defined until after the disaster. This creates uncertainty for those affected and an economic burden for government. The assistance policy sends an important signal to property owners about government's willingness to play this role in the future.

Reconstruction as Opportunity to Resolve Long-Standing Problems

A disaster is often viewed as an opportunity to resolve long-standing problems in the housing sector, and, with a significant inflow of external assistance, the potential for correcting inadequacies in pre-disaster housing increases. It is sound policy to rebuild houses and infrastructure that is more resilient to potential damage from future disasters. A major decision to be made as part of that policy is whether to move affected communities "to the head of the line" with respect to other development requirements (e.g., sewerage systems or updated road configurations), thereby providing those communities with a standard of housing and services that is higher than that in similar, but unaffected, communities. Beyond reducing future risk, government must decide the degree to which reconstruction will be used to accomplish longer-term development objectives.

Reconstruction as Social Policy

A post-disaster housing assistance program will raise questions of equity, both among those affected and between the affected group and other unaffected households with similar needs. Poor and vulnerable households are likely to receive a disproportionate level of assistance after a disaster because they are otherwise less able to rebuild or reestablish their livelihoods. Also, assistance is likely to arrive from numerous sources—private, public, and official, national and international—and is likely to be channeled through a range of entities. Each organization may define housing needs or rights differently, and an organization's imperative to establish a presence in the post-disaster situation can produce unexpected and inequitable outcomes. Ensuring a consistent and equitable allocation of available resources is government's right and responsibility. The challenge of doing so effectively increases with the number of agencies involved.

Choice of Criteria

Almost every criterion used for allocating housing assistance can have unintended consequences when applied in real-world situations. Applying these criteria in a logical manner is not easy, and the reality of limited resources further complicates the task. The assistance strategy should weight these criteria to reflect both governmental objectives and social values. Arriving at the proper solution is likely to be an iterative process. Government should consult with the public, especially the affected communities, on the appropriate assistance policy. Once decided, it should be announced publicly and applied objectively. Government should also monitor and publicize the results of the policy and be willing to make any needed adjustments.

The tables below contain some housing-related questions that are commonly asked during the process of developing a disaster compensation strategy, some issues that should be taken into consideration in responding to those questions, and some recommendations on how to proceed.

Who Is Entitled?

	Questions	Issues	Recommendations
Threshold	Should all people who suffered housing losses be entitled to aid or should assistance be targeted only to specific categories of people? Should families not affected by the disaster be assisted if they have housing problems similar to those who were affected?	Categories may be economic, geographic, or related to some aspect of pre-disaster housing condition, but any choice can create inequitable outcomes in certain situations.	The agency must have sufficient resources and administrative capacity to carry out the qualification process and the program.
Unit of assistance	Is the unit of entitlement the house, the family, or the household? Is a single-person family treated differently?	If pre-disaster housing supply was inadequate, multiple households or extended families may be sharing a single house unwillingly. Conversely, a single family may own or live in more than one house.	Make an early decision on the unit of assistance and the extent to which the goal is to address pre-disaster housing shortcomings.
Economic status	Should income be used to qualify beneficiaries or do all income levels qualify?	Income records may be falsified, destroyed in the disaster, or nonexistent.	Ensure there is a feasible method for qualifying according to income.
Social characteristics	Do social characteristics, such as gender, caste, or incapacity, override income as a criterion in those cases where there is an income cutoff?	Women and members of other vulnerable groups may need housing assistance even when their income exceeds the cutoff.	Consider using community members to help identify those who truly need assistance.
Renters versus owners	Who gets the assistance? Renters? Owners? Both?	It is equally important for rental housing to be rebuilt, yet during reconstruction renters may need assistance for transitional housing.	Consider requiring owners to let renters return at similar pre-disaster rents as a condition of owners receiving assistance.

	Questions	Issues	Recommendations
Informal tenure-holders	Is a squatter or informal settler entitled to the same compensation as a property owner?	Squatters may need assistance in addition to housing. This assistance will require planning for a more comprehensive set of services. Squatters often move to a disaster area after a disaster just to obtain housing assistance.	Ensure sufficient resources are available to carry out a full-service resettlement program. It may be necessary to exclude families that have migrated post-disaster.
Absentee owners versus owner-occupants	Should owners living elsewhere be entitled to housing assistance or only residents? Are owners of houses under co-nstruction entitled to assistance?	This issue is related to the question of the unit of assistance. If the primary motivation is to resettle residents, absentee owners may not qualify. If the neighborhood is a concern, broader eligibility will help prevent the negative effect of abandoned properties. If the owners are migrants, their remittances may be supporting other households in the affected area.	Try to use housing assistance as an incentive for owners to sell or rent.

What Type of Housing Solution Are People Entitled To?

(The questions regarding "type of housing solution" and "amount of assistance" are closely related. The former address issues related to the physical result being sought; the latter address issues related to the resources needed to accomplish the physical result. Neither is related to the reconstruction approach; almost any type of solution can be provided using a range of reconstruction approaches.)

	Questions	Issues	Recommendations
Standard Solution	Is it fairer to give everyone a house of standard size and features and let them modify it as they see fit (or give them resources equal to its value)?	This is the "basic house" model, which is often attempted in con-tractor-driven resettlement projects and rarely has a satisfactory out-come. It is also the approach used on m any contract-driven *in-situ* projects, where there may be more potential for customization.	Decide if the savings gained by avoiding a complex qualification process compensate for the economic shortcomings of this approach.
Minimum Housing Standard	Is it better for government to provide assistance at a level that will ensure a minimum standard of housing for everyone (e.g., persons/bedroom, square footage of common space per occupant)?	Ensuring a minimum solution requires variations in total com-pensation levels according to family size. Defining an acceptable minimum level will be culturally and even neighborhood-specific. The tempta-tion is to reject vernacular solutions and use standard designs and materials.	Consider applying the minimum standards approach for public services, even if some other approach is used for housing.

	Questions	Issues	Recommendations
Pre-Disaster Housing Situation	Should those whose housing had a high value qualify for more assistance than those whose housing had a low value? Conversely, should those whose pre-disaster situation was substandard qualify for more?	This is related to the assessment of damage. Restoring pre-disaster housing status puts government squarely in the role of insurer—paying more to those who would have had more insurance, had it been available. Giving more assistance to those whose pre-disaster housing had shortcoming than those who had adequate housing means other social objectives are being pursued.	Realize that the assistance scheme sends a message about future assistance and the type of rebuilding that should be done and make sure the scheme is adjusted accordingly.
Customized Solution	Can the entitlement criteria be weighted to produce a socially and economically optimal allocation of resources based on the characteristics of the family?	Value judgments are required to select and weight the criteria.	A single weighting system may not be generally acceptable or appropriate for all affected groups. Government should persuade outside agencies to align their assistance criteria with those of government.

What Amount of Housing Assistance Should Be Provided?

(Quantifying the amount of assistance may be the policy issue that concerns decision makers even more than what result will come of it. The factors above, such as the type of solutions sought, influence the level of assistance. Below are other critical questions.)

	Questions	Issues	Recommendations
Need	Should available family resources be subtracted from the damage to arrive at the compensation?	Assistance may not be necessary if a qualified household is capable of acquiring the minimum housing solution with its own resources. If only the cost of the solution is considered, it implies no expectation of self-help. Experience with use of credit in reconstruction is limited. IT is best to avoid lending by the public sector.	Establish a consistent policy about use of family's own resources in rebuilding and decide whether all families are owed some compensation. Decide whether households with capacity to borrow should be encouraged to finance reconstruction with credit.
Compensation for Different Levels of Capacity	How should families who have additional vulnerabilities or reduced capacity to manage rebuilding and therefore need extra help in acquiring a desirable housing solution be assisted?	A support system will assist house-holds in using the compensation that they are provided. Providing extra compensation to these households to buy services, such as supervision of construction, is another option, but agencies may need to support them in any case to ensure that appropriate services are in fact received.	Ensure that the monitoring system keeps track of out-comes (appropriate housing solutions occupied by different types of households) as well as outputs (funds disbursed).

	Questions	Issues	Recommendations
Replacement of Other Assets	Is the compensation only for housing? Or should it cover furniture and other household investments, such as equipment for home-based businesses that will permit the restoration of livelihoods?	The house may not be occupied or the household sustainable unless these other assets are replaced.	Funding agencies should understand that the household is not just a house. It's an economic system that needs to be rebuilt, and they should provide appropriate forms of funding.

Additional Considerations

Poverty and vulnerability. People's capacity to recover from a disaster depends on their socioeconomic status. The majority of the poor are women and children who may be isolated socially and who may have less access to physical, financial, and social capital. Members of vulnerable groups and the poor may not incur high losses in absolute terms simply because they own less, but they tend to be the most severely affected by disasters. These households often do not own the plot or shelter they occupy. And their dwellings may be weaker and located in more vulnerable sites. These issues need to be taken into consideration in designing assistance strategies.

Family size and composition. Housing requirements are a function of, among other things, family size and composition. These characteristics change with time and vary among societies. For instance, an assistance strategy that ignores the requirements of extended families can weaken family ties that support livelihoods and that serve as informal social security systems. This is one problem with providing overly standardized housing solutions that are difficult to customize later.

Land and housing tenure. UN OCHA recognizes six tenancy categories: occupancy with no legal status, house tenant, apartment tenant, land tenant, apartment owner-occupier, and homeowner-occupier.[3] Rural households usually own the house they occupy and have tenure security through formal land titles or customary land rights. Urban residents tend to have a range of tenure and occupancy types. In many reconstruction programs, only homeowners have been entitled to housing assistance. Housing assistance strategies should not discriminate against any category of tenancy affected by a disaster.

HOW TO DO IT
Social Assessment

The handbook will include specific instructions on how to organize and carry out a Social Assessment.

Gender issues. Generally, women spend more time in their homes than men do, and they have clearer ideas about what they need. Yet women often do not participate in public consultations or express their views in the presence of men, which can lead to errors in developing the assistance strategy. (This may be particularly true of female-headed households.) Best practice would be to place special emphasis on the particular post-disaster situation of women and to organize separate women-only community consultations. Among the gender-related housing issues to consider in housing reconstruction: legal (the

3. UN OCHA/Shelter Centre and DFID, 2008, *Transitional Settlement and Reconstruction after Natural Disasters* (Geneva: United Nations), http://www.sheltercentre.org/library/Transitional+settlement+and+reconstruction+after+natural+disasters.

differential legal status of women); economic (women's low economic status and the prevalence of women's home-based enterprises); security (safety issues related to housing and access to services and markets); and social (children's access to schools).

Disaster induced mortality and migration. If a disaster causes high rates of mortality or migration, it may not make sense to estimate housing requirements based on a pre-disaster census or to adopt a house-for-house assistance policy. More time and professional support may be required before an appropriate housing assistance policy can be defined.

The importance of social assessments. While the damage and needs assessment estimates physical damages and needs for reconstruction, a social analysis is required to understand the social dimension of housing and to design the assistance policy. The social analysis should include consultations with stakeholders and affected communities. The World Bank has experience and resources that provide conceptual and methodological guidance on conducting social analysis, as well as e-learning courses. Although none of these tools focuses specifically on social analysis in relation to disasters, they can be adapted for this purpose.4

Relation to Existing Public Policy

Few public agencies have policies on how to award post-disaster housing assistance. If they do, it will have to be adjusted to the particularities of the emergency at hand. However, there may be existing social transfer programs (such as welfare or housing subsidies). These programs may have preexisting data on families that can be used to facilitate the qualification process. Or they may have administrative systems in place that can be adapted to the reconstruction program. If other subsidy programs are already operating, public agencies should calibrate the level of assistance and qualification rules so that the housing assistance program is seen as fair and consistent with existing public policies. The agencies should also be prepared to explain publicly how the terms of the compensation strategy and other programs relate.

Specific laws may apply when the housing assistance is offered to the owner by the government in exchange for the property, for instance, to acquire a house in a high-risk area so that the residents relocate. If the owner objects to the government taking the property, and the government can argue that the property is being taken for a public purpose (risk reduction, in this case), eminent domain law may be applied.[5] Governments will ordinarily avoid using eminent domain in a post-disaster situation because of the time and cost involved. Whether taken by eminent domain or a less conflictive procedure, local law may stipulate the basis for the compensation, usually that the owner is "justly compensated" (often, paid fair market value) for his or her loss.

4. World Bank, 2003, Social Analysis Sourcebook: Incorporating Social Dimensions into Bank-Supported Projects (Washington, DC: World Bank), http://go.worldbank.org/HRXPCILR30.

5. Eminent domain (United States), compulsory purchase (United Kingdom, New Zealand, Ireland), resumption/compulsory acquisition (Australia) or expropriation (South Africa and Canada) is the inherent power of the state to seize or expropriate property or seize rights in property, with due monetary compensation, but without the owner's consent. The property is taken to devote it to public or civic use. *Source: Wikipedia, "eminent domain*," http://en.wikipedia.org/wiki/Eminent_domain.

Recommendations

1. Rather than borrowing from other disaster responses, develop a housing assistance policy consistent with the specifics of the situation and reflective of public policy and social values.
2. Develop a policy that contributes to equity, risk reduction, and sustainability. At the operational level, fine-tune it to the needs and capacities of different categories of affected people and their household requirements.
3. Base assistance policies on sound social analysis.
4. Governments should seek consistency in their housing assistance criteria and compensation schemes, as should external organizations using private funds.
5. Involve local communities and stakeholders in defining entitlement policies and make a special effort to consult with women, privately if necessary.
6. Make the assistance policy easy to understand. Publicize both the policy and the results of its application.
7. Avoid overcompensation and indiscriminate distribution of free houses to avoid negative socioeconomic consequences.
8. Closely monitor and evaluate the program to ensure the outcomes of applying the policy are as expected. If not, be willing to adjust the policy over time.

Case Studies

Different states in India have adopted entirely different housing assistance policies, each of which reflects an interpretation of an affected community's socioeconomic conditions and housing needs. The case studies below show how compensation policies can exacerbate existing socioeconomic inequalities.

1993 Maharashtra earthquake

Pre-Disaster Landholding as Basis for Assistance in Maharashtra

The 1993 Maharashtra earthquake affected more than 2,500 villages, 52 of which were completely destroyed. Under a reconstruction program executed with World Bank financing, the affected villages were divided into three damage categories. Category A villages received relocation and full reconstruction. Category B villages received financial assistance for reconstruction *in-situ*. Category C villages were assisted in repairing and retrofitting damaged houses. The size of the homestead plots and new houses varied, depending on the landholdings of the beneficiary. Landless and marginal landholders got 250-square-foot houses; households owning between 1 and 7 hectares of land got 400-square-foot houses; and farmers owning more than 7 hectares of land got 750-square-foot houses. As a result, wealthier households benefitted more than poor households, regardless of their own endowments or requirements. Because the housing rights of homeless were not recognized, the homeless had to depend on aid from nongovernmental organizations.

1999 Orissa Super Cyclone

Poverty Line Used to Determine Beneficiaries after Orissa Cyclone

The "Super Cyclone" that hit Orissa in September 1999 killed more than 10,000 people and destroyed nearly 800,000 houses. Immediately after the disaster, all affected people received a minor compensation grant. No comprehensive governmental reconstruction program was

organized. Instead, government provided two types of housing assistance: free housing to 200,000 poor families through the Indira Awas Yojana, an ongoing social housing program targeting the scheduled castes and tribes and households below the poverty line; and loans to 175,000 families above the poverty line through the Housing and Urban Development Corporation. This policy reflects a recognition that better-off households can afford to rebuild their houses on their own.

2001 Gujarat Earthquake

Funds Allocated According to Damage Level

The earthquake in the state of Gujarat destroyed 344,000 houses and damaged another 888,000. Using World Bank funds from the Gujarat Emergency Earthquake Reconstruction Programme, government offered financial, material, and technical support to all affected families based on the type of house they owned and the level of damage incurred. Families with completely destroyed *kuchcha* house (built with low-cost materials, such as mud and thatch) received a maximum compensation of Rs 30,000. Families with a completely destroyed *pukka* house (built with industrial materials, such as bricks and cement) received a maximum compensation of Rs 90,000. While poor people received less compensation than rich people, the minimum compensation was sufficient to replace a *kuchcha* house with a higher-standard house; however, the maximum compensation was not sufficient to replace houses of higher-income people. The housing rights of the homeless and tenants were also recognized.[6]

[Reviewers: Please provide case studies on experience in establishing housing reconstruction program criteria.]

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6. J. Duyne Barenstein, 2009, "Who Governs Reconstruction? Changes and Continuity in Policies, Practices and Outcomes," in *Rebuilding after Disasters: From Emergency to Sustainability*, ed. G. Lizarralde, C. Johnson, and C. Davidson (London: Taylor and Francis).

Chapter 3
To Resettle or Not to Resettle

Introduction

This chapter discusses the reasons, risks, risk-mitigation strategies, and recommendations regarding the resettlement of disaster-affected communities following a disaster. It warns against choosing resettlement out of organizational convenience without taking into consideration its potentially dramatic social consequences.

Disasters are sometimes the consequence of site-specific vulnerabilities, which is why resettlement is often considered the best option to reduce risk to future disasters. However, not all risks are site-specific and, in addition, resettlement itself entails numerous risks. Chief among them is the inability to find adequate sites for resettling disaster-affected communities, which in turn can lead to lost livelihoods, social and cultural alienation, poverty, and the probability that people will abandon the new sites and return to the location of their original community.

Guiding Principles

- Whenever possible, avoid resettlement of disaster-affected communities.
- Where a reduced population density is desired in an original location, provide options to people for staying in original location or resettling.
- Without social and environmental impact assessments of the new sites that involve the participation of disaster-affected and host communities, people are likely to abandon them because they do not support their socioeconomic and cultural needs.

Risks and Challenges

1. The social consequences of resettlement are often underestimated by decision makers in the post-disaster reconstruction field. However, a significant body of research on the impact and long-term consequences of resettlement proves that it is rarely successful for a variety of reasons: loss of livelihoods; impoverishment; social and cultural alienation; increased morbidity; loss of access to common property resources; and conflicts and competition with hosting communities over scarce resources, such as land, food, fuel, water, and fodder for livestock. People abandon their resettlement sites and return home, where there may be inadequate provision for them—a resettlement consequence generally ignored by humanitarian agencies.

2. The risks outlined in this chapter have been formally recognized by the World Bank, which has developed a safeguard policy specifically to address the risks associated with involuntary resettlement. However, this policy generally does not apply to post-disaster housing reconstruction in resettled sites. Disasters will continue to displace people, often leaving no alternative but resettlement. This is why a better understanding of the factors that determine its positive or negative outcomes is of crucial importance. A resettlement process that incorporates lessons learned internationally to date can prevent avoidable human suffering.

Technical Issues

Who Lives in Disaster-Prone Sites and Why

The urban poor in particular often inhabit hazardous areas because they can't afford to live elsewhere. The primary concern of people living in poverty is their immediate survival, which requires them to find affordable housing in close proximity to livelihood opportunities. For people with marginal incomes, even the minor additional cost of rent, utilities, or transportation that would result from living in a safer location may be unaffordable. Safe and affordable sites are hard to find in areas where jobs are located, where land is likely to be scarce and prices high. Poor urban dwellers often settle informally on public lands not suitable for development because of risk factors and then remain there for financial or political reasons until a disaster strikes.

Why Resettlement Is Rarely Successful

Inadequacy of new sites. One of the chief reasons for resettlement failure is underweighting the welfare of the population as a selection criterion for the resettlement site. Inappropriate land may be chosen for a resettlement project because it is perceived as efficient or cost-effective to build on: It can be acquired quickly, is owned or controlled by the government, or is easily accessible with topography that favors rapid construction. For similar reasons, people resettled to protect them from one risk (e.g., tsunamis) may find themselves exposed to new ones (e.g., risks to livelihood).

Distance from livelihoods and social networks. A lack of affordable land in areas close to sources of employment often necessitates resettlement to peripheral areas where land is less expensive. Yet a key cause for unsustainable resettlement solutions is the distance of the new site from vital resources (water, pasture), relatives, social networks, livelihoods, and markets. In addition, bringing infrastructure and services to these remote areas may be extremely expensive, even when the land is cheap. The full cost analysis of new sites should include both infrastructure investment and the provision of services, such as public transportation.

HOW TO DO IT
Resettlement Plan

The handbook will include specific instructions on how to organize and carry out a Resettlement Plan.

Socio-culturally inappropriate settlement layouts. Housing design, layouts, and construction are often to blame for the rejection or failure of post-disaster resettlement projects, in particular in rural areas. The following are frequently cited social reasons why a resettled community will abandon a new site.

- Settlements designed for ease of construction and inspired by urban middle-class land use patterns result in monotonous designs that do not permit the clustering of kin and old neighborhood groups vital to the social cohesion of rural communities.
- Failure to provide sufficient space around dwellings for tool sheds, livestock, and other agricultural needs makes resettlement sites in rural areas unviable for farming communities.
- Faulty house construction and inadequate materials (particularly regarding thermal protection in different seasons), lot dimensions, impossibility of extension and upgrades, and failure to provide spaces for domestic activities and livelihoods.

- Social composition of resettled communities and relation with hosting communities. Moving communities with different ethnic, religious, or social backgrounds into close proximity may lead to social conflicts and even violence.
- If resettled among male strangers, widows and female-headed households may be exposed to sexual and physical abuse.
- Groups from diverse locations resettling into a site may struggle to redevelop their cohesion and internal mechanisms for the sustainable governance of resources.
- Resettlement itself can lead to conflicts and competition with host or adjacent communities that lay claim to the resettlement site.

Lack of community participation. Consulting the people of a community, involving them in selection and planning of a site, understanding their needs and values, and gaining insight from local experience and knowledge of the local environment, can help reduce resettlement risks. Importing outside labor to construct new settlements discourages community participation and deprives its members of employment opportunities. A lack of community participation can also hinder the development of a personal sense of ownership or responsibility for the home and settlement, which may lead to feelings of alienation and a prolonged dependency on external aid.

Why Resettlement Is Sometimes Necessary

Resettlement of vulnerable communities to physically safer places is often the best way to protect them from future disasters. Some locations are inherently unsafe, e.g., floodplains, unstable hillsides, and areas where soil likely to liquefy as a result of seismic tremors. In particular, informal settlements of the urban poor are often located on highly vulnerable sites. In some cases, a disaster may have changed the topography, making a community's original site unsuitable for habitation, as was the case in many locations after the 2004 Indian Ocean tsunami, where shorelines and topography were markedly altered. Finally, it may be too costly to provide safety to communities located in areas likely to be subject to future disasters. Risk-mapping is a tool that can provide data on the degree, probability, and characteristics of these risks.

What Contributes to Successful Resettlement?

Resettlement of communities requires risk mitigation through well-planned and adequately financed programs that include such elements as land-for-land compensation, employment generation, ensured food security, improved access to health services, transportation to jobs, restoration of common properties, and support for community and economic development.

Resettlement is more likely to be successful when:

- Affected communities participate in critical resettlement and implementation decisions (site selection, identification of basic needs, settlement planning, housing designs, and implementation).
- Livelihoods are not site-specific nor are they disrupted by resettlement.
- Water, public transport, health services, markets, and schools are accessible and affordable.
- People are able to bring with them items of high emotional, spiritual, or cultural value (house doors, wooden frames, etc.).
- People belonging to the same community are resettled together to a new site.
- Emotional, spiritual, and cultural attachment to the old site is not excessively high.

- Housing designs, settlement layouts, natural habitat, and community facilities conform to a community's way of life.

Unjustified Resettlement

Resettlement to new sites is often decided for "practical reasons" that ignore risk management considerations and result in a massive waste of financial and natural resources. Examples include:

- Resettlement to avoid rubble removal, simplify land tenure issues, or minimize the number of stakeholders "interfering" in the reconstruction project.
- Resettlement to reduce construction costs, without accounting for the cost of basic infrastructure and services, which can result in the building of houses or entire settlements that are later abandoned, sold by beneficiaries, or left unoccupied, due to the lack of services or costs to acquire them.

When a new site is found by residents to be inappropriate, people are likely to return to their original settlements, where living conditions may have become unhealthy or unsafe. It is therefore important that governments and the World Bank consider resettlement only as a last resort. Even then, reconstruction in new sites should be allowed only if social and environmental impact assessments—developed in a participatory manner to incorporate the sentiments of the community—confirm its viability.

Relation to Existing Public Policy

Public agencies at the national and local government level in disaster-affected countries may have resettlement or involuntary resettlement policies that apply in post-disaster situations or can easily be adapted. Using them helps ensure that post-disaster resettlement criteria and compensation schemes are consistent with other instances of resettlement in the same locations. If policies were established in connection with infrastructure projects, such as highway widening when squatters needed to be resettled from a public right-of-way, policy implementation may fall within the jurisdiction of the Ministry of Public Works or the Social Investment Fund.

At the local government level, resettlement policy may be established in connection with slum upgrading, local infrastructure projects, city development master plans, or disaster risk reduction (DRR) plans. The local agency with jurisdiction may be the planning department, the public works agency, or the agency responsible for environmental management.

A transparent policy should always guide a resettlement process, and it should be reviewed with and communicated to the affected population in a public manner. Resettlement policies established principally to guide removal of people from high-risk or illegal settlements may not be appropriate to post-disaster situations. They should not be applied in a post-disaster situation without analyzing the need for modifications.

Consider international frameworks when this issue arises, including the Pinheirho Principles on Housing and Property Restitution for Refugees and Displaced Persons and the World Bank

safeguard policy.[1] The Bank policy on involuntary resettlement, as well as those of many international and bilateral agencies and regional development banks, is designed to assist displaced persons in their efforts to improve or at least restore their incomes and standards of living after displacement. The policy promotes the participation of displaced people in resettlement planning and implementation, and it prescribes compensation and other resettlement measures. The World Bank's sourcebook on involuntary resettlement provides valuable guidance.[2] Because countries that borrow from the World Bank and regional development banks must usually prepare written resettlement plans (this may vary in post-disaster situations), numerous examples of resettlement plans are available.[3]

Recommendations

1. If resettlement is considered, conduct thorough social and environmental impact assessments to ensure that the reasons for it are technically justifiable.
2. While it may be important to settle people away from flood-prone areas, in-situ reconstruction should be promoted after earthquakes to take advantage of existing infrastructure and community facilities.
3. If resettlement is unavoidable, carry out a detailed and realistic participatory assessment of the environmental and socioeconomic risks of resettlement and cost of risk-mitigation strategies for alternative sites.
4. If resettlement is unavoidable, involve the community in the decision-making processes and in designing risk-mitigation strategies.
5. Ensure that it is both technically possible and financially and institutionally feasible to serve the resettled site with basic services such as water, electricity, health services, schools, markets, policing, public transport, etc.
6. Ensure that people can pursue their livelihood activities from the resettlement site, given that successful creation of alternative livelihoods is rare.
7. Carefully assess the impact of resettlement on hosting communities.
8. Be aware that resettlement of disaster-affected communities may cause social conflicts and lead to problems of crime, delinquency, and secondary displacement.

Case Studies

[Reviewers: Please provide case studies on good practices in resettlement.]

1. Pinheirho Principles on Housing and Property Restitution for Refugees and Displaced Persons. http://www.cohre.org/store/attachments/Pinheiro%20Principles.pdf; and World Bank Operations Policy 4.12: Involuntary Resettlement, http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTSAFEPOL/0,,contentMDK:20543978~menuPK:1286647~pagePK:64168445~piPK:64168309~theSitePK:584435,00.html.
2. http://publications.worldbank.org/ecommerce/catalog/product?item_id=2444882.
3. http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTSOCIALDEVELOPMENT/EXTINVRES/0,,contentMDK:20480517~menuPK:1242293~pagePK:148956~piPK:216618~theSitePK:410235,00.html.

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World Bank. 2004. Involuntary Resettlement Sourcebook: Planning and Implementation in Developing Projects. Washington, DC: World Bank.

The World Bank's Social and Environmental Safeguard Policies. http://siteresources.worldbank.org/INTINVRES/214573-1115359971520/20480040/WBsEnvironmentalandSocialSafeguardPolicies.pdf.

Chapter 4
Reconstruction Approaches

Introduction

Post-disaster housing reconstruction can be undertaken through different approaches, which vary principally in terms of a household's control over the reconstruction process. The decision about which approach to adopt, however, should also factor in its implications regarding reconstruction costs; restoration of livelihoods; and contributions to risk mitigation, local capacity building, and people's well-being.

This chapter provides an overview of five reconstruction approaches that may be pursued after a disaster.

- **Cash Approach (CA):** Unconditional financial assistance without technical support.
- **Owner-Driven Reconstruction (ODR):** Conditional financial assistance accompanied by regulations and technical support aimed at ensuring that houses are built back better.
- **Community-Driven Approach (CDA):** Agency-led approach that involves the active participation of communities in decision making and construction.
- **Contractor-Driven Reconstruction *in-Situ* (CRIS):** Agency-led approach in which a construction company is hired to replace damaged houses in their pre-disaster location.
- **Contractor-Driven Reconstruction in Relocated Site (CRRS):** Agency-led approach in which a construction company builds new houses in a new site.

The authors of this handbook strongly advocate the ODR approach, which has proven to be the most empowering, dignified, sustainable, and cost-effective reconstruction approach in every type of post-disaster situation.

Guiding Principles

1. The building approaches adopted after disasters should be as similar as possible to building processes in normal times for similar households.
2. Control over key decisions related to housing reconstruction should rest as much as possible with the concerned people.
3. The reconstruction approach should be decided on the basis of a thorough assessment of local capacities and needs; more than one approach may be necessary.
4. Governments have a leading role in defining reconstruction policies and are responsible for monitoring reconstruction practices of all participating agencies.
5. Reconstruction agencies should take into consideration people's different housing needs regarding vulnerabilities, livelihoods, and family size.
6. The reconstruction approach should be based on people's capacities and aspirations.
7. Reconstruction should contribute to economic recovery and restoration of local livelihoods.
8. Building codes and standards in reconstruction need to reflect local housing culture, climatic conditions, available resources, building and maintenance capacities, and affordability.
9. The reconstruction approach should be selected by taking into account social and environmental safeguards.

Risks and Challenges

- Underestimating an affected community's capacity to rebuild its houses and, hence, opting for reconstruction by contractors.
- Allowing those who can provide reconstruction funding to dictate the reconstruction scheme.
- Building houses that people refuse to occupy for reasons of location, materials, or design.
- Not providing households participating in ODR projects with adequate assistance and supervision, resulting in poor construction quality, price inflation for materials, and other problems.
- Failing to take advantage of reconstruction as an opportunity to strengthen local building practices and construction capacities.
- Inadequate oversight of private construction companies, which results in higher costs or inferior quality of construction.
- Designing and building houses that do not meet the communities' cultural and individual requirements because of a lack of community participation in reconstruction planning.
- Local elites who hijack the project benefits because eligibility criteria and compensation schemes were either poorly designed or not monitored during implementation.
- Pressure to overinvest in housing that leaves little or no funding for on-site investments (that is, infrastructure and restoration of natural habitat).
- Failing to provide ODR schemes with sufficient initial compensation and technical assistance to ensure that poorer households reach construction milestones and obtain access to subsequent funding disbursements.
- In urban areas, adopting ODR without strengthening institutional mechanisms for land use planning, regulation, and building control, which can result in increased vulnerability.
- ODR is complex in situations involving multiple dwelling units in single buildings (such as apartments).

Technical Issues

The Cash Approach (CA)

Support for repair and reconstruction of damaged houses is provided exclusively by unconditional financial assistance. CA is appropriate for disasters that have a relatively limited impact and where housing vulnerabilities were not caused by shortcomings in local construction practices. Emphasis with CA is on the distribution of financial assistance with minimal attention given to enabling measures.

Experiences with the Cash Approach. After the 2004 floods in Santa Fe, Argentina, the World Bank supported a government CA program for housing repair and reconstruction.

Advantages	Disadvantages and Risks	Recommendations
Most cost-effective, rapid delivery of aid to households. Does not require complex delivery mechanisms. Compensation can be adjusted to household's income, family size, livelihoods, socio-cultural requirements, etc. Encourages repair of houses and use of salvaged and local building materials. Best when local building capacity and financial support are adequate. Families can employ cash according to their priorities.	May reproduce pre-disaster vulnerabilities. No improvement of building skills. No opportunity to introduce new building technologies. Vulnerable people may be unable to handle repair and reconstruction without assistance. Financial assistance may be used to meet other requirements while houses remain unrepaired. Risks negative publicity if households use funds for questionable purposes.	Use CA only when damage is not severe and is not attributed to poor construction or poor building code enforcement. Ensure that housing labor and materials markets are functioning properly.

Owner-Driven Reconstruction (ODR)

In an ODR program, people who lost their shelter are given cash, vouchers, and/or in-kind assistance to repair or rebuild their houses. They may undertake the construction or repair work themselves, by employing family labor, or by hiring skilled and unskilled labor in the local market. ODR is similar to the "aided self-help approach" that has been used extensively to provide housing assistance to the urban poor, particularly in Latin America.[1]

ODR is the most empowering and dignified approach, and it should be used whenever possible. However, ODR's risks need to be understood and addressed. ODR requires good governance, that is, a capable government and cooperation with civil society. Success lies in establishing a support system for homeowners appropriate to the local context, which may include:

- Training of trades people and homeowners
- Technical assistance and construction supervision
- Updating and enforcement of building codes and construction guidelines
- Mechanisms to regulate prices and facilitate access to building materials
- A system for providing financial assistance in installments as construction progresses

Experiences with ODR Approach

- Formally adopted by the state government of Gujarat as its official reconstruction policy following the 2001 earthquake in Gujarat, India. Independent evaluations proved it produced high levels of satisfaction.[2]

1. Sultan Barakat, 2003, *Housing Reconstruction after Conflict and Disaster*, HPN Network Paper, No. 43 (London: Overseas Development Institute).
2. Jennifer Duyne Barenstein, 2006, Housing Reconstruction in Post-Earthquake Gujarat. A Comparative Analysis, Overseas Development Institute, HPN Network Paper, No. 54 (London); and Abhiyan, 2005, Coming Together: A Document on the Post-Earthquake Rehabilitation Efforts by Various Organisations Working in Kutch (Bhuj: United Nations Development Programme/ Abhiyan).

- Used by the World Bank after the 2004 Indian Ocean tsunami in Thailand and Sri Lanka and after the 2005 Pakistan earthquake. The Bank funded reconstruction and influenced government reconstruction policy.

Advantages	Disadvantages and Risks	Recommendations
Mobilizes households to take an active role in rebuilding, which speeds recovery from psychological trauma. Compensation can be adjusted to the needs of the household related to income, family size, livelihoods, socio-cultural requirements, etc. Consistent with normal incremental housing construction practices. Encourages repair of houses and use of salvaged and local building materials. Tends to involve local building industry, thereby contributing to restoration of local economy and livelihoods. Helps preserve community's cultural identity by ensuring continuity in local building tradition and architectural style. Allows people to "top up" compensation with their own savings and build a house reflecting their specific needs and aspirations. Is less subject to disruptions caused by unstable political situation (for example, eastern provinces of Sri Lanka). Is viable for dispersed and remote settlements (for example, Pakistan, Gujarat).	Not suitable for complex building technologies, such as high-rise buildings. Quality of construction may be poor, and pre-disaster vulnerabilities may be reproduced. People can have trouble complying with requirements if building codes are too rigid and biased toward alien housing technologies. Hard to implement in resettled communities and poor communities with no building experience (for example, urban squatters). Households of elderly and vulnerable groups will face difficulties managing reconstruction alone and may not reach milestones for subsequent compensation payments.	Establish a support system for homeowners that is responsive to local requirements. Ensure adequate training for trades people and construction supervisors. Acknowledge housing rights and accommodate special needs of tenants, squatters, and the homeless. Adjust the approach to serve geographically and socioeconomically disadvantaged regions and people. Ensure that compensation is equitable and sufficient to satisfy minimum housing standards. Establish a delivery mechanism for financial assistance that is easy to understand and access. Adopt measures to prevent inflation and ensure access to quality construction materials. Consider involving NGOs as part of the enabling system. Ensure building codes are based on local building technologies and materials. Provide special attention and support to vulnerable groups (orphans, widows, the elderly, and the very poor).

Community-Driven Reconstruction (CDR)

CDR entails varying degrees of organized community involvement in the project cycle. Communities may be involved in one or all of the following: decisions regarding housing design and building materials, production or distribution of building materials, and housing reconstruction. Likewise, the degree of involvement and control over reconstruction varies between and even within agencies. The agency may suggest housing designs, technologies, and/or materials, and may deliver construction materials, financial assistance, and/or training. Finally, it may employ skilled and unskilled laborers from the community, facilitate the formation of construction committees, or even support house owners to manage their own construction (similar to ODR).

Experiences with CDR Approach

- Adopted by several national NGOs following the 2001 Gujarat, India, earthquake. The level of satisfaction was relatively high but lower than for ODR houses.
- Adopted by UN-HABITAT, KfW, and Uplink in Aceh, Indonesia, following the 2004 Indian Ocean tsunami, using somewhat different interpretations of the approach. Uplink gave people more choice, but community-based construction committees had an important role and received financial and material resources to carry out the construction. In some cases, local contractors gained control of the committees. KfW gave materials and financial assistance directly to owners but provided little choice over building materials and designs.
- Used by the city of Ocotal, Nicaragua, in a relocation site following Hurricane Mitch in 1998, to house residents of displaced neighborhoods and others relocated from highly vulnerable sites. Culturally and environmentally sensitive housing designs and building materials were proposed by a local architect, but entitlement was contingent upon participation in construction of at least one family member. A communal kitchen and child-care center enabled the participation of mothers.

Advantages	**Disadvantages and Risks**	**Recommendations**
Useful where: • new building technologies, materials, or housing designs are being introduced; • agencies must bring in building materials; or • housing reconstruction is linked to community development activities. Can foster social cohesion when people from different communities are relocated to a common site. Has high levels of flexibility and accountability and provides control for owners over reconstruction. Ensures access to construction materials. Scale of project may contribute more strongly to reactivation of local economy.	Overheads may be high because of agency involvement. Agencies leaving little room for individual preferences by imposing standard designs and materials. Local contractors hijacking community construction committees that have extensive control over resources. Real participation may be limited if: • consultation is only with community leaders whose views don't reflect those of the community; • processes are captured by local elites; • participation is perceived as excessively time-consuming; or • women's perspectives are not incorporated.	Adopt CDR only if a need exists for high agency involvement. Ensure project staff is qualified to lead a participatory reconstruction process. Avoid overruling community preferences and recognize the different needs and capacities of participants. Introduce mechanisms to prevent project resources from being hijacked by local elites.

Contractor-Driven Reconstruction *In-Situ* (CRIS)

In CRIS, an agency hires one or more contractors to design and build the houses. Design, materials, and expertise are likely to be imported from outside the community.

CRIS takes place on people's own plots. It allows homeowners some degree of control over quality control and participation in specific tasks. Even during construction, they may be able to

make suggestions to or modify the design. CRIS should eliminate the need for land acquisition and should allow people to know from the beginning where their house will be located. However, if housing designs are standardized or different from local designs, it may be difficult to fit the houses into pre-disaster settlement layouts or to modify them later. CRIS, therefore, often results in similar or even worse outcomes than those of CRRS.

Experiences with CRIS Approach

- Many international NGOs and private companies "adopted" villages and used CRIS to build houses after the 2001 Gujarat, India, earthquake, even though government adopted an ODR policy. These projects often became a mix of CRIS and CRRS in adjacent sites where the housing designs did not fit existing sites and local governments were convinced to buy land for new construction. Contractors that did not respect the heritage sites and spatial organization caused irreversible damage to historical villages.
- Because of difficulties and delays in acquiring new land, many private voluntary organizations adopted CRIS in Tamil Nadu, India, following the 2004 Indian Ocean tsunami. However, they refused to start construction until the ground was cleared of houses and vegetation. As a result, hundreds of vernacular houses that were culturally and climatically appropriate and easily repairable were demolished, and thousands of trees were felled, which negatively affected people's livelihoods and well-being.[3]

Advantages	Disadvantages and Risks	Recommendations
Communities are not displaced. People can be effectively involved in construction and monitoring. New building technologies can be introduced. No land acquisition is required.	A contractor's construction modes, designs, and settlement layouts are often not compatible with existing sites. Remaining built and natural environments may be considered an obstacle to reconstruction, leading to unnecessary house demolition and tree removal, causing high social and environmental impacts and conflicts. Exogenous building technologies may have negative environmental impacts and may not meet local requirements. Community participation may be more difficult to incorporate or may be limited to community leaders, resulting in elites getting disproportionate benefits. Construction quality is often poor. Contractors may encourage communities to demand additional benefits from government.	Avoid CRIS if local building capacity is available. If CRIS is unavoidable, ensure community participation in choices regarding housing design, building materials, and construction. Require contractors to use local building materials and designs. Preserve buildings and trees that survived the disaster. Establish social audit mechanisms to ensure local accountability. Ensure quality control through independent third-party audit system. Protect the heritage value of pre-disaster environment, both built and natural. Ensure equitable distribution of project benefits with transparent entitlement criteria based on social assessments and monitoring their application.

3. Jennifer Duyne Barenstein, 2006, Housing Reconstruction in Post-Earthquake Gujarat.

Contractor-Driven Reconstruction in Relocated Site (CRRS)

Using a CRRS approach, an agency contracts the construction of houses on a new site, generally with little or no involvement with the community or homeowners. The community, government, or agency supporting the reconstruction may purchase the land for the new settlement. Upon completion, the houses may be allotted randomly, either through lottery or using criteria defined by the community or the agency, or both. CRRS, often justified as a risk-mitigation measure, may be advisable when communities are located on hazardous sites. And agencies may favor CRRS for the ease of constructing on a clear site without tenancy issues or other complications.

However, CRRS should be avoided whenever possible. It frequently leads to the construction of costly, inappropriate housing of poor quality and settlement arrangements that do not meet the socio-cultural and livelihood requirements of the people, causing severe economic consequences and low occupancy rates. The argument that CRRS results in higher construction quality is rarely valid, because of poor supervision or the lack of qualified contractors. Moreover, finding an appropriate site can be a major challenge; this failure is one of the principal reasons for dissatisfaction with this approach. (See Chapter 3, "To Resettle or Not to Resettle.")

Experiences with CRRS Approach

- International NGOs and national private companies opted for CRRS after the 2001 Gujarat, India, earthquake because of perceived organizational advantages and higher visibility, including naming rights to new settlements. Local elites were sometimes given incentives to sell this approach to local officials. However, by accepting these offers, people lost their entitlement to government financial compensation. When they later found the designs, layouts, and construction quality to be subpar and refused to occupy these villages, they ended up liquidating assets, such as land and livestock, so they could rebuild elsewhere. An independent study found that in villages that opted for ODR, housing conditions were considered better than before the earthquake and economic conditions unchanged, while in villages reconstructed with the CRRS approach, a significant percentage of households reported high levels of indebtedness and worse economic conditions.[4] (See the "Case Study" section for more information.)
- On the other hand, CRRS has had positive results in urban contexts. Two examples are the city of Nagapattinam in Tamil Nadu, India, and Banda Aceh, Indonesia, after the 2004 Indian Ocean tsunami. In Banda Aceh, a Korean voluntary organization acquired land in a middle-class neighborhood for an urban housing project. Although the houses were small, high occupant satisfaction was attributed to housing design, good location, access to public services, and the fact that livelihoods were not site-dependent.

4. Jennifer Duyne Barenstein, 2006, Housing Reconstruction in Post-Earthquake Gujarat.

Advantages	Disadvantages and Risks	Recommendations
Appropriate where pre-disaster settlements are located on hazardous sites. May be faster and more cost-effective. May allow pre-disaster housing problems to be addressed (for example, shortages, vulnerability, and poor housing conditions). More appropriate for dense urban settlements, rental housing, and complex building technologies (multistory construction). Can contribute to heritage conservation by relocating from sensitive sites. Can address housing needs of various categories of tenants simultaneously, depending on design.	Difficulties and delays in finding appropriate land. Negative socioeconomic impacts and disruption of livelihoods from relocation may cause occupancy rates to remain low. Poor site selection may cause negative environmental impacts or re-create vulnerability of original location. Construction quality is often poor. Loss of local building culture and capacity. Disruption of access to common property and to natural and cultural heritage sites. Settlement layout, housing designs, and building technologies can be alien to local communities and culturally inappropriate, particularly in rural areas. Repairs and extensions to exogenous building technologies may be unaffordable. Contractors may encourage communities to demand additional benefits from government. Lack of community participation or oversight may result in poor targeting, unequal distribution of houses, and elite capture.	Only adopt CRRS if ODR is not possible on safety grounds. Avoid this approach in rural areas, anywhere people can manage house construction on their own, and where livelihoods are very site-specific. Carefully assess relocation effects on livelihoods and provide mitigation measures. Identify beneficiaries and allot houses during the planning stage. Ensure community participation throughout the project cycle, site selection, settlement planning, and housing design. Take into consideration socioeconomic and gender-specific requirements.

Relation to Existing Public Policy

There are unlikely to be public policies at either the national or local level that specifically address post-disaster reconstruction approaches. Yet there may be national or local housing sector programs that provide new housing to low-income people or subsidies for upgrading that can provide a framework for defining the post-disaster housing reconstruction strategy. It is unlikely that all reconstruction will take place using the same approach, and the decision should be made in consultation with affected populations.

Government should take an active role in setting the rules for and overseeing the activities of all agencies involved in reconstruction. It should insist that agencies conform to the following good planning and construction principles:

- Consistently applying urban/rural plans and planning principles established by the locality
- Making sure there is conformance with local building codes and standards

- Minimizing environmental impacts in construction, site planning, and building design and technology
- Ensuring community participation in all aspects of development, including those managed by outside agencies and private contractors

Recommendations

1. When reconstruction is simple and mainly entails repair of damaged housing that is otherwise adequate, adopt CA; otherwise, whenever possible, adopt ODR.
2. Use CDR when community life and the local economy is disrupted by the disaster or relocation is required, or both.
3. Avoid CRIS, especially in rural areas and in places where the built environment and natural habitat are significantly intact.
4. If CRRS is absolutely necessary, government should require community participation and establish simultaneous audit and oversight mechanisms.
5. Help communities rebuild their houses with appropriate enabling mechanisms identified through a socioeconomic assessment that includes households with vulnerable populations.
6. Under every approach, ensure that construction methods embody good planning and environmental principles.
7. Require community participation in all aspects of the process, even when outside agencies or the private sector are in the lead.

Case Study

2001 Gujarat Earthquake, Gujarat, India

Owner- and community-driven approaches favored over others

An independent household survey conducted in 2004 compared citizens' satisfaction with different reconstruction approaches used in the 2001 earthquake in Gujarat, India.[5] Satisfaction levels decreased when houses were built by contractors. The household satisfaction results are as follows:

- 100 percent: ODR project in which the government provided financial and technical assistance and local NGOs provided additional material assistance.
- 93 percent: government-supported program using the ODR approach without NGO assistance.
- 90 percent: programs managed by NGOs using the CDR approach.
- 23 percent: households that received CRRS houses complained about their non-participatory role, discrimination in favor of local elites, and disruption of family networks. Many refused to move to the new village, and the houses remained unoccupied.

Self-built houses in Gujarat

Contractor-built houses in Gujarat

[5]. Jennifer Duyne Barenstein, 2006, Housing Reconstruction in Post-Earthquake Gujarat.

[Reviewers: Please provide case studies that demonstrate good and bad practices related to the choice of reconstruction approach.]

Resources

Abhiyan. 2005. Coming Together: A Document on the Post-Earthquake Rehabilitation Efforts by Various Organisations Working in Kutch. Bhuj: United Nations Development Program/Abhiyan.

Adams, L., and P. Harvey. 2006. *Cash for Shelter. Learning from Cash Responses to the Tsunami.* Humanitarian Policy Group, Issue Paper No. 4. London: ODI. Available online.

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Barakat, Sultan. 2003. *Housing Reconstruction after Conflict and Disaster.* HPN Network Paper, No. 43, London: Overseas Development Institute.

Causton, A., and G. Saunders. 2006. "Responding to Shelter Needs in Post-Earthquake Pakistan: A Self-Help Approach." *HPN Humanitarian Exchange* 34. Available online.

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Section 2
Planning Reconstruction

Chapter 5
Land Use and Physical Planning

Introduction

Land use and physical planning provide a forum in which the interests of multiple stakeholders as well as the physical, social, and economic constraints on land uses can be debated and balanced in the post-disaster context. Specifically, post-disaster planning provides:

- a framework for stakeholders and elected representatives to relate reconstruction to longer-term development priorities;
- a forum within which reconstruction decisions can be made;
- a tool for incorporating disaster risk reduction (DRR) into the reconstruction effort; and
- an opportunity to modify policy, legislation, and regulations; strengthen institutions; and improve construction methods.

This chapter shows how land use and physical planning—complex processes that entail normative, institutional, and technical aspects—can be used to establish a coherent framework within which affected populations can permanently reestablish their housing and livelihoods after a disaster.

Key Definitions

Land use planning is a public policy exercise that regulates the use of land to secure a community's physical, economic, and social efficiency and well-being. By considering socioeconomic trends as well as physical/geographical features (such as topography and ecology), planning helps identify the preferred land uses that will support local development goals. The final outcome is allocation/zoning of land for a specific use (or combination of uses), regulation of the intensity of use, and formulation of legal and administrative instruments that support the plan.

Physical planning is a design exercise that uses the land use plan as a framework to propose the optimal physical infrastructure for a settlement or area, including infrastructure for public services, transport, economic activities, recreation, and environmental protection. A physical plan may be prepared for an urban area or a rural area. A plan for an urban region can have both rural and urban components, although the latter usually predominates.

Guiding Principles

- A strategic land use and physical planning exercise precedes project development.
- The planning process encourages and provides community participation and ownership of the process.
- Rather than a static "master plan," land use and physical planning exercises establish an ongoing planning process supported by priority action programs in key sectors.
- Planning should be used to reduce vulnerabilities.
- Appropriate planning exercises address both public and private investments and land uses.

- Existing laws, regulations, plans, and institutional frameworks should form the basis of reconstruction planning.
- The situation of informal and illegal occupiers should be addressed in reconstruction planning.

Risks and Challenges

1. Initial damage and needs assessments inadequately consider land issues.
2. Land rights and access to land are ignored in reconstruction planning.
3. Ad hoc planning processes create a disconnect between reconstruction and existing land use or physical plans.
4. Institutional and community disagreement over land use and site location delay reconstruction.
5. Obstacles in acquiring or legalizing land for resettlement, reconstruction, and infrastructure rights-of-way.
6. Lack of coordination between infrastructure rehabilitation and housing reconstruction.
7. Local cultural, social, and economic life is ignored in planning reconstruction.

Technical Issues

Decide on a Plan to Guide Reconstruction

In the aftermath of a disaster that dictates changes in land use, officials have several options. They can rely on existing land use plans, conduct a planning exercise to create new plans or update outdated plans, or develop a new plan only for the disaster site. The scope of the disaster will suggest the proper approach. While planning exercises may appear time-consuming, they ensure that the development concept applies up-to-date planning principles, help people envision the reconstructed future, and build confidence that decisions about reconstruction will be made. (See Annex: Data and Tools for Post-Disaster Reconstruction Planning).

Three types of plans are often used in combination: the vision plan, the structure plan, and the concept plan.[1]

Vision Plan (started early in the recovery phase). Local officials, in coordination with community members, frame a vision for the development of the community. Together, they establish minimum standards of community facilities, infrastructure, socioeconomic supports, and environmental protection. The vision plan guides all later plans and reconstruction efforts.

Structure Plan (prepared immediately after announcing the vision plan). Providing the principles and policies for a settlement's development, a structure plan usually covers a city or town and identifies hazard areas and mitigation policies, environmental and heritage attributes, roads and public transport facilities, and broad land use zones. The plan also indicates areas of priority development and maximum densities. It forms the basis of all other specific plans, including transportation and infrastructure.

1. World Bank, 2008, *Urban Planning Guidelines* (Washington, DC: World Bank).

Concept Plan (applies the structure plan to a particular area). Both structure and concept plans should include benchmarks and indicators to ensure minimum standards are met and to measure progress. Possible indicators can include area built under residential development and percentage of areas accessible to public transport.

HOW TO DO IT
Land Use or Physical Plan

The handbook will include specific instructions on how to organize and carry out a land use plan and a site-specific physical plan.

Agree on Principles to Guide Planning

No matter the scale of the planning exercise or whether it is used to update plans or develop new ones, good planning principles should guide the process. The best principles for planning are those that both professional planners and the community agree on and those that embody the larger development vision for the locality. Some principles to be considered are the following.[2]

At the town level

- **Restore connectivity.** Restoration of the social and economic linkages is important for revival of communities. Transportation, communication, and road networks must be priority items in reconstruction so they can transport labor and material for reconstruction. Connectivity at the local level will make mobility easy for all means of transportation, including walking and bicycles, and will support livelihood activities.
- **Consolidate unused land.** Since reconstruction requires land, plans may be needed to consolidate land so that it can be made available for development. Unused public land and abandoned industrial land are two sources to be considered.
- **Improve energy efficiency.** Reconstruction presents excellent opportunities to promote housing designs, development patterns, and neighborhood layouts that lower living costs by lowering energy consumption. Even landscaping options and house orientation contribute to this goal and should be considered.
- **Create development nodes.** Relocated and rehabilitated settlements should be planned so that they are attractive for investment and development. Providing quality public services and sites for services and other land uses desired by residents will help new settlements become vibrant communities.
- **Reconstruct strategic towns**. Economic centers that serve as growth engines should be reconstructed as early as possible. Strategic towns and cities absorb population, generate employment and nonwage economic opportunities, and provide social services to affected people. Even if such cities have the capacity to meet the needs of their own population and support other villages and towns, they may need assistance to plan reconstruction.[3]

At the site level

- **Integrate residential and economic land uses.** Home-based businesses are the life blood of low-income communities. Ensure that neighborhood plans and housing designs provide adequate and appropriate space for these activities.

2. World Bank, 2008, *Urban Planning Guidelines* (Washington, DC: World Bank).
3. World Bank, 2008, *Urban Planning Guidelines* (Washington, DC: World Bank).

- **Avoid enclave development.** A study of relocated communities reveals that establishing enclaves for newcomers isolates them socially, prevents integration, and brings a host of social problems. Therefore, while planning for relocation, careful integration into the fabric of any receiving settlements is absolutely essential.
- **Plan for emergency access.** Any settlement plan must identify escape and evacuation routes and provide access for emergency vehicles and fire service engines. Those affected by the disaster may not return or occupy sites that don't have adequate escape routes.

Choose Resettlement Sites Carefully

This handbook recommends that relocation be avoided whenever possible. Forcible resettlement should be avoided at all costs. (See Chapter 3, "To Resettle or Not to Resettle.") When relocation is unavoidable, planning processes can help ensure that the sites selected are the most suitable possible and contribute to broader development objectives.

Resolving Land Rights and Titling Issues in Reconstruction

There is an inextricable connection between poorly functioning land systems and disasters.[4] Where tenure security is weak or land markets are not accessible by all groups, vulnerability is higher, disaster impacts are greater, and recovery is slower. Indicators of poorly functioning land systems include:

- Large number of settlements where occupants have extralegal, customary, or informal tenure
- Poor land governance, including poor land records and weak capacity in land administration institutions
- Lack of tenure security with all types of property rights
- Inferior land rights for women because of inheritance or marital law or administrative practices
- Highly unequal land distribution

Before a disaster, weak land systems will cause populations to settle in high-risk areas and will leave these settlements beyond the reach of DRM measures. Occupants with weak tenure rights hesitate to evacuate, despite pre-disaster warnings, for fear of losing their land—and may instead lose their lives. Female-headed households, more apt to evacuate, face disproportionate risks of lost land or property from invaders or theft.

After a disaster, an influx of the poor and landless from other areas to take advantage of temporary emergency shelters can make closing them difficult when the disaster subsides. Renters, squatters, and landless people who leave the area may have difficulty returning to their disaster-affected land, reestablishing their lease terms, or securing affordable rent. Legal owners may have lost records or have customary rights with no documentation. None of these problems are solved easily or rapidly in most countries, even under the best conditions, and they will inevitably arise in housing reconstruction programs.

Some measures that may be considered to solve post-disaster land rights problems include the following:

4. UN-HABITAT. No date. *Scoping Report: Addressing Land Issues after Natural Disasters.* http://www.gltn.net/images/stories/downloads/utf-8nat_disaster_scoping_paper_jan_08.pdf.

Addressing Land Rights Problems in Post-Disaster Reconstruction

Common land rights problem	Potential solutions
Owners with documented land rights who have lost documentation in the disaster	Use community-based mechanisms or traditional authorities to validate claims Provide new (or interim) documentation to landowners, including in previously undocumented areas Provide technical assistance to land administration agency to accelerate normal land administration procedures including replacement of documents
Owners with rights to land, but no formal title or documentation to prove it	
Landless who need to be resettled, including disaster refugees	Acquire public land: A common solution is to use public land for resettlement, sometimes in spite of its suitability. Availability is not sufficient justification; use should be preceded by a good site evaluation. Acquire private land: Market-based acquisition from landowners willing to sell. Government offers limited fiscal incentives to sellers (property tax rebate) Long-term rental assistance rather than land ownership.
International agencies or individuals attempting to acquire legally titled land as part of reconstruction confronted by poor records and inefficient land administration procedures	Provide technical assistance to land administration agency to accelerate normal land administration procedures. Willing owners (public or private) lease land to agencies until sale/purchase can be formalized. Agency commits to following through on legalization of ownership Provide assistance to individual buyers to lower transaction costs or assist with property purchase
Large parcel needing to be subdivided to provide individual title to those resettled	Provide technical assistance to land administration agency to accelerate normal land administration procedures Agency provides collective land rights to those resettled as a group as a permanent or temporary solution Agency provides interim documentation until subdivision and titling are formalized
Land disputes between households affected by the disaster or with the receiving community caused by resettlement without formal titles or invasion	Avoid resettlement programs that create questionable land rights at all costs Negotiate with claimants to purchase land or land rights and resolve claims before relocation Establish formal or community-based mediation mechanisms to resolve post-disaster land issues
Governments considering land distribution to those displaced but fearing protests from other landless groups not affected by the disaster, or fear influx of fraudulent claims	Announce compensation scheme and eligibility criteria after the census of affected population has taken place Link compensation scheme or land distribution to existing social compensation schemes and policies Use disaster to establish compensation or land distribution schemes that can be expanded to other groups post-disaster Employ social communication tools to explain compensation strategy and rules

Common land rights problem	Potential solutions
Inflated price of land needed for resettlement	Use market valuation methods, validated with data from outside the area Use competitive bidding process to establish prices Temporary land price controls imposed by government in the immediate post-disaster period
Areas from which communities are resettled for reasons of risk reduction may be rapidly resettled	Zoning or other regulation should be establish that forbids resettlement in high-risk areas Provide budgetary support for police or other enforcement body Create community enforcement mechanisms Secure abandoned area or transform into park or recreation area so the public has an interest in monitoring and reporting illegal settlements

Other actions that should be taken during reconstruction include:

- Focusing particularly on the housing, land, and property rights of women and children.
- Conducting an early land-tenancy assessment and carrying out ongoing monitoring of the impact of measures to address land-rights issues as reconstruction progresses.

The following long-term land rights-related reforms are often required and may also be initiated during reconstruction.

- Long-term measures to improve access to secure tenure and improve land administration systems.
- Including the reduction and prevention of informal settlements in DRR strategies.
- Maintaining redundant and secure recordkeeping, and deploying information and communications technology (ICT) data warehousing systems to digitize and protect records so they are available after the next disaster.

[Reviewers: Please provide information on specific strategies to address land ownership and titling issues in reconstruction programs.]

Promote Disaster Risk Reduction in Reconstruction Planning

To avoid reproducing the vulnerabilities that contributed to the disaster, multiple actors need to be engaged in implementing and managing DRR.[5] The following actions should be taken to integrate DRR into the planning process.

- Include DRR as an integral element in every phase of planning for reconstruction.
- Strengthen both institutional and community capacity, and commit resources to ongoing DRR activities.
- Implement DRR training and information sharing that reaches all stakeholders.
- Plan live exercises that cover risk reduction, safe construction techniques, siting, and building maintenance in order to integrate DRR into housing and settlement design and maintenance.

5. ISDR, 2006. Words Into Action: Implementing the Hyogo Framework for Action Document for Consultation, 81; ProVentium Consortium, 2007, Construction Design, Building Standards and Site Selection. Guidance Note 12; http://www.sheltercentre.org/sites/default/files/ProVention_ToolsForMainstreaming_GN12.pdf.

- Investigate how risks can be transferred through insurance and micro-insurance schemes, and facilitate the implementation of feasible measures.

Make Community Participation an Integral Part of Planning

The management of settlements and of their livelihoods interact at a local level; therefore, the participation of the community is fundamental for sustainable development. The following conditions are critical for implementation of this approach (see Chapter 17, "Community Participation"):

- An inclusive decision-making process particularly focused on vulnerable populations, including women
- A high level of interaction, cooperation, and partnerships among different stakeholders, including civil society, national and local governments, the private sector, the media, and national and international support agencies
- Support by local governments to establish a coherent framework and effective facilitation mechanisms and to provide the necessary information base

Relation to Existing Public Policy

Local and National Policies/Regulations

Public agencies at the national and local government level in disaster-affected countries may already have in place physical and land use policies and regulations. Implementation of the policy may fall within the jurisdiction of the Ministry of Public Works, the Ministry of Land, and/or the Ministry of Urban Development and Planning Departments at different levels. Most disaster-affected urban areas have physical and land use policies and regulations in place, generally under the jurisdiction of the local planning department or planning commission. Rural areas may have no plans or may be governed by regional or rural development plans overseen by a higher level of government, such as the state or province.

International Frameworks

Land use issues are addressed in a number of framework documents and instruments issued by international agencies. These are included in the Resources section below.

Physical planning, because it is context-specific, is addressed less in international frameworks. The guides prepared by the Oregon Natural Hazards Working Group,[6] the Shelter Centre and OCHA,[7] UNEP,[8] and the European Union's Sustainable Urban Development Unit[9] address physical planning issues.

6. Partners for Disaster Resistance & Resilience Post-Disaster Recovery Planning Forum: How-To Guide, http://nctr.pmel.noaa.gov/education/science/docs/Reports/OR_Post-Disaster_Guide_20070716_Draft.pdf.
7. OCHA, 2008, Transitional Settlements and Reconstruction after Natural Disasters (Geneva: United Nations), http://www.sheltercentre.org/sites/default/files/TransitionalSettlementandReconstructionAfterNaturalDisasters.pdf; and T. Corsellis and A. Vitale, 2005. Transitional Settlement: Displaced Populations (Oxford: Oxfam Publishing), http://www.sheltercentre.org/node/3128/download/2179.
8. UNEP, 2008, Environmental Needs Assessment in Post Disaster Situation: Practical Guide for Implementation, http://www.humanitarianreform.org/humanitarianreform/Portals/1/cluster%20approach%20page/clusters%20pages/Early%20R/UNEP%20PDNA_pre-field%20test%20draft.pdf.
9. European Commission, 2002, Consultative Guidelines for Sustainable Urban Development Co-Operation towards Sustainable Urban Development: A Strategic Approach (Luxembourg: European Commission). http://www.ucl.ac.uk/dpu-projects/drivers_urb_change/official_docs/Tow_Sust_Urb_EU_Guidelines.pdf.

Recommendations

1. Carry out a strategic land use planning exercise before planning specific projects, even if there are time constraints.
2. Agree on the principles that will guide planning early in the planning process.
3. Use a variety of mechanisms to involve stakeholders—including the private sector—in planning processes.
4. Respect or update existing laws, regulations, policies, plans, and institutional frameworks when planning reconstruction, as appropriate.
5. Include DRR as an integral element in every phase of planning for reconstruction.
6. When resettlement is unavoidable, integrate relocation areas into the existing fabric of receiving towns and cities.
7. In planning reconstruction, take steps to resolve the situation of informal and illegal occupiers of land.
8. Consider using a community-based methodology for establishing property boundaries if good records are not available.

Case Studies

2000–2001 Floods, Mozambique

Mozambique develops a techno-legal framework to address land issues

Between 2000 and 2001, flooding in Mozambique affected 2.5 million people and left 200,000 people homeless. The floods magnified poor land management practices prior to the disaster. (While some disaster-affected areas had land use plans, and measures to mitigate erosion and landslides, they often were not followed.) Land records and equipment were destroyed by the floods. Insecurity of land and housing tenure meant that some people affected by the flood refused to leave low-lying lands. Other concerns included the property rights of flood victims who did not return to their previous locations and of those settled in new areas, particularly women. (Land rights in Mozambique are acquired through occupation or authorization of statutory use rights. Family law recognizes equal land rights for women; however, in practice, access can be limited.) An assessment by UN-HABITAT noted that the allocation of housing and development of new settlements after the flooding lacked adequate technical and legal backing, presaging the emergence of land disputes between affected households and in resettlement locations. The United Nations recommended that irregular allocations and unlawful occupations of land be remedied as quickly as possible. UN-HABITAT and the government of Mozambique have implemented a portfolio of projects to[10]:

- improve the capabilities of municipalities and the Directorate of Geography and Cadastre;
- rehabilitate the offices of institutions involved in land registration;
- prepare maps of rural and urban settlements affected by the floods;
- delineate and register properties in new settlements; and
- review the legal and institutional framework governing rights to land.

10. United Nations Human Settlements Programme, *Scoping Report: Addressing Land Issues after Natural Disasters*, http://www.gltn.net/en/general/post-disaster-land-guidelines.html.

2001 Gujarat Earthquake, India

Comprehensive reconstruction package in four towns of Gujarat

The state of Gujarat's comprehensive reconstruction program covered urban and rural housing reconstruction and local/regional infrastructure development. These packages were designed as owner-driven programs. Government played a facilitating role, providing land and infrastructure. Village councils undertook physical planning for rural housing. For four of the severely affected urban areas, government commissioned detailed land use planning and physical planning exercises, leading to the preparation of development plans at the city level and town planning schemes at the micro level. New development control regulations were also framed for each city. In the town planning schemes, land readjustment was carried out and new plots close to the original location were given to the original owners, while new streets and open spaces were created to enhance safety, comfort, and efficiency. Four relocation sites were planned and implemented simultaneously with the *in-situ* redevelopment options. Once the planning activity was over, owners were provided with housing assistance and helped construct their own houses under a new regime of building regulations.

2005 Reconstruction in Nias and Aceh

Community-driven land record system recovery

Following the 2004 Indian Ocean tsunami, the Multi-Donor Trust Fund administered by the World Bank financed an integrated approach to community development and recovery. A total of $222 million was provided to finance five projects that used community decision making to reestablish property rights, construct housing, and develop infrastructure. With the assistance of a network of 13,000 facilitators, villages and urban areas managed needs assessments, and project design and implementation, supported by NGOs and the Land Administration Agency. A unique aspect of this program was the methodology of establishing or reestablishing land rights. Community members carried out a land inventory process using guidelines developed by the Land Administration Agency. The agency validated the community's findings regarding ownership and boundaries by using land records from before the tsunami and parcel measurements, and then securing community agreement. The ruling on the land parcels was then published and registration of titles was offered free of charge. The goal was to formalize 600,000 land titles. By 2008, 211,839 parcel surveys had been completed, 126,107 land titles were registered and 112,460 had been distributed. As part of a capacity-building effort, 700 NGO representatives and 610 Land Administration Agency officials had been trained in conducting land parcel assessments. The land management system was computerized and joint titling for married couples was introduced.

Source: Multi Donor Fund. Implementing Projects Acheiving Results. December 2006. http://siteresources.worldbank.org/INTINDONESIA/Resources/226271-1113558711510/MDF-18months-report.pdf (accessed April 2009).

[Reviewers: Please provide case studies that demonstrate good and bad practices related to land use and land use planning in construction projects.]

Annex 1

Steps in the Land Use Planning Process

Step 1. Establish goals and terms of reference. Determine the existing land use situation followed by discussions with local residents and the government to find out what they need. Land area, goals and objectives of the plan have to be arrived at. The key output at this stage is the terms of reference.

Step 2. Organize the work. Identify activities, organize team and create a schedule to implement activities by consulting all those likely to be affected by the plan.

Step 3. Analyze the problems. Identify problems by studying existing land use, consultations with land users to determine needs and determine causes of problems and barriers to development.

Step 4. Identify opportunities for charge. Identify and draft a design for a range of land-use types that might achieve the goals of the plan; present these options for public discussion.

Step 5. Evaluate land suitability. For different land uses identify the area requirement and compare with nature of available land to arrive at the physical land suitability.

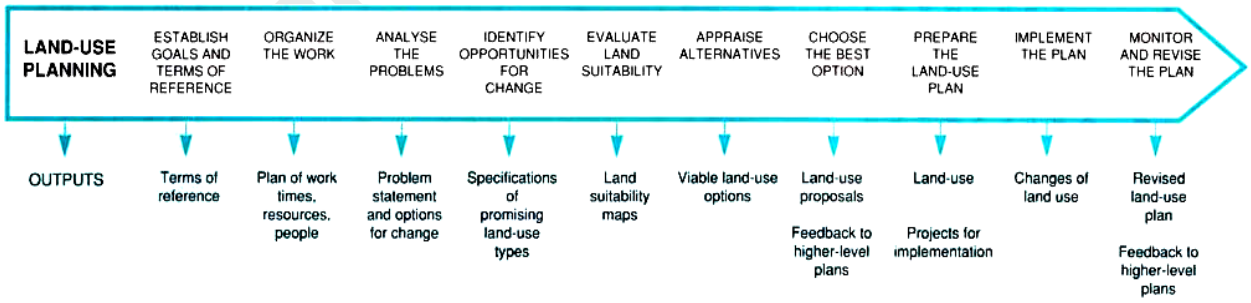
Step 6. Appraise the alternatives: environmental, economic and social analysis. Determine the environmental, economic and social impacts for each combination of land use for the community. Identify the effects as positive or negative and decide on alternatives

Step 7. Choose the best option. Conduct public meetings and discussions to find out the optimal solution. Based on discussions and analysis determine which land use changes should be made.

Step 8. Prepare the land-use plan. Assign land according to the areas chosen and create land management plans. Identify ways to implement the land use improvements. Prepare budgets, policy guidelines after consultation with local decision makers and agencies.

Step 9. Implement the plan. Implement the plan as part of the planning process or as a separate project involving existing implementing agencies.

Step 10. Monitor and revise the plan. Monitor the project to ensure the goals are met. Refer figure below that summarizes the steps in land use planning.



Food and Agriculture Organization. 1996. Guidelines for Land Use Planning. Rome: FAO. http://www.fao.org/docrep/t0715e/t0715e00.HTM.

Annex 2

Data and Tools for Post-Disaster Reconstruction Planning

The following activities help ensure that planning is based on adequate, up-to-date information.

Impact assessment. Gather critical data at the macro level, such as pre-disaster demographics; geographical impact; and damage and loss from the disaster on human and animal life, property, crops, arable land, and water resources. At the micro level, develop detailed information on localized impacts, damage, and community resources. Remote sensing methods (satellite imagery, aerial photography) can be useful to provide information on areas affected by the disaster. Field surveys capture information relating to loss of life or specific types of damage. Communities can create simple databases and maps to situate damage and resources. All this information should be captured in a geographical information system (GIS) platform.

Vulnerability and land suitability assessment. Vulnerability assessment requires detailed information on, among other things, quality of housing stock and infrastructure. Land suitability mapping uses multiple parameters, such as topography, ecology, demography, and infrastructure availability, which are assessed and weighted to determine suitability of land for specific purposes. These tools provide a sounder basis for decisions related to resettlement locations and infrastructure development.

Legal and institutional framework assessment. Working with the relevant local institutions, analyze the functional and geographic jurisdiction of laws and institutions to identify opportunities during post-disaster reconstruction to revitalize the institutions and their regulations. In developing countries, urban areas are generally covered by town or city planning legislation and its related institutional structures and regulations. Rural areas that lack specific land use planning or regulatory instruments may be covered by regional or state plans.

Reconstruction strategy. At an early stage, analyze the proposed reconstruction strategy in the context of pre-existing land use plans or other physical plans to identify potential conflicts and alternatives.

Resources

Brown, O., Crawford, A., and Hammill, A. 2006. *Natural Disasters and Resource Rights Building: Resilience, Rebuilding Lives.* Winnepeg, Canada: International Institute for Sustainable Development. http://www.iisd.org/pdf/2006/tas_natres_disasters.pdf.

Centre on Housing Rights and Evictions. No date. The Pinheirho Principles: United Nations Principles for Housing and Property Restitution for Refugees and Displaced Persons. Geneva: COHRE. www.cohre.org/store/attachments/Pinheiro%20Principles.pdf.

Food and Agriculture Organization. 1996. *Guidelines for Land Use Planning*. Rome: FAO. http://www.fao.org/docrep/t0715e/t0715e00.HTM .

The Global Land Tool Network (GLTN) developed a series of guidelines and experiences not explicitly directed to disasters but applicable in such cases. http://www.gltn.net/en/general/about-gltn-4.html and http://www.gltn.net/images/stories/downloads/ utf8nat_disaster_scoping_paper_jan_08.pdf.

International Institute for Sustainable Development (IISD). 2006. Land use and land titled cases, experiences and policies, especially in Indonesia and Sri Lanka are explored in *Natural Disasters and Resource Rights: Building Resilience, Rebuilding Lives,* a report issued by IISD. http://www.iisd.org/pdf/2006/tas_natres_disasters.pdf.

ISDR. 2006. Words Into Action: Implementing the Hyogo Framework for Action Document for consultation. November, 81.

UN-HABITAT. No date. *Scoping Report: Addressing Land Issues after Natural Disasters.* Covers major literature and presents a series of cases studies. http://www.gltn.net/images/stories/ downloads/utf-8nat_disaster_scoping_paper_jan_08.pdf.

UN Inter-Agency Standing Committee (IASC). 2006. Operational Guidelines on Human Rights Protection in Situations of Natural Disasters, with Particular Reference to the Persons Who Are Internally Displaced (Guidelines on Human Rights and Natural Disasters). Washington, DC: Brookings-Bern Project on Internal Displacement, 18.

World Bank. No date. "Safeguard Policies." http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTSAFEPOL/0,,menuPK:584441~pagePK:64168427~piPK:64168435~theSitePK:584435,00.html.

Chapter 6
Infrastructure and Services Delivery

Introduction

The infrastructure component of a disaster response deals with activities conducted during or immediately after a disaster to repair lifeline infrastructure and networks. The focus of infrastructure reconstruction and service delivery in a post-disaster environment is on stabilizing the area and reducing the probability of secondary damage (e.g., fires from gas leaks or contamination from damage to sewage plants). During the rehabilitation and reconstruction phases, when shelter provision is the most important activity, the reestablishment of infrastructure services related to shelter is a priority.

Infrastructure rehabilitation and reconstruction must be carried out so that the systems are integrated both physically and chronologically with housing reconstruction, even though a complete infrastructure post-disaster reconstruction program may take many more years than the reconstruction of damaged or destroyed housing. To the extent multiple donors and public and private agencies are contributing to the rehabilitation and reconstruction of infrastructure systems, it is necessary to align and coordinate decisions among them. The housing reconstruction approach may influence how infrastructure is planned; at the same time, housing should be designed to accommodate eventual connections with public services infrastructure.

Infrastructure in this chapter refers to lifeline systems (including the water supply, sanitation, energy, communication and other utility networks, and the transportation network, including roads and other access lines) and public buildings and community services.

Guiding Principles

- Minimum technical standards are needed for effective retrofitting and reconstruction of infrastructure. These standards should incorporate disaster risk reduction and sustainable development objectives.
- All four types of disaster risk reduction (DRR) measures—policy and planning measures, physical preventative measures, physical coping and/or adaptive measures, and community capacity building measures—are relevant to infrastructure and should be utilized in reconstruction.
- Housing will often be built or rebuilt before infrastructure is fully rehabilitated or reconstructed because of long lead times for infrastructure projects. Accommodations for this will be required.
- Reconstruction projects should follow local procedures and legal and regulatory requirements, or seek to update them if they are not current.
- Agencies that will be responsible for operating and maintaining infrastructure facilities need to be involved early to have a voice in planning and to establish a sense of ownership of the results.

- Involving local technical experts, such as architects and engineers, in project development increases the chance that upgraded infrastructure standards will get incorporated into local building practices.
- Cost increases are common during reconstruction, especially when projects are large or reconstruction schedules are ambitious. (is this a guiding principle?)

Risks and Challenges

1. Setting unrealistic reconstruction timeframes in response to local political and social pressures.
2. Collapsing reconstruction schedules in an attempt to match the proposed reconstruction period to avoid donated funds being diverted elsewhere.[1]
3. Under-budgeting program management and administration costs, which, in a post-disaster environment, can cost more than twice as much as those in regular projects.[2]
4. Time and cost overruns due to limited project management capacity and increased demand for resources in local markets.
5. Not adequately coordinating infrastructure and housing reconstruction so that communities end up without proper services.
6. Environmental damage from improperly planned or engineered infrastructure projects.

Technical Issues

Damage to Infrastructure from Disasters

The magnitude of damage to infrastructure depends on the hazard type, its intensity, and the *ex ante* preparedness. The following graphic shows relative magnitudes of common impacts by disaster type.[3]

	Earthquake	Volcanic Eruption	Landslide	Hurricane	Flood	Drought
Structural damage to system infrastructure	●	○	●	●	●	○
Rupture of mains and pipes	●	○	●	⊙	●	○
Obstructions in intake points, intake screens, treatment plants, and transmission pipes	○	●	⊙	⊙	●	○
Pathogenic contamination and chemical pollution of water supply	⊙	●	○	●	●	○
Water shortages	⊙	⊙	○	○	○	●
Disruption of power, communications, and road system	●	○	⊙	●	⊙	⊙
Shortage of personnel	●	⊙	⊙	⊙	⊙	○
Lack of equipment, spare parts, and materials	●	○	⊙	●	●	○

Legend: ● Severe effect ⊙ Moderate effect ○ Minimal effect

1. Sisra Sisira Jayasuriya and Peter McCawley, 2008, *Reconstruction after a Major Disaster: Lessons from the Post-Tsunami Experience in Indonesia, Sri Lanka, and Thailand*, ADB Institute Working Paper No. 125, http://www.adbi.org/files/2008.12.15.wp125.reconstruction.post.tsunami.experience.pdf.
2. *World Bank Good Practice Note on Overall Reconstruction: Design, Implementation and* Management, 2008, World Bank, http://siteresources.worldbank.org/CHINAEXTN/Resources/318949-1217387111415/Overall_Reconstruction_en.pdf.
3. Pan-American Health Organization, 2002, *Emergencies and Disasters in Drinking Water Supply and Sewerage Systems: Guidelines for Effective Response*, PAHO, http://www.reliefweb.int/rw/lib.nsf/db900sid/LGEL-5S6BNE/$file/paho-sew-02.pdf?openelement.

Moving from Recovery to Reconstruction

Two-pronged approach. To reconcile the need to act quickly while still allowing time for design and consultation, the negative impacts of a disaster should be contained and the lifeline infrastructure should be rehabilitated during the recovery period, while the planning and design of long-term infrastructure reconstruction begins. This approach responds to critical service needs and demonstrates visible efforts, while allowing lead time for land use planning, consultations, infrastructure design, land acquisition, and procurement. Long lead times for infrastructure reconstruction mean that housing reconstruction is likely to take place before infrastructure is fully restored or reconstructed; therefore, short-term interventions may need to address the availability of basic services and safety of households in communities where reconstruction is taking place.

Short- and Long-Term Infrastructure Interventions Relevant to Housing and Community Reconstruction (*in-situ* and relocated sites)

Short-term interventions	Medium- to long-term interventions
Electric power systems	
• Give priority to functions that support other lifelines, such as treatment and pumping of water.	• Incorporate DRR mechanisms in reconstructed systems and facilities. • Provide power for households and community facilities and for pumping water and running generators and tools used in reconstruction. • Consider alternative energy generation options in housing and community building design and community planning. • Develop a DRR plan for electric power installations.
Transport systems	
• Prioritize access to critical facilities, such as hospitals, emergency centers, and fire stations.	• Incorporate DRR mechanisms in reconstructed systems and facilities. • Provide housing site access and egress, including access by emergency vehicles for delivery of construction materials. • Retrofit and upgrade to improved codes and standards. • Design road access to sites to encourage walking and bicycling. • Plan for public transit access. • Develop a DRR plan for the transport sector.

Short-term interventions	Medium- to long-term interventions
Water systems[4]	
Water loss increases health and fire hazards, and causes loss of cooling systems for telecommunications and computers. • Strengthen and support structures. • Provide alternative domestic water supply until systems are restored.[5] • Repair, clean, and disinfect wells, boreholes, water storage tanks, and tankers.[6] • Improve leak detection. Monitor water quality.[7] • Rehabilitate water distribution and treatment works.[8] • Educate population on point-of-use treatment of drinking water.[9]	• Incorporate DRR mechanisms in reconstructed systems and facilities. • Test for availability and quality of potable water before selecting resettlement sites. • Provide water for reconstruction purposes, such as mixing concrete. • Provide water for households. • Consider meter installation during rehabilitation of system. • Develop a DRR plan for all water installations and facilities.
Sewerage system[10] *and storm-water runoff*	
System loss causes untreated sewage discharge into water bodies or increased environmental and health hazards. • Provide emergency sanitation systems.[11] • Prevent defecation in areas likely to contaminate food chain or water supplies.[12] • Educate population on hygiene.[13]	• Incorporate DRR mechanisms in reconstructed systems and facilities. • Improve shut-off and diversion systems. Segregate combined overflow systems. • Consider small-scale sewage treatment options. • Design site for rainwater capture for landscaping and other non-potable purposes. • Use permeable paving materials to maximize infiltration of water. • Consider incorporating cisterns in site designs for collection of rainwater. • Develop a DRR plan for all sewerage and storm-water installations and facilities.

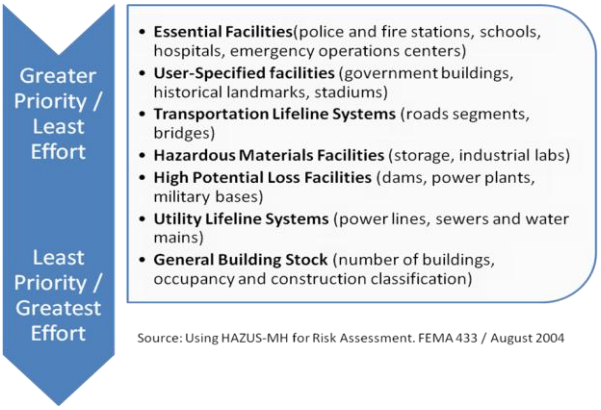
4. Pan American Health Organization, 2002, *Emergencies and Disasters in Drinking Water Supply and Sewerage Systems: Guidelines for Effective Response*, http://www.reliefweb.int/rw/lib.nsfdb900sid/LGEL-5S6BNE/$file/paho-sew-02.pdf?openelment.
5. For additional guidance refer to WEDC, *Technical Guidance Notes for Emergencies*, Nos. 9 and 12, 2005, World Health Organization, http://wedc.lboro.ac.uk/WHO_Technical_Notes_for_Emergencies.
6. Ibid, Technical Guidance Notes for Emergencies, Nos. 1, 2, and 3, 2005.
7. Ibid, Technical Guidance Notes for Emergencies, No. 11, 2005.
8. Ibid, Technical Guidance Notes for Emergencies, Nos. 4 and 6, 2005.
9. Ibid, Technical Guidance Notes for Emergencies, No. 5, 2005.
10. Pan American Health Organization, 2002, *Emergencies and Disasters in Drinking Water Supply and Sewerage Systems: Guidelines for Effective Response*, http://www.reliefweb.int/rw/lib.nsfdb900sid/LGEL-5S6BNE/$file/paho-sew-02.pdf?openelment.
11. For additional guidance refer to WEDC, *Technical Guidance Notes for Emergencies*, Nos. 13 and 14, 2005, World Health Organization, http://wedc.lboro.ac.uk/WHO_Technical_Notes_for_Emergencies.
12. Ibid, Technical Guidance Notes for Emergencies, Nos. 13 and 14, 2005.
13. IbidTechnical Guidance Notes for Emergencies, No. 10, 2005.

Short-term interventions	Medium- to long-term interventions
Solid waste	
Unmanaged waste can pollute and obstruct water sources and provide breeding grounds for insects and vermin. • Develop systems and designate sites for domestic, industrial, construction, hospital, and hazardous waste management, including recycling of rubble.[14]	• Develop integrated solid waste management plan if none exists. • Maintain interim facilities until normal operations resume and maintain rubble and construction waste recycling until reconstruction tapers off. • Reestablish normal solid water management services as soon as possible. • Incorporate recycling and composting services in solid waste management plan.
Public buildings (health facilities,[15] schools,[16] and police and fire stations)	
Social consequences and compromised health and safety result from the lack of these facilities. • Prioritize restoration of power supply, transportation access, and water supply.	• Incorporate DRR mechanisms in reconstructed buildings. • Prioritize school reconstruction to minimize disruption to school, and therefore family, life. • Construct community meeting spaces or incorporate community space in other early public building reconstruction projects. • Restore public facilities to improved construction and service standards. • Design new public buildings with energy efficiency and multiple uses in mind. • Develop a DRR plan for all public buildings.

Source: Adapted from FEMA 271/May 1996, FEMA 433/August 2004, and WEDC/WHO notes.

A DRR-Oriented Infrastructure Project Development Sequence [17]

Disaster risk reduction in reconstruction. DRR is a top priority in infrastructure reconstruction. Not only should infrastructure facilities be built so that the risk of future damage from disasters is reduced, but the infrastructure itself—such as a system for storm-water runoff—can provide protection from the impacts of disasters. With respect to the phases of DRR, the most relevant to infrastructure are:



14. For additional guidance refer to WEDC, *Technical Guidance Notes for Emergencies*, No. 7, 2005, World Health Organization, http://wedc.lboro.ac.uk/WHO_Technical_Notes_for_Emergencies.
15. Refer to PAHO, *Guidelines for Vulnerability Reduction in the Design of New Health Facilities* (Washington, DC: PAHO, WHO, WB, ProVention Consortium 2004), www.paho.org/english/dd/ped/vulnerabilidad.htm.
16. See B. Wisner, et al., "School seismic safety: Falling between the cracks?" in Rodrique, C. and Rovai, E. (eds.), 2004, *Earthquakes* (London: Routledge), http://www.fsssbc.org/downloads/SchoolSeismicSafetyFallingBetweentheCracks.pdf.
17. This section is based on Charlotte Benson and John Twigg with Tiziana Rossetto, *Tools for Mainstreaming Disaster Risk Reduction*, Guidance Note 12: Construction Design, Building Standards and Site Selection, 2007, International Federation of Red Cross and Red Crescent Societies, ProVention Consortium, http://www.proventionconsortium.org/themes/default/pdfs/tools_for_mainstreaming_GN12.pdf.

Mitigation: structural (physical) or non-structural (e.g., land use planning, public education) measures undertaken to minimize the adverse impact of potential natural hazard events; and

Rehabilitation and reconstruction: measures undertaken in the aftermath of a disaster to restore normal activities and restore physical infrastructure and services, respectively.

DRR measures can be categorized as policy and planning measures, physical preventative measures, physical coping and/or adaptive measures, and community capacity building, all of which are of paramount importance during post-disaster infrastructure reconstruction.[18] The table below provides information on the stages of infrastructure reconstruction and some key considerations to be taken into account during that reconstruction effort.

Stage	Key considerations
Damage and needs assessment and prioritization of projects	Locate the inventory of infrastructure assets, remaining capacity, and a preliminary assessment of reconstruction and resource requirement from the Post-Disaster Needs Assessment. When prioritizing projects, inventoried assets can be categorized according to the graphic above and works sequenced considering priority and effort involved. Use economic and social criteria to evaluate project costs and benefits. Infrastructure planning, design, and construction must be coordinated with the plan for housing reconstruction to ensure the availability of basic services and sanitary conditions in such settlements. Timing of housing reconstruction affects the prioritization process for infrastructure.
Define roles and responsibilities	Clearly define the roles and responsibilities of the various individuals, agencies, and organizations involved with regard to the hazard risk assessment; design and siting of appropriately hazard-resilient infrastructure; enforcement of design; and quality control of construction, operation, and maintenance. Coordinate with other development or relief organizations working in the area to avoid duplication of research effort into hazard-proof construction and to promote a harmonized use of hazard-proof construction standards. Set up a system of consultation and collaboration with engineers, academics, local government, and the affected community. Ensure that engineers and other infrastructure service providers participate fully in the design of projects, to avoid them merely building/supplying to order.
Hazard assessment	Assess the frequency and dimension of all potential sources of natural hazards (geological, meteorological, or hydrological) in the area and determine the most likely hazard scenarios for consideration in the infrastructure design. Ideally, a development organization working in the country should have already analyzed some aspects of disaster risk. Existing academic studies and hazard maps may provide information for the hazard evaluation. However, depending on the prevalent hazards and the site, it may also be necessary to conduct site-specific risk analysis or micro-zonation studies. Local secondary disaster effects (e.g., landslides from excessive rain or ground shaking) should be considered.

18. Natural Disaster and Disaster Risk Reduction Measures: A Desk Review of Costs and Benefits, 2005, Draft Final Report, UK Department for International Development (DFID).

Stage	Key considerations
Review of legislation and good practice	Assess existing codes of practice for hazard resistance and determine whether they are adequate for use in infrastructure reconstruction. • If this review has already been conducted at the national level by a development organization or by a local research/academic body, draw on this information as relevant to the specific project context. • If there is no existing review, research existing codes of practice for hazard resistance, which might include the following. Investigate the history of the code development and level of hazard inclusion. Analyze the performance of buildings and infrastructure designed to the codes during past hazard events. Compare loading and design criteria to building codes developed for countries with similar hazards and neighboring countries with similar construction practices. Review international good practices, building codes and design guidelines appropriate to the identified hazards, and assess their applicability.
Review of construction methodologies and local capacity	Identify the normal local construction practices for the relevant type of infrastructure. A rapid assessment may be made in the case of new construction, but a more detailed analysis is required in a retrofitting project. Weaknesses in structures and the vulnerability of infrastructure to the identified natural hazards must be assessed. This may include a study of the rate of degradation of the structure and its materials over time to assess resilience against projected hazards. The strengths and durability of materials need to be determined. Identify those who will carry out the design and construction (engineered, non-engineered, self-built, or contractor-built) and assess their level of code compliance. Assess program management and administration capacity and strengthen it with training or outside expertise. Assess the resistance of local construction to the determined hazards and the level of risk this poses.
Set hazard safety objectives	Establish clear and measurable objectives for hazard safety, based on the level of risk that can be supported by the affected public and government agencies. Take into account development agency accountability issues. Consider different performance objectives for critical facilities and infrastructure, factoring in the potential impact on the users or clients who would be negatively affected to varying extents by loss of service.
Site selection	The site for development will typically be defined by local government based on availability, land use plans, and economic criteria. The suitability of these sites needs to be assessed. Any hazard assessments carried out in previous stages should be considered. Determine whether additional works are required to render the site viable for development or whether land use should be restricted to reduce vulnerability to natural hazards. Consider whether re-siting to a location of reduced risk is an option. Topographical features and landscape can be used to reduce the impact of potential natural hazards (e.g., to minimize flood risk or modify wind-speed and wind direction). Land swaps might be a potential solution in collaboration with local government, although the stronger experience with this is for environmental protection. Project cost estimates should plan for possible land acquisition.

Stage	Key considerations
Technology selection	In evaluating infrastructure technology options: • Consider the financial and operational capacity of the beneficiary. • Assess capital investment and operation and maintenance costs over the life of the project. • Review the availability of parts and supplies over the life of the project. • Consider rebuilding zoned and decentralized infrastructure systems, which may be more resistant to system failures.
Design and procurement	Design a sustainable and socially acceptable strengthening/building solution that satisfies the hazard safety objectives. Consider limitations of finance, construction skills, and material availability. In a strengthening initiative, take into account potential disruption to normal activity. Ensure that the environmental and social impacts of the proposed solution are acceptable. Ensure (through testing and research) that the proposed solution will in fact yield the performance objectives established for the project. Develop a procurement strategy that provides overall value during the entire life of the service/facility.
	Consider applying the concept of "build back better," although this concept has not been translated into specific codes or standards. Assess the competency of the contractor. Consider the level of necessary site supervision. Address any skills training issues necessary for the implementation of the proposed solution (e.g., possible on-the-job training included in the implementation stage). Develop building codes and guidelines, accounting for local hazard conditions, building material characteristics, and construction skills and quality, using the results of the studies above, and ensure the following. • Building codes cover retrofitted facilities. • Standards are coordinated with respective ministries and local planning departments • Streamline permissions and permits. • Work with the government to streamline repair permits and demolition procedures. • Enhance technical and human capacity, if necessary, to ensure speed in reviewing and issuing construction permits.
Construction	The quality of any post-disaster construction must not compromise the design intent. A procedure must be established for the multidisciplinary inspection and checking against specifications of works throughout the building process. Test materials and check adherence to design guideline. Ensure implementation of the quality assurance system. Require filing of all as-built drawings (including retrofitted structure). Institute data management systems and ensure that updated records and drawings are maintained. Mandate insurance of all critical facilities, both public and private.

Stage	Key considerations
Operation and maintenance	Guidelines for operation and maintenance should be provided to maintain the design level of hazard resilience. Institute measures to ensure adequate human capacity for operating and maintaining constructed facilities and managing ongoing risk management activities. Define a procedure to be followed for the approval of any structural alterations carried out through the design life of the structure. Set up a structure for funding operation and maintenance and risk management activities, including cost recovery mechanisms.
Evaluation	An assessment of the adequacy of the chosen infrastructure design and the success of the project as a whole must be conducted. This assessment should include evaluation of: • functionality, social acceptability, and sustainability; • project cost with respect to potential benefits of hazard-proof design in future events, any skills provided to builders, and new construction guidelines introduced; and • reporting of infrastructure performance under any hazard events that have occurred. Lessons learned regarding strengthening hazard resilience should be summarized, shared, and drawn on for future projects,

Other Housing and Community Reconstruction Considerations for Infrastructure

Location and design of critical infrastructure. Decisions between relocation versus *in-situ* reconstruction of housing and infrastructure should be based on findings from hazard risk assessments and microzonation maps. (See Part 4, "Disaster Risk Management Principles.") At times, relocation may not be a pragmatic solution due to human, economic, or physical considerations. Alternatives include re-planning land use and design solutions aimed at mitigating DRR concerns. The decision between reconstruction and rehabilitation or retrofitting of infrastructure facilities is based on the extent of damage, the desired reconstruction standard, and the costs involved. Zone-specific vulnerability can sometimes be managed through retrofitting.

HOW TO DO IT
Hazard Risk Assessment

The handbook will include specific instructions on how to organize and carry out a hazard risk assessment for infrastructure or housing sites.

Institutional issues. Since infrastructure systems and housing are interdependent and often fall under multiple geographic and administrative jurisdictions, both public and private, coordination across sectors and agencies is necessary. Reconstruction speed and quality depends on pre-disaster conditions, such as the state of the infrastructure, record keeping, data management, and institutional capacity. The capacity of local government and of the consulting and construction sector is particularly relevant. Partnerships with the private sector and other non-governmental partners may facilitate implementation. Infrastructure assessments should analyze each of these elements.

Public notifications and consultations. Local legislation may require stakeholder participation in siting, planning, and land acquisition processes. Such participation is important but may need to be accelerated in a post-disaster reconstruction environment. This should be done, however,

without compromising the intent of these processes. Acceleration may be successfully achieved through an enhanced outreach effort.

Local impact of infrastructure development. To ensure long-term sustainability and economic development, reconstruction should emphasize the use of local resources (technical, financial, operational). The capacity of academic, professional, and licensing bodies needs to be developed to ensure that architects, engineers, and builders are involved in upgrading and correctly applying the appropriate codes and construction techniques. In the agencies that will take over management of new facilities, training, staffing, and other institutional strengthening needs should be identified and funded.

Urban infrastructure development. Infrastructure reconstruction in urban areas may be more challenging due to the higher population and the built environment densities, deployed construction technology and materials, complex social fabric, and poverty levels. When developing the approach, engage with agencies responsible for urban planning, as well as those that will ultimately be responsible for operating and maintaining the infrastructure, to develop a sense of ownership.

Logistics of labor and materials. In establishing equipment, material, and supply requirements, plans should be made for items that require a long lead time that could create supply bottlenecks. The government can sometimes facilitate material imports and clearances. Expect and budget for cost increases due to an increased demand for material and labor. Increases will be a function of the size and pace of the reconstruction relative to the national economy and the supply capacity. A high pace of reconstruction will result in higher cost escalations; a slower reconstruction, while conducive to managing cost increases and capacity development, results in losses related to delayed reconstruction. The phasing and pace of reconstruction should strike a balance these two considerations.

Relation to Existing Public Policy

The post-disaster reconstruction objective should be aligned with the country's and the region's overall development vision and long-term development and land use plans (see Chapter 5, "Land Use and Physical Planning"). To the extent possible, reconstruction should be carried out in accordance with local procedures and legal and regulatory requirements. Where the legal and regulatory framework is inadequate, it may need to be updated beforehand or over the course of the reconstruction program.

Because land use and development are generally governed by local land use planning agencies, local government should be involved in decisions regarding new land uses and acquisitions, and may need to coordinate the acquisition of rights-of-way for infrastructure, especially if eminent domain procedures are involved. Land acquisition can be a long and contentious process, and lack of site control poses a significant construction risk.

Recommendations

1. Coordinate infrastructure planning and reconstruction closely with housing.
2. Develop realistic reconstruction schedules and service delivery strategies that take into consideration the fact that infrastructure reconstruction can take much longer than housing reconstruction.
3. Do not hesitate to apply the "build back better" philosophy to infrastructure reconstruction, both in terms of its resilience to hazards and its environmental sustainability.
4. Plan in advance for activities that require long lead times, especially land acquisition and public consultations.
5. Provide a reserve for material and labor cost increases; these costs will grow in proportion to the speed of the overall reconstruction effort.
6. Use local technical resources in infrastructure planning and design, risk reduction, and construction.
7. Plan and budget for the human capacity development needed for the operation and maintenance of reconstructed infrastructure facilities.

Case Studies

2001 Gujarat, India Earthquake

Rebuilding urban infrastructure

The Gujarat Urban Development Company (GUDC) was responsible for reconstruction of urban infrastructure in fourteen towns following the 2001 earthquake. The government decided to go beyond replacing lost capital stock and planned the urban reconstruction program in a holistic manner. The program included both *in-situ* reconstruction and relocation. The safety of *in-situ* reconstruction was determined by geotechnical studies. Development plans were prepared for the four most severely damaged towns using a 20-year horizon. The planning process included an accelerated public consultation—80 public meetings were held within eight months. Development codes were amended to incorporate National Codes for seismic and cyclone safety. Building height was restricted to two stories and congestion in towns was addressed. GUDC executed 89 contracts worth US$80.7 million. The four severely damaged towns received new infrastructure, while in the other ten less-affected towns damaged infrastructure was selectively upgraded. A three-year implementation period was originally projected for the Gujarat reconstruction. Yet the scope of the effort necessitated extension of the reconstruction program to six years. Implementation delays were later attributed to:

- Time required for acquisition of easements and removal of encroachments
- Delayed contract awards due to multiple agency approvals
- Contractors once selected not able to meet requirements
- Fraudulent bank guarantees
- Inability of suppliers to honor supply commitments due to price increases
- Frequent transfers of implementing agency officials
- Late receipt of funds by the Gujarat State Disaster Management Authority, causing delayed payments to contractors.

Completion Report. India: Gujarat Earthquake and Reconstruction Project, 2008, Project #35068, Asian Development Bank.

[Reviewers: Please provide case studies on good and bad practices in the reconstruction of infrastructure in housing and community reconstruction projects.]

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Chapter 7
Environmental Planning

Introduction

Almost every disaster has a negative environmental impact, and the issues that arise from those impacts are addressed in three distinct phases: assessment, planning, and implementation. Environmental assessment and planning are inextricably linked with each phase of post-disaster reconstruction, from site planning to the choice of materials for construction and the handling of water, sanitation, and waste management. Identification and integration of critical environmental considerations in physical planning and housing reconstruction help ensure long-term sustainable development following a disaster.

While environmental issues have broader implications for the built, social, and economic environment and for the ecology, this chapter considers only the ecological aspects and built environment factors related to the housing reconstruction. It is intended to help improve the environmental impact of decisions taken after a disaster by covering environmental impact assessments, resettlement, waste management, ecological planning of new settlements, environmental needs of habitat, and environmental assessment of housing reconstruction.

Guiding Principles

- Environmental sustainability should guide all physical planning and reconstruction activities in post-disaster situations.
- Post-disaster rubble and debris should be reused or recycled whenever possible.
- Ecological site planning should be used when developing new settlements.
- Reconstruction site selection should respect the environmental value of the land.
- Trees should be protected during all stages of planning, and green elements should be an integral part of any design proposal.
- Groundwater resources should be protected during all phases of planning and reconstruction.
- Infrastructure development integrated with settlement planning maximizes benefits and minimizes negative impacts.
- Construction methods, building design, and choice of materials should be local and eco-friendly.

Risks and Challenges

1. Delays in conducting the environmental assessment increase environmental risks created by the disaster.
2. Dangerous or hazardous rubble and debris (such as toxic or ignitable substances, explosives, collapsing buildings) are not handled with caution, with negative effects on communities and the environment.
3. Damage to infrastructure leads to secondary impacts like fire and floods before problems are identified and addressed.

4. Political and institutional factors, rather than community and environmental priorities, drive site-selection decisions.
5. Poor planning permanently destroys environmental assets such as endangered habitats, coastal sand dunes, and mangroves.
6. Infrastructure and site development negatively affect groundwater quality and quantity.
7. Social and cultural assets are destroyed because of ad hoc development planning.
8. Community participation in environmental decision-making is downplayed because of political and commercial interests.
9. Local building practices are combined in an unsafe way with practices promoted by external actors.
10. Commercial interests influence material and technology selection, with negative ramifications on the environment and community.

The following table lists the environmental impact of eight common natural disasters.

Common and Recurrent Natural Disasters and Some Environment-Related Consequences

Type of disaster	Associated environmental impact
Hurricane/cyclone/ typhoon	Loss of vegetation cover and wildlife habitat Short-term heavy rains and flooding inland Mudslides and soil erosion Saltwater intrusion to underground fresh water reservoirs Soil contamination from saline water Damage to offshore coral reefs and natural coastal defense mechanisms Waste (some of which may be hazardous) and debris accumulation Secondary impacts by temporarily displaced people Impacts associated with reconstruction and repair to damaged infrastructure (e.g., deforestation, quarrying, waste pollution)
Tsunami	Groundwater pollution through sewage overflow Saline incursion and sewage contamination of groundwater reservoirs Loss of productive fisheries and coastal forest or plantations Destruction of coral reefs and natural coastal defense mechanisms Coastal erosion or beneficial deposition of sediment on beaches or small islands Marine pollution from back flow of wave surge Soil contamination Loss of crops and seed banks Waste accumulation—additional waste disposal sites required Secondary impacts by temporarily displaced people Impacts associated with reconstruction and repair to damaged infrastructure (e.g., deforestation, quarrying, waste pollution)

Type of disaster	Associated environmental impact
Earthquake	Loss of productive systems, e.g., agriculture Damage to natural landscapes and vegetation Possible mass flooding if dam infrastructure weakened or destroyed Waste accumulation—additional waste disposal sites required Secondary impacts by temporarily displaced people Impacts associated with reconstruction and repair to damaged infrastructure (e.g., deforestation, quarrying, waste pollution) Damaged infrastructure as a possible secondary environmental threat, e.g., leakage from fuel storage facilities
Flood	Groundwater pollution through sewage overflow Loss of crops, livestock, and livelihood security Excessive siltation may affect certain fish stocks River bank damage from erosion Water and soil contamination from fertilizers or industrial chemicals Secondary impacts by temporarily displaced people Beneficial sedimentation in floodplains or close to river banks
Volcanic eruption	Loss of productive landscape and crops being buried by ash and pumice Forest fires as a result of molten lava Secondary impacts by temporarily displaced people Loss of wildlife following gas release Secondary flooding should rivers or valleys be blocked by lava flow Damaged infrastructure as a possible secondary environmental threat, e.g., leakage from fuel storage facilities Impacts associated with reconstruction and repair to damaged infrastructure (e.g., deforestation, quarrying, waste pollution)
Landslide	Damaged infrastructure as a possible secondary environmental threat, e.g., leakage from fuel storage facilities. Secondary impacts by temporarily displaced people Impacts associated with reconstruction and repair to damaged infrastructure (e.g., deforestation, quarrying, waste pollution)

Source: United Nations Environment Programme (UNEP), 2008, Environmental Needs Assessment in Post-Disaster Situations: A Practical Guide for Implementation (Nairobi: UNEP), http://www.humanitarianreform.org/humanitarianreform/Portals/1/cluster%20approach%20page/clusters%20pages/Environment/UNEP_PDNA_draft.pdf

Technical Issues

Rapid Environmental Impact Assessment

Governments, international aid agencies, nongovernmental organizations (NGOs), and communities use rapid environmental impact assessments (REAs) as the key starting point after any disaster. An REA needs to be conducted within 120 days of the event.[1] There are standards

1. Charles Kelly, 2005, *Guidelines for Rapid Environmental Impact Assessment in Disasters* (Geneva: CARE International). http://www.reliefweb.int/rw/lib.nsf/db900SID/EVOD-6FCH52?OpenDocument.

manuals and guidelines for REA on organization-level assessments, community-level assessments, consolidations, and analyses. Personnel required for an REA include specialists on disaster relief and environmental impact assessments (EIAs). Community REAs can be conducted by NGOs and field practitioners.[2] Environmental need assessment guidelines are also available for early recovery programs.[3] At the end of the housing reconstruction process, an integrated environmental assessment should be part of the project evaluation.

Example: In post-2004 tsunami in Aceh the following 10 priority areas for environmental management in the recovery process were identified:

1. *Contaminated ground waste*
2. *Sanitation*
3. *Lost livelihoods*
4. *Lack of coordination in relief or recovery response during the emergency response phase*
5. *Shelter and related domestic needs*
6. *Enhanced roles identified for local governance and the role of communities in environmental management*
7. *Volume of (mixed) waste*
8. *Uncertain land tenure for tsunami survivors*
9. *Strengthening the local government to overcome the loss of infrastructure, staff, and resources*
10. *Increasing capacity to direct and absorb relief assistance for sustainable development.*

HOW TO DO IT
Environmental Assessment

The handbook will include specific instructions on how to organize and carry out a post-disaster environmental assessment.

Post-Disaster Waste Management

Post-disaster waste management is one of the most crucial and urgent issues following a disaster. Most disaster wastes are generated from building materials; therefore, different types of waste are produced in urban and rural areas. Much of the waste from rural housing (stone, adobe or mud brick, and wood) can be recycled, while those from urban areas need proper separation, collection, and treatment. In urban areas, electrical appliances are a potential source of hazardous waste; therefore, proper separation and treatment of these wastes is required. Rubble and debris are commonly seen as a source of building materials and energy, yet they represent a high risk for communities and should be handled with care. In case of water-related disasters, a large amount of biological waste is produced and needs to be treated properly.

HOW TO DO IT
Waste Assessment and Management Plan

The handbook will include specific instructions on how to organize and carry out a post-disaster waste assessment and management plan.

2. Ministry of the Environment Republic of Indonesia, 2005, *Rapid Environmental Impact Assessment, Banda Aceh, Sumatra* (Jakarta: Republic of Indonesia), http://www.humanitarianinfo.org/sumatra/reference/assessments/doc/gov/GoI-EnvironmentalImpactAssessment-050405.pdf.
3. United Nations Environment Programme (UNEP), 2008, *Environmental Needs Assessment in Post-Disaster Situations: A Practical Guide for Implementation* (Nairobi: UNEP), http://www.humanitarianreform.org/humanitarianreform/Portals/1/cluster%20approach%20page/clusters%20pages/Environment/UNEP_PDNA_draft.pdf.

Reconstruction cannot begin until waste is removed from building sites, and either recycled or disposed of. But unplanned removal of waste may cause the loss of valuable recyclable materials and damage to historical building elements. Incentives may be necessary to encourage good practices by property owners. Housing officials should be involved in the development of the waste management plan to ensure the optimum reuse and protection of materials.

Handling disaster waste involves the following critical steps:
1. Agree on institutional roles and responsibilities
2. Conduct a rapid waste assessment
3. Formulate a waste management plan
4. Establish debris processing procedures
5. Collect, recycle, and dispose
6. Monitor the waste management plan and make adjustments, as needed.

Example: Typhoon Tokage in the city of Toyooka, Japan (2004), produced disaster waste that was 1.5 times the annual waste production in the city.[4] It took significant time and financial resources to process the waste to start the reconstruction process. Information and communications technology (ICT) tools and systems can be deployed. Catalogue and communicate availability of recycled materials to facilitate local economic activity.

[Reviewers: Please provide comments on experience with post-disaster waste assessments and waste management practices in housing reconstruction.]

In-Situ Construction versus Resettlement

The decision to relocate or build *in-situ* has environmental consequences. Likewise, the amount and nature of waste produced in a disaster often influences decisions about the reconstruction process. The environmental consequences of the *in-situ*/relocate decision should be discussed with community members, government, and multilateral and bilateral donors. Local environmental guidelines should be consulted as well.

Example: After the 2004 Indian Ocean tsunami in Aceh, many settlements had to be relocated 2-3 kilometers inland because of water logging and disaster debris, thereby causing challenges to the livelihoods of fishing communities. Some tsunami-affected countries like Sri Lanka imposed strict limits based on the Coastal Regulatory Zone Act. (See Chapter 3, "To Resettle or Not to Resettle," for more information.)

Ecological Planning of New Settlements

New housing settlements are often sited in areas with rich ecological resources and biodiversity, creating both new risks and an environmental conservation challenge. If the environmental assessment used for site selection is not properly conducted, resettlement for one disaster may create new risks. After a coastal hazard (like a typhoon or tsunami), the new settlement may be developed on mountain slopes. Yet the higher ground may have a high landslide risk. Therefore, proper ecological analysis and hazard mapping is required before selecting new settlements after

4. UNEP, 2005, Environmental Management and Disaster Preparedness: Lessons learnt from the Tokage Typhoon (Geneva: UNEP), http://www.unep.or.jp/ietc/wcdr/unep-tokage-report.pdf .

a disaster. This is particularly important for fragile ecosystems such as small islands and mountainous areas with higher biodiversity. Protection of natural habitat should be a priority after a disaster, including mangroves and nesting grounds of birds, along with architectural heritage, such as structures, since both contribute to the cultural, psychological, and economic recovery of the community.

Environment-Friendly Housing Materials

Rural housing styles have evolved in harmony with local cultural and climatic conditions. Vernacular designs and techniques are often optimal because of their cost-effectiveness, localized availability, and minimal environmental impact. There is increasing support for using local, environment-friendly housing materials in reconstruction (e.g., stone, mud brick, wood, and slate), especially in the rural areas. False perceptions about environmental impacts can discourage the use of local materials (e.g., the ban on timber products in Aceh in the initial stage of the post-tsunami reconstruction). This makes reconstruction more difficult for homeowners unfamiliar with new building materials and construction methods. Materials should be selected using environmental criteria, such as energy use, the sustainability of production chains, and the potential for recycling and reuse. (See Chapter 8, "Housing Design and Construction Technology.")

Need for Basic Environmental Services

Lack of basic infrastructure like water, sanitation, and waste management can cause serious environmental and environmental health problems and can lead to low occupancy rates of new and reconstructed housing. SPHERE standards, which establish minimum health, sanitation, water supply, and housing standards for humanitarian operations, can be useful as a frame of reference in reconstruction.[5] A word of caution regarding the SPHERE standards, however, concerns their occasional justification of the demolition of vernacular housing. (See Chapter 6, "Infrastructure and Services Delivery.")

Tools for Environmental Planning

Community participation is absolutely critical in each stage of environmental planning and assessment. Public hearings, held to inform the community of environmental assessments and planned actions, can bring together all stakeholders, including project proponents, environmental agencies, NGOs, citizens, and project-affected persons.

The tools outlined below aim to apply core principles of building local capacity of communities to prevent and mitigate disasters, create partnerships among stakeholders, share and exchange information, and develop learning and decision-making tools to address disaster impacts. All tools incorporate common elements such as assessment, stakeholder involvement mechanisms, and monitoring:[6]

5. Sphere Humanitarian Charter and Minimum Standards in Disaster Response, http://www.sphereproject.org/content/view/27/84/lang,english/.
6. United Nations Centre for Human Settlements and United Nations Environment Programme,1999, *The SCP Source Book Series, V. 5, Institutionalising the Environmental Planning and Management (EPM) Process* (Nairobi: UNCHS and UNEP), http://www.unhabitat.org/pmss/getPage.asp?page=bookView&book=1652.

Assessment Tools

Rapid Environmental Impact Assessment. Helps identify and prioritize likely environmental impacts in natural disaster conditions. A qualitative assessment approach is used to rank issues and identify follow-up actions.

Environmental Risk Assessment. Identifies risks arising from disasters and identifies impacts on human, ecological, and ecosystem health.

Environmental Impact Assessment. Involves analysis of baseline environment, identification and evaluation of impacts, and mitigation measures to remedy adverse effects of natural and manmade disasters.

Strategic Environmental Assessment. Evaluates the consequences of plans, policies, and programs on the natural environment using a systematic approach, taking into account social and economic considerations.

Planning Tools

Eco and Hazard Mapping (EHM). A simple systematic and visual tool that aids in post-disaster reconstruction planning by using maps and plans of cities, neighborhoods, and buildings. The mapping process involves multi-stakeholder participation. Participants mark all environmental aspects, hazards, and risks on plans and maps that contribute to the formulation of post-disaster recovery plans.

Environmental Profiling. Provides planning and management options based on a study of development setting, environmental setting, and disaster setting of a city or village. The development setting studies the socioeconomic structure, institutional structure, and environmental resources. Environmental setting studies the natural and built environment in detail. Disaster setting provides an analysis of hazards and vulnerability faced by communities.

Implementation Tools

Environmental Management System. An environmental management system (EMS) is a problem-solving and problem-identification tool based on the concept of continual improvement. It forms the core of the international environmental standard ISO 14001. The EMS adopts the Plan-Do-Check-Act cycle to develop environmental policies, frame the EMS, and implement, review, and revise performance.

Relation to Existing Public Policy

Hasty, inconsistent, and narrowly discussed (exclusive) decisions by governments on land use plans and environmental safeguards can become a barrier to rapid recovery. Often they must be reconsidered late in the process because of objections from communities or agencies with contrary technical arguments.

It is recommended that inclusive and transparent environmental policy guidelines be established at the earliest possible stage of the reconstruction process. Policy guidance should be widely accessible to different actors, including government departments, international agencies, NGOs, and local communities. These policies should be consistent with national and local

environmental law and regulation. If these instruments require updating, or strengthening, donors and other sources offering to finance reconstruction should support these activities. Governments should consider updating environmental policies as part of their disaster risk reduction program so they are prepared to apply them in the event of a disaster.

Recommendations

1. Send Bank staff or consultants, or both, along with the REA team to participate in the early stages of the damage and needs assessment so they acquire firsthand knowledge of the environmental and other issues of the affected area.
2. Assess and map the disaster debris available for reconstruction (especially housing debris) and estimate the amount that can be recyclable as building materials. Use ICT systems and tools to facilitate awareness to stimulate local economic activity.
3. Make an informed decision with national governments and local communities on resettlement or *in-situ* reconstruction (or some combination), taking the REA results into consideration.
4. When planning new settlements or the rehabilitation of existing systems, make decisions on sanitation and other basic infrastructure part of the process to ensure that housing will be readily occupied and that the settlement's environmental conditions will be healthy.
5. Make appropriate decisions on building materials—including reviewing the availability of local materials (for rural non-engineered housing reconstruction)—in close cooperation with the government and other UN shelter cluster partners.

Limitations

- Environmental issues are not restricted to the disciplinary boundary of environmental management. In a post-disaster context, environmental issues also deserve consideration when making decisions regarding, among other things, financial management, technical and engineering aspects of housing reconstruction (safer design), material availability, accessibility, cost, time.
- Environmental issues tend to become a lower priority when measured against the desire to speed up the reconstruction. Respecting the existing environmental policy framework of the country and documenting and mapping environmental hazards and assets may help rebalance these considerations. In the long run, wise environmental decisions will pay off.

Case Studies

2004 Indian Ocean tsunami in Sri Lanka

Ecological planning of settlements to address waste management

After the 2004 Indian Ocean tsunami in Sri Lanka, waste management became a growing challenge in addition to the regular waste generated by the growing population. There was a need to address the waste generated by the changing consumption patterns of the tsunami-affected people, largely in transitional shelters. Many new housing schemes, settlements, and townships had been developing everywhere, and these schemes as well as the transitional shelters hardly had the space or the capacity to tackle this problem. Therefore, it was important to link the new schemes with the local authorities to avoid waste management becoming a major issue when new housing would be occupied. New phases of ecological planning were required in many cases.

2008 Wenchuan, China earthquake
Using waste as resource to create an environment friendly society

Following the 2008 Wenchuan earthquake in China, some people proposed the circular economy concept. The idea is to establish a new view of resources that would help improve the efficiency of its use. The concept requires establishing waste recycling as a core value in building a resource-conserving and environment-friendly society. This, in turn, promotes a community's economic well-being as well as social and environmental development that is comprehensive, coordinated, and sustainable.

[Reviewers: Please provide case studies on good and bad practices in environmental management in housing reconstruction.]

Resources

Humanitarian Reform in Action. *Mainstreaming the Environment into Humanitarian Response.* http://www.humanitarianreform.org/humanitarianreform/Portals/1/cluster%20approach%20page/clusters%20pages/Environment/UNEP_PDNA_draft.pdf.

Inter-Agency Technical Committee of the Forum of Ministers of the Environment of Latin America and the Caribbean. 2000. "Panorama of the Environmental Impact of Disasters in Latin America and the Caribbean." Report given at the 12th Forum of Ministers of the Environment of Latin America and the Caribbean, Bridgetown, Barbados, March 2–7. http://www.gdrc.org/uem/ disasters/disenvi/Panorama-Envi-Impact.pdf.

Kelly, Charles. 2005. *Guidelines for Rapid Environmental Impact Assessment in Disasters*. Geneva: CARE International. http://www.reliefweb.int/rw/lib.nsf/db900SID/EVOD-6FCH52?OpenDocument.

Pakistan Poverty Alleviation Fund (PPAF) and Its Response to Kashmir Earthquake. 2005.

Sphere Project. 2000. *Humanitarian Charter and Minimum Standards in Disaster Response.* http://www.sphereproject.org/component/option,com_docman/task,cat_view/gid,17/Itemid,203/lang,english/.

UNEP. 2005. Environmental Management and Disaster Preparedness: Lessons learnt from the Tokage Typhoon. Geneva: UNEP. http://www.unep.or.jp/ietc/wcdr/unep-tokage-report.pdf.

UNEP. 2005. Environmental Impact Assessments of Indian Ocean Tsunami, Executive Summary. Geneva: UNEP.

World Bank. 1999. "OP/BP 4.01. Environmental Assessment." *Operational Manual.* Washington, DC: World Bank.

World Bank. 2007. "OP/BP 8.00. Rapid Response to Crises and Emergencies." *Operational Manual.* Washington, DC: World Bank.

Chapter 8
Housing Design and Construction Technology

Introduction

When a disaster affects housing, there are important choices to be made in the rebuilding effort, choices related to design and construction technology and related to whether to repair/retrofit a house or demolish it. These choices must take into account environmental, cost, social, institutional, and technical factors. The size and scale of the project as well as the geographic concentration of the affected area also play a significant role in the decision-making process. Ignoring these factors or making the wrong decisions about them can significantly affect whether or not stakeholders are satisfied with the reconstruction and whether or not the resulting housing is sustainable.

This chapter covers three subjects related to efforts to rebuild housing after a disaster: design, construction technology, and the repair/retrofit versus demolition option. Each section of the chapter provides guidance to help practitioners make decisions that result in the most appropriate solutions.

Guiding Principles

- Contextual conditions should be carefully considered in developing appropriate customized solutions.
- Complementary and multidisciplinary expertise is essential in the decision-making process. The choice of design and construction technology should not be the sole decision of any one scientist, civil servant, or local community member.
- Local expertise is invaluable in both the decision-making and implementation processes. If needed, local expertise should be supported by training and by regional, national, or global knowledge and best practices.
- Design and technology should be aligned with local building practices, standards, knowledge, culture, and climatic conditions.
- A structure's entire life span, from construction through maintenance to eventual demolition or reuse, should be considered in evaluating technology options.
- Repairing/retrofitting partially damaged houses should be considered a legitimate option to enhance the likelihood of sustainable reconstruction.
- Every attempt should be made to incorporate designs and technologies with low environmental impact.
- The choice of design and technologies need to take into account their impact on the building materials market to supply the reconstruction effort.

Risks and Challenges

1. There is a general lack of knowledge of appropriate housing design and current construction practices.
2. Specialized expertise to inform the choice of building technology is not available.

3. Building materials and skilled labor forces are not available, which can lead to inflated prices.
4. Poor construction quality results in structures that are vulnerable, fragile, and expensive to maintain.
5. Imported building technologies and materials often require more energy to produce satisfactory indoor comfort conditions. This additional energy increases the costs of creating a comfortable environment.
6. Building technology is unresponsive to all contextual risks. For instance, a particular technology might provide good protection against a windstorm but make the structure more vulnerable in the event of an earthquake.
7. New housing designs or building technologies are incompatible with local traditions or with the local population's willingness to change.
8. Design and construction contribute significantly to local and global environmental damage.
9. The demolition of repairable houses can result in a loss of cultural identity and heritage, difficult psycho-social recovery, adverse environmental impacts, and extended reconstruction/recovery times.
10. Improperly designed and/or implemented repair/retrofit projects may damage the architectural integrity and quality of a house.
11. Donors may not be willing to finance non-standard reconstruction approaches, such as repair/retrofit.[1]
12. Building codes and regulation may prohibit the use of local building technologies.

Technical Issues and Recommendations: Housing Design

Housing design involves the form, dimensions, natural lighting, ventilation, and spatial organization of dwellings. There is no "ready-made" solution for housing design in reconstruction. Careful and contextualized integration of many issues determine whether or not a rebuilt house's stakeholders, most importantly, its inhabitants, are satisfied. The table below contains several of the issues involved in housing design, how the issue is relevant, and recommendations for designing the most suitable option.

Issue	Relevance	Recommendation(s)
Town, settlement, territory, land issues, planning	Planning criteria determine position, size, function, form, and materials of the house and the relation between buildings and infrastructure.	Modify, improve, or obtain an exemption for elements of the proposed plan that hinder implementation of sustainable housing solutions.
Policies, guidelines, building codes, standards, strategies	Existing documentation may not provide appropriate instructions.	Identify and suggest possible improvements (hazards, environmental impact, socio-cultural aspects, flexibility, etc.). Propose guidelines and standards for new alternative technologies that provide more appropriate solutions.[2]

1. Good practices review: Latur, Kashmir, Kutch, Uttrakhand, NCPDP India, http://www.ncpdindia.org.
2. Gujarat State Disaster Management Authority (GSDMA), 2003, *Guidelines for construction of compressed stabilized earthen wall buildings* (Gujarat State, India).

Issue	Relevance	Recommendation(s)
Infrastructure and community services	Water supply, drainage, treatment, sanitation, access roads, energy supply, communication systems, and community services directly influence housing design.	Ensure housing design is consistent with infrastructure plan so all necessary services are provided (either in the community or in the individual house) and are not redundant. (Examples: sanitation system provides local and/or community treatment of sewage; kitchen design accommodates available energy source for cooking.)
Beneficiaries' needs, social structure, culture, livelihoods, aspirations	Social structure determines spatial organization and size; culture affects forms, function and aesthetics; livelihoods dictate spatial organization, morphology, size, land use; community's aspirations determine the "housing standard."	Ensure intense community participation in the design and decision-making process (house size, morphology, spatial organization, functions, form, position on the plot). (Example: houses without verandas or shading areas in hot climates affect the social structure by not providing a key gathering place for social interaction.)
Climatic conditions	Indoor conditions must be within the human comfort zone, which varies according to population's culture, apparel, and activities. The main function of a house with respect to climate is to protect against and take advantage of the climatic conditions.	Design the house and landscape to take advantage of the climate and reduce the demand for operating energy: sun/shadow exposure, solar shading, thermal insulation, passive solar energy, solar hot water, photovoltaic electricity, rain water collection, wind ventilation system, etc. Consider biodiversity enhancement as a tool for improving the local climatic conditions. (Example: Trees are essential for improving indoor and outdoor conditions in hot climates and can help to reduce the impact of wind, soil erosion, and solar radiation.[3])
Need for flexibility, modular design, expandability, incremental housing	As a family grows, the needs of space and functions change; a house needs to adapt to these changes.	Incorporating flexibility, modular design, and expandability in the housing design and concept will make those operations easier and cheaper to carry out when necessary. Incremental housing provides a basic house structure, allowing the users to complete it according to their will and means.

3. P. Gut, D. Ackerknecht, 1993, *Climate responsive buildings*, SKAT.

Issue	Relevance	Recommendation(s)
Environmental impact	The housing sector generates a huge environmental impact worldwide, contributing substantially to the deterioration of the local environment and natural resources.	Study vernacular architecture and tradition; they are the best reference for developing new designs that lessen environmental impact. Assess environmental impact over the entire life span of a house. Employ basic rules for low environmental impact design: land use that respects/safeguards the soil and biodiversity; simple and reasonable design and size limits that minimize the quantity of building materials and the house's energy requirements; and use of low environmental impact building materials.[4] In regions under water stress, incorporate rainwater-harvesting systems.
Cost	The entire lifespan of the house, not just the construction phase, determines the true cost of a design option; higher initial construction cost may lower the lifespan cost.	Consider the cost of upkeep as well as initial investment. Include materials transport cost. Use an appropriate factor to discount future costs. Design a house that facilitates future expansion (or reduction); it will reduce modification costs. Limit the needs of operating energy through the design; heating and cooling costs may force inhabitants to forego comfort.
Exposure to risks/hazards	Improving a house's physical resistance to hazards is an essential element of risk reduction and disaster preparedness.	Limit a house's vulnerability to hazards through its design elements, especially form, dimension, and morphology.[5]
Available construction technologies and building materials	The housing design may be influenced by the construction technology and materials and vice versa.	Use traditional technologies. They often provide the most appropriate solutions by integrating costs, climate, culture, and technical capacity. Improve and adapt traditional solutions by integrating modern technologies. Assess and factor into the design the availability of local material and manpower, especially after large-scale disaster. In many cases, reuse and recycling of debris can be an alternative material source; however, measures may be needed to store, sort, and reprocess rubble.
Relation with the built heritage	A house's form, size, and construction material has a visual impact on the environment, and its relation between historical and vernacular affects the area's architectural quality.	Observe and carefully consider the existing built environment in designing new dwellings; incorporate its context into the design.

4. R. Stulz, K. Mukerji, 1993, *Appropriate building materials*, SKAT.
5. Andrew Chalesson, 2008, *Seismic Design for Architects* (Oxford: Architectural Press). Also see the "Types of Disasters, Their Impacts on Houses, and How to Reduce the Related Risks" section later in this chapter.

Technical Issues and Recommendations: Construction Technology

Construction technology involves the choice of building materials and the technique and means used to erect the house. As with the housing design process, cautious consideration of contextual conditions is crucial to developing appropriate construction technologies. The following criteria can be used to compare them and identify the most suitable technology options.

Issue	Relevance	Recommendation(s)
Policies, guidelines, building codes, standards, strategies	Existing documentation may not provide appropriate instructions.	Identify and suggest possible improvements (hazards, environmental impact, socio-cultural aspects, flexibility, etc.). Propose guidelines, standards, and building codes for new alternative technologies that provide more appropriate solutions.[6]
Housing design	The design influences the choice of construction technology and materials.	Ensure the physical characteristics and limits of a particular technology are coherent with the design. (Example: The size of a room can determine the choice of the roofing technology; a big room may not allow the use of locally available wood for the roof.)
Availability of construction materials	Indigenous materials—unlike those imported from outside—support the local economy and livelihoods.	To the greatest extent possible, use indigenous materials, unless the scale of the disaster, its origin, and transportation availability hinders access to local materials.
Costs: Materials technology	Local and abundant construction materials reduces transportation costs and limits price inflation of alien materials. Technology easily adopted by local workers limits the expensive involvement of external skilled manpower or contractors. Local technologies and materials that are durable and inexpensive to maintain reduce long-term maintenance costs.	Reduce immediate and long-term costs by using local materials and technologies that are abundant, easily adopted, inexpensive, and durable (or cheap and easy to be maintained). Save costs by using materials and technologies that can be easily dismantled, demolished, and recycled.[7]
Exposure to risks/hazards	Engineers and architects are not always trained in the science of hazard-resistant structures. Contextual conditions guide the choice of appropriate solutions.	Mitigate risks by merging modern technology components with traditional construction practices and improving existing traditional practices. Carefully adapt alien solutions to the contextual conditions of every situation.[8]

6. GSDMA, 2003, Guidelines for construction of compressed stabilized earthen wall buildings (Gujarat State, India).
7. R. Stulz, K. Mukerji, 1993, *Appropriate building materials*, SKAT.
8. Rajendra Desai, 2008, *Case Studies of Seismic Retrofitting – Latur to Kashmir and Lessons Learnt*, National Centre for Peoples' Action in Disaster Preparedness (NCPDP), http://www.ncpdpindia.org; and Rajendra Desai and Rupal, 2008, *Manual on Hazard Resistant Construction in India* (UNDP India, Government of India), http://www.ncpdpindia.org.

Issue	Relevance	Recommendation(s)
Construction speed	Unavailability of materials and manpower can drastically slow reconstruction.	Provide training to increase the number of skilled workmen. Have a large number of people constructing houses rather than a few specialists, because more can be built concurrently.
Climatic conditions, indoor comfort, operating energy needs	Thermal transmission, thermal storage, and vapor diffusion characteristics of materials play a large role in affecting a house's thermal comfort and need of operating energy.	Select building materials by considering their impact on indoor comfort to ensure an appropriate climate-responsive house.
Socio-cultural appropriateness, acceptance	Technology and building materials influence a community's way of life. People may want modern imported technologies because of the social status they confer rather than improved traditional solutions that are more appropriate and far cheaper to maintain.	Help communities make appropriate decisions by demonstrating how to analyze advantages and disadvantages of materials and technologies and their relevance to the social and cultural context.
Environmental impact (including transportation, maintenance, and demolition/recycling possibilities)	Certain technologies and materials can substantially contribute to the deterioration of both the local and the global environment and natural resources.	Whenever possible, use: • locally available, low-energy consumption building materials, especially those produced with renewable energy sources; • materials from sustainable production chains (e.g., avoid wood from savage deforestation); • non-toxic materials; • materials easily dismantled (and recyclable as building materials or energy sources); and • in regions under water stress, materials that require minimum amounts of water (including the curing and maintenance processes).[9]
Availability and capacity of local skills	The quality of construction depends on manpower skills. Skilled manpower from other regions might use the employment opportunity to provide spontaneous services.	Address a skilled manpower shortage with proper training, management, and monitoring.

9. R. Stulz, K. Mukerji, 1993, *Appropriate building materials*, SKAT.

Issue	Relevance	Recommendation(s)
Examples: Following the 2001 earthquake in Gujarat, India, local mason skills were initially insufficient to properly use hollow interlocking compressed stabilized earth blocks, which resulted in slow construction. But news of employment opportunities spread fast, and trained artisans from other parts of the country came to Gujarat to provide their services. The same happened following the 1999 earthquake in Uttarakhand, India: Bricks from the plains soon arrived as did masons from Bihar state. Likewise, following the 2005 earthquake in Kashmir, masons and laborers from Bihar played a pivotal role in speedy reconstruction.[10]		
Opportunities for participation and livelihoods	Traditional methods and materials are generally easier for local people to implement and replicate. The feasibility of community participation in the reconstruction phase is largely determined by the technology being applied. When local artisans understand what the problem is, they can often devise appropriate solutions.	Train and monitor local laborers regarding new components, such as earthquake-resistance features and imported technologies. Use model houses to teach improved technologies. Devise simple measures to test resistance in the field. Assimilate new technologies in a community with long-range measures that ensure their replicability beyond the reconstruction period.

Opportunities for Participation and Livelihoods--Good practice. *NCPDP project sponsored by the Agakhan Development Network, Kashmir 2005 earthquake. Local building systems, architecture, lifestyle, and preferences were the basis for the design. The technology was developed with a high degree of participation of the artisans. Feedback from local women and from local master artisans was incorporated, and technical guidelines from government were translated into practical guidance and gradually improved to ensure replicability and affordability.*

The Debate Concerning the Promotion of Vernacular Technologies

Vernacular technologies are often appropriate solutions in terms of cost, environmental impact, climate, and cultural and architectural suitability. However, these technologies are not always optimal due to concerns such as their vulnerability to hazards and durability. There is considerable debate in the development community concerning the promotion of vernacular technologies in reconstruction. Agencies should ensure that a reputable organization has tested the hazard resilience of a particular technology, and ideally recommended improvements or retrofitting approaches, before financing a large-scale program to repair vernacular buildings. (For some of the resources available from organizations working to merge modern and vernacular technologies to produce more appropriate solutions, see the Annex to this chapter.)

[Reviewers: Please provide feedback on the use of improved vernacular building methodologies, including resilience testing approaches.]

10. R. Desai, 2009, Personal communication.

Technical Issues and Recommendations: Repair/Retrofit versus Demolition

In reconstruction efforts, repairing and retrofitting a house may make more sense than demolishing and rebuilding it. Many practitioners and policy makers think that programs designed to repair and/or retrofit housing are difficult to design and implement. However, such programs can save many partially damaged houses, often with excellent results. Properly designed and monitored repair/retrofit projects can drastically improve the reconstruction process in terms of cost, environmental impact, speed, supply of resources, community participation and satisfaction, recovery of psychological well-being, and heritage conservation. In addition, structures that are vulnerable can have their flaws fixed as part of the repair. Consideration of the repair/retrofit option should be part of the comprehensive reconstruction program and should address similar issues, including layout, infrastructure, and building technology and materials. Below are some of the issues that should be addressed in the repair/retrofit discussion.

Relocation. The repair/retrofit option is moot if a house must be relocated.

Damage level. Before a decision can be made about whether the repair/retrofit option is appropriate, the level of damage to the house, to the neighborhood, and to the infrastructure, as well as the related risks to residents, must be considered.

Cost of repair/retrofit versus reconstruction. To be justifiable, the total cost of the repair/retrofit option should generally be lower than that of the new construction option.

Willingness and capacity of people to repair/retrofit their houses. It is essential that the local population participate in the discussion about the repair/retrofit option. People do not always perceive repairing/retrofitting as a viable or desirable option. But without local support, a repair/retrofit project may encounter more and more passionate objections. Communications, public outreach, and training are all crucial elements to a successful reconstruction project.

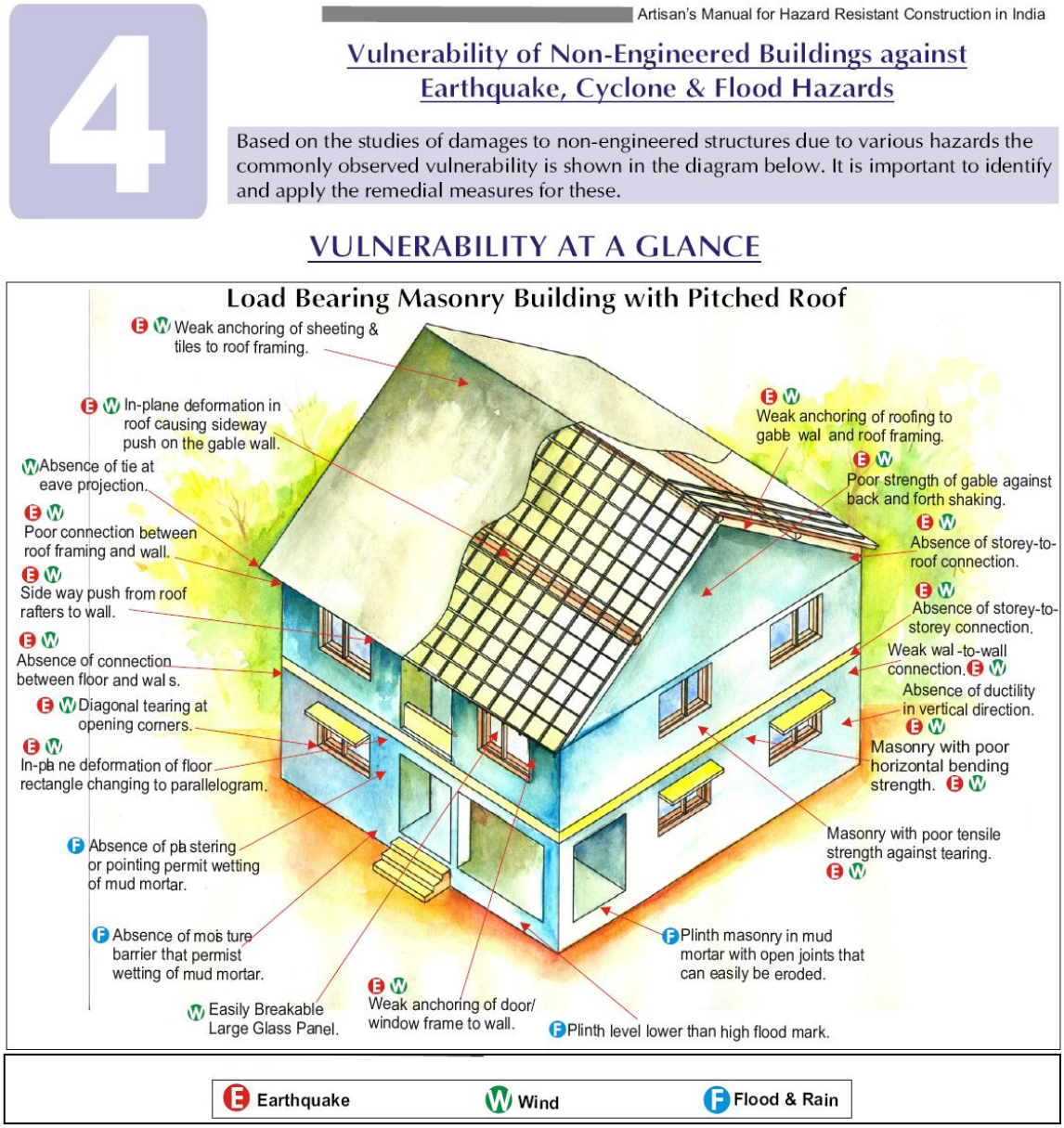
Architectural/historical, cultural, and socioeconomic value of damaged houses. If a particular house has a high architectural/historical, cultural, and/or socioeconomic value, substantial efforts to overcome any cost and/or technical difficulties and prevent it from being demolished may be justified.

[Reviewers: Please provide input on the tradeoffs in different systems for categorizing the damage level of houses between 3-category versus 5- or more-category systems and the incentives they create.]

The Vulnerabilities of Houses and How to Reduce Them

Disasters affect house structure in a variety of ways. Consequently, the technical solutions for repairing affected buildings have to respond to the type of disaster, and the building technology and materials. This principle applies to risk reduction in both new and retrofitted houses. A variety of technical materials on this topic are listed in the resources section. Among the publications is the “Manual on Hazard-Resistant Construction in India,” published by UNDP

India. The figure below depicts the range of vulnerabilities associated with housing, taken from this manual.



Abstract from "Manual on hazard-resistant construction in India," UNDP India, http://www. ncpdpindia.org.

Case Studies

2005 Northern Pakistan Earthquake

Earthquake-Resistant Dhajji Dewari Technology

In the framework of rural reconstruction after the 2005 earthquake in Northern Pakistan, through an owner-driven reconstruction approach, the use of the traditional Dhajji Dewari technology (light-weight timber frames with stone in-fills) has been promoted and facilitated. This construction technique makes use of local materials (wood, stones, mud), has proven to stand up well in earthquakes (when properly constructed), has low environmental impact, is economical, and is part of the housing culture and know-how. This traditional building technology has been approved by the Government of Pakistan's Earthquake Reconstruction and Rehabilitation Authority on the basis of the observation of existing structures. Dhajji Dewari technology, given its appropriateness and connection to the context, has been rapidly adopted by local communities and provides a high level of satisfaction. As of February 2009, 102,000 such houses had been built and another 50,000 were under construction.[11]

Indian Ocean Tsunami, Tamil Nadu, India

Comparative Analysis of Various Roofing Technologies in Post-Tsunami India

The cost, environmental impact, and indoor comfort have been evaluated for five roofing technologies:

- Reinforced cement concrete (RCC) flat roof
- Coconut thatched roof
- Straw thatched roof
- Traditional handmade tile roof
- Mangalore industrial tile roof

The cost includes both the initial investment and the maintenance costs over 20 years. The environmental impact considers the local availability of materials (transportation), the environmental impact of materials production, the presence of pollutants into the materials, the impact during the construction phase, and demolition. The indoor climatic comfort was measured (progression of temperature and humidity over day and night cycles) and put into relation with the human comfort zone. Conclusion: Options 2 and 3 are clearly the most sustainable, followed by Options 4 and 5. For all considerations (cost, environmental impact, and indoor comfort), Option 1 is the least appropriate response.[12]

11. Adapted from Maggie Stephenson, UN-HABITAT, Photo © T. Schacher.
12. Jennifer Duyne Barenstein, D. Pittet\, 2006, Towards sustainable post-disaster housing reconstruction. An empirical assessment of SIFFS' housing reconstruction project in tsunami-hit Tarangambadi and Chinnankudi (Tamil Nadu, Lugano: ISAAC).

Roofing options	Cost	Environment	Comfort
1 - RCC			
2 - Coconut thatched			
3 - Straw thatched			
4 - Handmade tiles			
5 - Industrial tiles			
Performance	LOW	AVERAGE	GOOD

[Reviewers: Please provide case studies on good and bad practices in use of specific housing design and construction technology in reconstruction.]

Resources

Arya, A.S. et al. 2004. "Guidelines for earthquake resistant non-engineered construction." National Information Center of Earthquake Engineering, IIT Kanpur. http://www.nicee.org/ IAEE_English.php.

Blondet, M., Garcia, G.V., and Brzev, S. 2003. "Earthquake-resistant construction of adobe buildings: A tutorial." Contribution to the World-Housing Encyclopedia. International Association for Earthquake Engineering. http://www.worldhousing.net/Tutorials/Tutorial.asp.

CDMP. 2001. "Hazard-resistant construction." Caribbean Disaster Mitigation Project, Organization of American States Unit of Sustainable Development and Environment, USAID Office of Foreign Disaster Assistance and the Caribbean Regional Program. http://www.oas.org/ CDMP/safebldg.htm.

EERI/IASPEI. 2006. "International norm for seismic safety programs." Draft. Working group of the International Association of Earthquake Engineering and the International Association of Seismology and Physics of the Earth's Interior. EEFIT/International Association of Seismology and Physics of the Earth's Interior. http://www.world-housing.net.

Minke, G. 2001. "Construction manual for earthquake-resistant houses built on earth." gate-basin/GTZ Eschborn – De.

Patel, D. B. et al. 2001. "Repair and strengthening guide for earthquake-damaged low-rise domestic buildings in Gujarat, India." Gujarat Relief Engineering Advice Team (GREAT).

Rossetto, T. 2007. "Construction Design, Building Standards and Site Selection." ProVention Consortium.

Schneider, C. et al. 2007. "After the Tsunami: Sustainable building guidelines for South East Asia." UNEP.

Twigg, J. 2006. Technology, Post-Disaster Housing Reconstruction and Livelihood Security. Practical Action Web site.

United Nations HABITAT. [no date]. Building materials and construction technologies: Annotated UN-HABITAT bibliography. http://www.unhabitat.org/pmss/getPage.asp?page=bookView&book=1087

Publications dealing with hazard resistance in buildings:

Asian Disaster Preparedness Centre (ADPC). *Handbook on Design and Construction of Housing for Flood-Prone Rural Areas of Bangladesh*. Focuses solutions for various construction technologies exposed to flooding. http://www.adpc.net/AUDMP/library/ housinghandbook/handbook_complete-b.pdf.

International Association for Earthquake Engineering (IAEE). *Guidelines for Earthquake Resistant Non-Engineered Construction.* http://www.nicee.org. Information specifically on earthquake-exposed structures.

United Nations Development Program (UNDP), India. *Manual on Hazard-Resistant Construction in India.* http://www.ncpdpindia.org. Includes illustrated practical solutions covering earthquake, cyclone, and flood situations for various technologies.

The Applied Technology Council (U.S.) provides a wide range of materials on the hazard resistance of building technologies, building retrofitting techniques, and methodologies for post-disaster building inspections. http://www.atcouncil.org/.

Annex
Adapting Vernacular Building Technologies/Some Good Practices

Technology/Project	Country/Region	Organization/Links	Remarks
"Bunga" houses built with compressed stabilized earth blocks; earthquake-resistant structures derived from traditional houses of cylindrical shape	India, Gujarat State, Kutch District	Hunnarshala Foundation for Building Technology and Innovations, Bhuj, India, http://hunnar.org	Governmental approval through GSDMA, *Guidelines for Construction of Compressed Stabilized Earthen Wall Buildings* (Gujarat State Disaster Management Authority, 2003)
Manual on hazard-resistant construction in India	India	UNDP India and NCPDP, Ahmedabad, India, http://www.ncpdpindia.org	For reducing vulnerability in buildings without engineers; focuses on construction and retrofitting of masonry buildings
Manual for restoration and retrofitting of rural structures in Kashmir	Pakistan, Kashmir India, Jammu	UNDP India and NCPDP, Ahmedabad, India, http://www.ncpdpindia.org	For reducing vulnerability of existing structures in earthquake-affected areas
Guidelines for earthquake-resistant construction of non-engineered rural and suburban masonry houses in cement sand mortar in earthquake-affected areas	Pakistan	ERRA, Government of Pakistan, http://www.erra.gov.pk	Practical guidance for non-engineered structures, covering site-selection issues, planning, construction, and retrofitting measures of various housing elements
Model bamboo house	Ecuador, Guayaquil	International Network for Bamboo and Rattan (INBAR), http://www.inbar.int	Demonstration and comparison of 10 different technologies based on the use of bamboo for walling systems that have been developed to improve the quality and reduce the cost
Earth-based building materials and technologies	India	Auroville Earth Institute, Tamil Nadu, India, http://www.earth-auroville.com	Development, training programs, publications, and realization of numerous constructions using earth as building material and integrating modern technology for improving structural safety
Construcción de casas saludables y sismorresistentes de Adobe Reforzado con geomallas	Peru	Pontificia Universidad Católica del Perú, http://www.pucp.edu.pe	Technology based on the use of mud blocks walls reinforced with plastic nets for improving the seismic resistance
Mitigation measures for post-hurricane reconstruction	Honduras	Centre des Etudes et Coopération International (CECI), http://www.ceci.ca	Technical improvement of dwellings for reducing the vulnerability to hurricane and flood
Collection of information and publications on seismic resistance of various building technologies	Various	World Housing Encyclopaedia, an EERI and IAEE initiative, http://www.world-housing.net	

Chapter 9
Cultural Heritage Conservation

Introduction

Once restricted to monuments, archeological sites, and movable heritage collections, the definition of cultural heritage now includes historic urban areas, vernacular heritage, cultural landscapes, and even living dimensions of heritage and all aspects of the physical and spiritual relationship between human societies and their environment.

The World Bank uses a broad definition of physical cultural resources: "Movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance."[1] The World Bank also recognizes that "physical cultural resources are important as sources of valuable scientific and historical information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices."[2]

This chapter addresses the importance of protecting the cultural heritage of communities, especially privately owned traditional housing, which should be an integral part of any post-disaster recovery program.

Guiding Principles

- Conserving cultural heritage helps a community conserve its identity, practices, history, physical cultural resources, and economic and social development.
- Cultural heritage provides communities with an invaluable sense of continuity and identity.
- Both utilitarian and beautiful, built vernacular heritage is the fundamental expression of a community's culture as well as a source of pride and affection.
- Cultural properties sometimes serve as safe havens where surrounding communities can temporarily relocate.
- Cultural heritage, such as the traditional knowledge embodied in local construction methods and ecological systems, can mitigate the impact of disasters and provide communities with post-disaster coping mechanisms.
- Built vernacular heritage offers a historical record of a society, revealing a community's continuous adaptation to social and environmental constraints.
- Compared with many mainstream building technologies, vernacular solutions have a significantly lower environmental impact and higher likelihood of withstanding local climate conditions.

1. World Bank, 2006, Operational Policy 4.11, Physical Cultural Resources, http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL/0,,contentMDK:20970737~menuPK:64701637~pagePK:64709096~piPK:64709108~theSitePK:502184,00.html.
2. World Bank, 2006, Operational Policy 4.11, Physical Cultural Resources, http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL/0,,contentMDK:20970737~menuPK:64701637~pagePK:64709096~piPK:64709108~theSitePK:502184,00.html..

Risks and Challenges

- Cultural heritage is confronted with various primary risks, including damage sustained during a natural disaster (such as floods, fires, and earthquakes) or human-generated emergencies (such as war and terrorism). But natural and cultural heritage is also threatened by secondary risks that arise during recovery and reconstruction, such as:
- Rescue and relief measures that are carried out with no regard to heritage value of damaged areas (e.g., water damage from fire fighting and debris removal with no regard to heritage value).
- Looting of heritage buildings
- Reuse of cultural and natural heritage resources as fuel, food, and reconstruction materials
- Damage compensation policies that encourage demolition of heritage buildings
- Infrastructure repair or replacement that disregards or encroaches upon cultural assets (e.g., road widening)
- Illegal and/or uncontrolled redevelopment
- Loss of authenticity because of inadequate repair and retrofitting measures

Technical Issues

Ideally, awareness about the socioeconomic value of cultural heritage and measures to protect it are established in "normal" times. This way, risks to cultural heritage and the related losses of livelihoods, cultural identity, and social cohesion can be mitigated before disaster strikes. In this scenario, the concern after a disaster is only with implementation. Cultural heritage risks can be addressed by means of:

1. Disaster risk management plans that incorporate cultural heritage consideration
2. Culturally sensitive urban development plans
3. Raising the cultural sensitivity of disaster management authorities and the families that occupy heritage properties
4. Systematic documentation of cultural heritage
5. Regular maintenance and risk reduction of heritage properties
6. Post-disaster response and recovery programs that are consistent with management plans

But even if these measures are not in place, post-disaster reconstruction is an opportunity to "build back better," even for heritage properties. Reforms can be made and measures taken to reduce risks to cultural heritage from normal development and from future disasters.

Conserving Cultural and Natural Heritage Following a Disaster

Coordinate disaster management with heritage authorities. Lack of coordination between disaster management and heritage authorities often causes much of the damage to heritage within the framework of emergency operations and reconstruction programs. This can be avoided through an immediate cooperation between disaster management and heritage authorities following a disaster. Natural and cultural heritage sites may be affected by the location of temporary camps for displaced populations that place increased pressure on related resources. It is therefore important to consult with and involve representatives of heritage agencies in planning reconstruction.

Take a multidisciplinary approach toward damage and assessments. Damage assessment teams need to be multidisciplinary and include the expertise of heritage and conservation experts and anthropologists. Depending on the context, the local nature of heritage, and the type of damage, separate damage assessments may be undertaken for cultural heritage buildings and sites.

Recognize the value of built vernacular heritage. Vernacular housing and building practices often offer an affordable, environmentally sustainable, aesthetic and culturally appropriate response to people's sheltering needs. Their value, however, is often not recognized. While post-disaster reconstruction can be an opportunity to upgrade a community's housing condition, it should not result in the systematic demolition of vernacular houses and their surrounding habitat. Such practices can be avoided through culturally sensitive planning that recognizes its functional and aesthetic value.

HOW TO DO IT
Cultural Heritage Assessment

The handbook will include specific instructions on how to organize and carry out a post-disaster cultural heritage assessment.

Create incentives for the conservation of vernacular housing. If new houses are handed out for free without timely, adequate support for repair and retrofitting, reconstruction policies may directly encourage the demolition of undamaged or partially damaged vernacular houses. Reconstruction programs often give priority to the construction of new houses; repair and retrofitting programs can be initiated almost immediately as on-site recovery, but may be completely missing or, at best, gain marginal attention only at a later stage.

Make building guidelines and codes compatible with vernacular building practices. Building codes are important to ensure safety of new constructions. However, such codes should not be applied to historic buildings of different structural types. It must be stressed that no historic or vernacular building should be condemned, destroyed, or stripped of its beneficial use because it does not or cannot comply with current official building codes. Building guidelines or codes being developed within the framework of post-disaster reconstruction must reflect local building heritage, culture, technologies, skills, and materials.

Harmonize designs and building materials of new housing and settlements with local cultural and natural heritage. Building new houses after a major disaster is necessary and unavoidable. It is important, however, to plan new construction in harmony with local building culture and settlement layouts, especially when building new houses near existing historical or vernacular settlements. If reconstruction entails relocation, the heritage value of a new site needs to be assessed so irreversible losses can be mitigated or avoided altogether.

Ensure storage facilities for movable heritage properties. Without adequate storage facilities, movable heritage properties with high cultural and emotional value for their owners may be subject to looting and further damage. In addition, storage facilities allow communities to employ salvaged material with heritage value in the construction of new houses. This is particularly important to ensure much-needed continuity after a disaster.

Use authentic materials and skills for repairing and retrofitting heritage buildings. Repairing, strengthening, and retrofitting heritage buildings may be necessary ingredients of a post-disaster reconstruction program. Ideally, they should have no impact on the heritage value, authenticity, or integrity of a building and its surroundings. However, in cases where this is not possible, the impact should be minimal. This can be achieved by using local skills and materials. Conserving cultural heritage also helps restore local livelihoods.

Ensure community participation. The cultural heritage significance of a place or element may have a local character. Even within a community, there may be variations in terms of attributing spiritual and emotional importance to specific sites or elements. Accordingly, effective protection of cultural heritage can be achieved only through community participation in recovery and reconstruction planning.

Relation to Existing Public Policy

Local planning departments and local disaster management agencies are responsible for the implementation of the instruments mentioned above (disaster management plans and urban development plans, for example) and should be consulted when heritage conservation issues arise in a post-disaster situation. Heritage conservation may also be guided by policies established at the national level, by public agencies, such as the Iranian Cultural Heritage Organization, or quasi-public entities, such as the Indonesian Heritage Trust. These authorities should also be involved when cultural properties are affected by a disaster.

At the international level, the Kyoto Declaration 2005 on Protection of Cultural Properties, Historic Areas, and Their Settings from Loss in Disasters established a framework for work on the preservation of cultural properties and historic areas.[3] UNESCO is closely involved in the implementation of the Kyoto Declaration, including working to reduce disaster risk at World Heritage sites.[4] The agency is often active in post-disaster situations and may provide technical assistance to public officials and owners of heritage assets.

Case Studies

1993, Latur Earthquake, Maharashtra, India

From a "Natural" to a "Cultural" Disaster: Post-Earthquake Reconstruction in Marathwada
As part of the rehabilitation program following the 1993 earthquake in Marathwada, India, more than 52 villages were relocated and reconstructed, using a layout and a construction technology selected on the basis of earthquake safety. However, the spatial plans of these reconstructed villages and the new house designs were totally incompatible with the local population's traditional way of life. Traditional settlements in this area were characterized by a hierarchy of public and private open spaces used for various activities and clusters of housing of distinct types. Instead, what was designed for them was a complete "city-like" plan with wide streets

3. Adopted at the Kyoto International Symposium, "Towards the Protection of Cultural Properties and Historic Urban Areas from Disaster," held on January 16, 2005. See also "Recommendations from the UNESCO/ICCROM/Agency for Cultural Affairs of Japan Thematic Session on Cultural Heritage Risk Management Kobe, 2005," http://www.unisdr.org/wcdr/ thematic-sessions/thematic-reports/report-session-3-3.pdf.
4. UNESCO, *Natural and Environmental Disasters: UNESCO's Role and Contribution*, http://portal.unesco.org/en/ev.php-URL_ID=31605&URL_DO=DO_TOPIC&URL_SECTION=201.html.

forming a grid pattern and row housing. In the new settlement, there were no spaces for traditional activities, especially those of artisans. The town planners perceived that the plan would encourage the "development" of "backward" rural areas. However, this did not happen, and, over the years, people gradually made modifications so that the houses and settlement better suited their lifestyle.[5]

[Reviewers: Please provide case studies on good and bad practices in cultural heritage conservation related to housing and community reconstruction.]

Resources

Organizations

International Council for Monuments and Sites (ICOMOS), http://www.icomos.org/.

International Centre for the Study of Preservation and Restoration of Cultural Property (ICROM), http://www.iccrom.org.

UNESCO World Heritage Centre, http://whc.unesco.org.

Research Center for Disaster Mitigation of Urban Cultural Heritage, http://www.rits-dmuch.jp.

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World Conference on Disaster Reduction. 2005. "Kobe Report Draft. Report of Session 3.3, Thematic Cluster 3." Geneva: Cultural Heritage Risk Management.

World Bank. 2008. "Risk Preparedness for Cultural Heritage." *Good Practice Notes*.

5. Rohit Jigyasu, *Reducing Disaster Vulnerability through Local Knowledge and Capacity* (PhD thesis, Trondheim: Norwegian University of Science and Technology, 2002).

Section 3
Project Implementation

Chapter 10
Institutional Options for Reconstruction Management

Introduction

The management of the recovery and reconstruction process following a major disaster presents massive and often unprecedented challenges to any country, especially those with limited or no prior experience with such situations. Where post-disaster recovery planning that anticipates institutional requirements exists, early recovery is likely to be more effective. Where plans have not been made, governments may need advice on designing an appropriate organizational structure to manage reconstruction. In either case, assistance may be needed with implementation of the arrangement and establishment of an effective system of coordination among governmental and nongovernmental entities.

This chapter analyzes organizational options for the management of post-disaster housing reconstruction in the context of the larger disaster management institutional framework.

Guiding Principles

- A single point of overall responsibility is needed in government, close to the apex of political power, to maintain authority.
- All organizations, regardless of how long they've been in existence, should work closely with existing government agencies.
- The rebuilding of damaged governmental capacity (such as facilities, finance, and staff) is an essential prerequisite to effective reconstruction.
- Any institutional option for managing reconstruction requires a structure, mandate, policy, and plan.
- Effective partnerships and coordination mechanisms must be created among government, nongovernmental entities, international entities, and the private sector.
- Successful reconstruction depends on effective local institutions in all sectors, with leadership and technical capacity at all levels.
- Institutional arrangements for managing recovery must adjust as the country moves from relief through longer-term recovery.
- A critical role of recovery institutions is facilitating a two-way flow of information—with communities, on assessments, and to support monitoring and evaluation.
- The military has a useful role in early recovery, but is rarely appropriate for permanent housing reconstruction.
- Planning a reconstruction approach before a disaster is preferable and should include the institutional and governance policies and guidelines for creating the institutional structure.

Risks and Challenges

1. Creating a new institution to manage recovery that duplicates or sidelines the work of existing entities.
2. Starting reconstruction without first rebuilding a damaged local governmental capacity.
3. Centralizing, rather than devolving, reconstruction planning.
4. Government allowing, in its weakened post-disaster state, external entities to assume too much authority over management and coordination of recovery.
5. Government failing to incorporate and institutionalize disaster risk reduction activities in reconstruction.
6. Multiple entities with different demands and internal priorities at odds with one another and with government's reconstruction policy.
7. Political interference in reconstruction.
8. Corruption in large housing contracts.

Technical Issues

Need for Authority, Autonomy, and Political Support

To wield the necessary authority to get the job done, a reconstruction agency needs both autonomy and support from the highest level of government and the political system. Broad-based support is the backbone of an integrated and uninterrupted recovery and reconstruction process. It also helps minimize political interference, such as politicians trying to capture resources for their own constituents who were not affected by the disaster or funds and contracts being intercepted for individual or party gain. Decisions based on transparent policies and accurate data about the housing needs of the surviving population will help deflect demands for assistance motivated by political objectives rather than real post-disaster requirements.

Rebuilding Governmental Capacity

Local problems and opportunities are best managed by local officials using local powers and applying local knowledge. A balance is needed between policies that ensure quality and equity in housing reconstruction and a decentralized implementation based on local reality, capacity, and culture. Rebuilding governmental capacity, especially local government, is an essential prerequisite for physical, social, environmental, and economic reconstruction. Both national and local political leaders want to see rapid action in response to public pressure for recovery. The disaster may be unusual and confusing to government officials, especially local officials. There may be pressure on local officials to work around local policies and procedures or to turn responsibilities over to international aid agency staff who have extensive disaster experience. However, the goal is longer-term governance and sustainable reconstruction, and, until local government staffing levels are rebuilt or records damaged by the disaster are recovered, the progress will not be genuine. National recovery agencies are unlikely to have a strategy for overcoming local institutional weaknesses. Funding sources, however, can gain great leverage by providing technical, financial, and material support to reestablish local government capacity.

Organizational Options

The structures of the organizations that manage reconstruction vary greatly. Following any disaster, governments need to decide fairly quickly whether a single agency, two separate agencies, or multiple agencies will manage the immediate relief and the recovery process. In either case, the reconstruction agency requires an organizational structure. The following table indicates the principal organizational options with their inherent strengths and weaknesses.[1]

Organizational Models for Reconstruction	Strengths	Weaknesses	Recommendations
Option 1. Create new dedicated organization or taskforce (applicable in centralized or decentralized context) (See case study of Pakistan earthquake)	Highly independent, focused Provides mechanism for resource allocation, procurement, and staffing Handles complex financial arrangements with international donors Simplifies consultation with government Effectively addresses tasks	Risks relegating line ministries to the sidelines and duplicating their efforts Takes time to clarify roles and responsibilities May lack local ownership Expensive; requires premises, facilities, and staff Problematic exit strategy; will probably fight to survive If re-created for each disaster, doesn't build on experience (See case study on Colombia)	Employ if government is decimated by the disaster or involved in civil conflict Sunset clauses critical to avoid agency surviving beyond its mission
Option 2. Create dedicated organization or taskforce drawn from existing line ministries (applicable in centralized or decentralized context)	Improves coordination with existing sector activities and policies Top executive drawn from outside bureaucratic ranks Exit strategy: staff returns to previous government positions	May lack political authority Can weaken ministries and undermine ongoing non-disaster programs Proper expertise may not exist in line ministries International agencies may not finance backfilling of normal ministry functions	When formed from existing line ministries, far more likely disaster recovery lessons will be applied to improve future disaster operations

1. Wolfgang Fengler, Ahya Ihsan and Kai Kaiser, 2007, *Managing Post-Disaster Reconstruction Finance, International Experience in Public Financial Management*, World Bank Policy Research Working Paper 4475 (Washington, DC: World Bank).

Organizational Models for Reconstruction	Strengths	Weaknesses	Recommendations
Option 3. Existing governmental agencies manage recovery as part of an integrated national disaster plan (particularly applicable in decentralized context) (See case study of Mozambique)	Places sector responsibility with sector expertise and responsibility Full local ownership Exit strategy: staff returns to previous government positions If country is highly decentralized, sector rehabilitation corresponds to decentralized functions Disaster risk reduction lessons carried back to normal operations Increases probability government will apply disaster recovery lessons to future disaster operations	Can overburden provincial and local governments with inadequate capacity to manage large reconstruction program Can overload line ministries with double agenda (reconstruction and normal programs) International agencies may not finance backfilling of normal ministry functions Existing government system may be incapable of reconstruction duties	Effective, but needs detailed pre-disaster planning, staff training, and national disaster plan Requires existing line ministries to be strengthened with experienced staff Advisable option if reconstruction is manageable and local governments are strong and decentralization

[Reviewers: Please provide perspectives on the use of dedicated agencies versus existing governmental agencies to coordinate reconstruction.]

Need for Mandate, Policy, and Plan

To be effective, reconstruction agencies require a mandate, a policy, and a plan that include the following elements.

Mandate

- Sustained political support without interference
- Clear mandate supported by appropriate legislation
- Credibility with surviving communities and other agencies involved in reconstruction
- Adequate financial, human, and material resources
- Direct links to relevant line ministries
- Knowledge of disaster recovery process dynamics
- Mechanisms for continual two-way consultation with surviving communities
- Effective disaster recovery management information system
- Administrative systems capable of managing international loans and grants
- Good governance, including an active civil society

Policy

- Reconstruction aims and objectives
- Registration rules for assisting entities
- Special provisions for highly vulnerable groups
- Housing assistance policies with eligibility criteria and allocation schemes

- Links between immediate shelter, transitional housing, and full reconstruction
- Reconstruction standards for houses, building plots, and costs, with the means for measuring and enforcing them
- Approach to address safety concerns, including siting and land-use planning controls, structural issues, building materials, education, enforcement procedures, and legal requirements
- Strategies for linking different sectors of recovery and for ensuring coordination between housing and infrastructure reconstruction
- Monitoring and evaluation tools to maintain accountability to beneficiaries
- Financial and anticorruption policies

Plan

- Wide consultations with stakeholders
- Public distribution upon completion, even if it is preliminary and requires updates over time
- Public distribution of updates
- Outcomes associated with concrete indicators that can be monitored and evaluated
- Clear definition of roles and responsibilities for various entities
- Transition between different stages of disaster recovery, especially the handoff from transitional to permanent housing programs

[Table to be added that showing the common roles of public, private and non-governmental organizations in reconstruction.]

Establishing Effective Relationships

Families. Affected families are the most important stakeholders. This group may be defined by post-disaster needs, spatial location (such as a neighborhood), or occupational community (such as fishermen). While various executing agencies will be working most directly with these individuals, a reconstruction agency itself should have a strategy for obtaining feedback from affected households on the progress and experience of the reconstruction process.

Other Stakeholders. Institutional arrangements for recovery also need to address the roles and operational relationships of other stakeholders. This requires first understanding the complex institutional interests at work in reconstruction, including demands and priorities of individual organizations at odds with each other and at variance with the government approach. These can include territorial issues ("planting the flag"), refusing to collaborate, and competing for local resources and reconstruction sites. There is no easy solution to this competitive and potentially anarchic situation, but the problem will be reduced if government officials running a reconstruction program dictate their terms in a decisive manner.

The National Military. The national military can sometimes be an effective partner in housing reconstruction. It can rebuild bridges and essential infrastructure, and it has better and faster logistics capability than any other agency, including rapid assessment capabilities and excellent communications. The military maintains large stockpiles of goods and can deliver them readily, even when roads are impassible. Although military forces often have high levels of local support, there can also be problems with military involvement, including the cost, which sometimes gets charged to aid budgets. The military, not used to operating in the complex multi-stakeholder

environment of a disaster recovery situation, also has little experience in listening to community concerns or accepting civil authority. Military-style campsites are generally not an appropriate environment for survivors, where they are sometimes treated like prisoners. Also, the military is not experienced in creating conditions for housing recovery and reconstruction. Last, where there is a prevalence of NGOs, conflicts may arise between NGO personnel (especially those with pacifist origins) and the military.

Planning for Reconstruction before a Disaster

Although still a rarity, pre-disaster planning for response and reconstruction is likely to become more common. Ideally, the process is closely related to disaster contingency planning, which is now largely confined to emergency planning. To develop useful plans, it may be necessary to overcome differences in perspective between those officials responsible for emergency planning and those who would manage reconstruction.

Recommendations

1. Equip reconstruction agencies with a structure, a mandate, a policy, and a plan.
2. If government is very weak, establish a dedicated organization to manage disaster recovery.
3. In most cases, administer reconstruction using existing line departments and existing officials.
4. Have government regulate the work of all stakeholders, verifying their capacity, fixing standards, and ensuring that their interventions are consistent with national policy.
5. Make certain that a government weakened by a disaster is strengthened so that it can manage the reconstruction itself.
6. Set up reliable monitoring and evaluation procedures to strengthen accountability and transparency.
7. Use the services of the military but understand its limitations.
8. Define reconstruction policies and institutional mechanisms before disaster strikes.

Case Studies

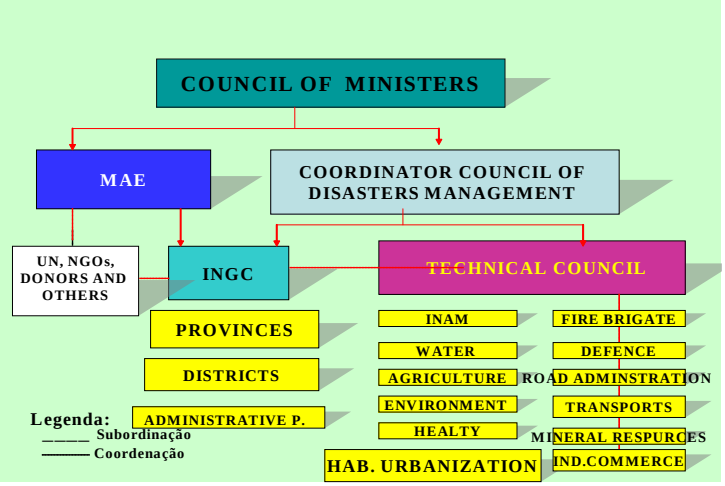
Evolution of Disaster Reconstruction Management in Colombia 1983–2006

Colombia's experience following a succession of disasters from 1983 to 2006 provides an excellent case study of a country that learned from its experiences, avoided creating ad hoc institutions, and respected the need for cultural sensitivity.

1. After the 1983 Popayan earthquake, government created a recovery organization that evolved into a permanent environmental body. After the 1985 Armero volcanic-induced mudslide, government created a new recovery body that was closed following recovery activities.
2. In the early 1990s, a progressive, decentralized National System for Disaster Prevention and Attention was created with involvement from government, NGOs, the private sector, and local communities. This successful system has been copied in other Latin American countries.
3. Following the 1994 Tierradentro earthquake, an organization was created outside the national system to satisfy the local cultural needs of affected Indian communities.

4. Within a year of the 1999 coffee-growing-region earthquake, a new disaster recovery organization was formed to coordinate all reconstruction work, Fondo para la Reconstrucción y el Desarrollo Social del Eje Cafetero (FOREC).

Integrating Disaster Management into Existing Institutional Structure, Mozambique
Mozambique is an example of a country where government regularly activates a planned recovery facility as an integral part of its ongoing disaster management system. Importantly, its disaster management is undertaken by the same body that organizes disaster recovery. The country's National Institute for Disasters Management (INGC), created under a different name during the civil war that ended in 1992, is jointly located under the Ministry of State Administration (MAE) and a Coordinating Council of Disasters Management. Floods and cyclones are almost seasonal events in Mozambique. After each disaster, an ad hoc coordinating body, the National Centre for Emergency (CENOE), is activated to manage relief and recovery, with the INGC acting as secretariat. CENOE is supported by a technical council composed of all the key sectors needed for disaster reconstruction. Thus, the policy in Mozambique is not to establish a specific body to manage reconstruction, but rather to activate a well-planned system that works with existing line ministries, departments, and local governments in a highly devolved manner, with district governments playing a key reconstruction role.



Formation of ERRA to Address Disaster Reconstruction in Pakistan
Pakistan is an example of a country in which government created a new dedicated body to manage disaster recovery. The country's devastating 2005 earthquake was the catalyst for forming a totally new recovery organization, the Earthquake Reconstruction and Rehabilitation Authority (ERRA), with a broad-ranging agenda to "plan, coordinate, monitor, and regulate reconstruction and rehabilitation activities in earthquake-affected areas, encouraging self-reliance via private-public partnership and community participation, [and] ensuring financial transparencies." This institution was placed directly under the prime minister's office. ERRA's challenges concerned its relationship with provincial and district authorities, the military, donor agencies, and the wider NGO community; it coordinates all national and international assistance agencies and facilitates the work of implementing partners. Initially, its rapid growth presented transparency and accountability challenges. But, in practice, ERRA has been effective in macro-planning, developing sectoral strategies, financing, project approval, and monitoring and evaluating reconstruction.

[Reviewers: Please provide case studies on institutional options for managing housing reconstruction.]

Resources

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Clinton, B. 2005. Transcript of remarks to UN Economic and Social Council (ECOSOC) Humanitarian Segment Panel, "Lessons Learned from the Response to the Indian Ocean." New York City.

Davis, I., ed. 2007. *Learning from Disaster Recovery, Guidance for Decision Makers*. Geneva and Kobe: International Recovery Platform (IRP).

Fengler, W., Ihsan, A., and Kaiser, K. 2008. *Managing Post-Disaster Reconstruction Finance—International Experience in Public Financial Management*. Washington, DC: World Bank (pg. 9, table on institutional options and considerations in managing reconstruction process).

International Recovery Platform (IRP). Information on institutional and governance aspects of disaster reconstruction remains limited at present. The following documents refer to the topic, but as yet none contains any comprehensive treatment. http://irp.onlinesolutionsltd.net/.

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Chapter 11
Effective Donor Coordination and Partnerships

Working with Key International Institutions

Since the late 1980s, the World Bank has been a leader in the global commitment to lessen the impact of natural disasters worldwide through disaster risk reduction (DRR). The Bank is also an active supporter of a related set of commitments to improve the effectiveness of disaster response through the coordination of institutions and technical approaches.

This chapter summarizes important global framework agreements and describes key organizations with which the World Bank is collaborating to turn the commitment to DRR and institutional coordination into reality.

It also discussed collaboration with local institutions, particularly civil society organizations, as a strategy to improve reconstruction programs.

Framework Agreements

December 1987	The United Nations General Assembly designates the 1990s as the Decade for Natural Disaster Reduction. UN General Assembly Resolution 42/169. http://www.un.org/documents/ga/res/42/a42r169.htm.
December 1989	The UN General Assembly proclaims the Decade for Natural Disaster Reduction and specifies the policy and operational measures for pursuing its goals. UN General Assembly Resolution 44/236. http://www.un.org/ documents/ga/res/44/a44r236.htm.
June 1990	The first major World Bank colloquium to promote the exchange of experiences and ideas related to the environment and disaster management is held in Washington, D.C.
December 1991	The UN General Assembly adopts a policy to strengthen the coordination of humanitarian emergency assistance, initiates a process to establish a global culture of prevention and preparedness, and creates what is now the Office for the Coordination of Humanitarian Affairs (OCHA). UN General Assembly Resolution 46/182. http://www.un.org/documents/ga/res/46/a46r182.htm.
May 1994	The World Conference on Natural Disaster Reduction adopts the Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation and its Plan of Action ("Yokohama Strategy"). (See details below.)
January 2005	The World Conference on Disaster Reduction adopts the Hyogo Framework for Action (HFA) for 2005–15. (See details below.)
September 2006	The World Bank establishes the Global Facility for Disaster Reduction and Recovery (GFDRR) to promote integration of DRR into poverty reduction strategies and Millennium Development Goals in response to the Hyogo Framework. (See details below.)

The Yokohama Strategy

In May 1994, the World Conference on Natural Disaster Reduction convened in Yokohama, Japan, and adopted the "Yokohama Strategy," which calls for a global culture of prevention and improved risk assessment, as well as broader monitoring and communication of warnings.[1] The conference document stated that, though natural phenomena that cause disasters are outside human control, vulnerability of populations was a result of human activity (or non-activity). The Yokohama conference also focused on important socioeconomic factors in disaster prevention, such as cultural tradition, religious values, economic standing, and trust in political accountability.

Hyogo Framework for Action 2005–15

In January 2005, 168 governments adopted a 10-year plan to make the world safer from natural hazards at the World Conference on Disaster Reduction held in Kobe, Hyogo, Japan.[2] Endorsed by the UN General Assembly in Resolution 60/195, the HFA is the primary international agreement for DRR, providing a global blueprint for reduction efforts during the next decade. Its goal is, by 2015, to substantially reduce disaster-related losses in lives and in the social, economic, and environmental assets of communities and countries. The HFA's principal strategic goal is to effectively integrate, in a coherent manner, disaster risk considerations into sustainable development policies, planning, programming, and financing at all levels of government. Priorities for action include:

- Ensuring that DRR is a national and local priority with a strong institutional basis for implementation
- Identifying, assessing, and monitoring disaster risks and enhancing early warning
- Using knowledge, innovation, and education to build a culture of safety and resilience at all levels
- Reducing underlying risk factors
- Strengthening disaster preparedness for effective response at all levels[3]

Stockholm Plan of Action for Integrating Disaster Risks and Climate Change Impacts in Poverty Reduction

In October 2007, more than 200 representatives of national governments, bilateral and multilateral agencies, civil society organizations, experts and researchers, the World Bank, the Swedish Agency for International Development Cooperation, and the United Nations International Strategy for Disaster Reduction (ISDR) Secretariat met in Stockholm, Sweden, and endorsed a plan to more effectively integrate natural hazard and climate change risks into national development strategies and poverty reduction strategies.[4]

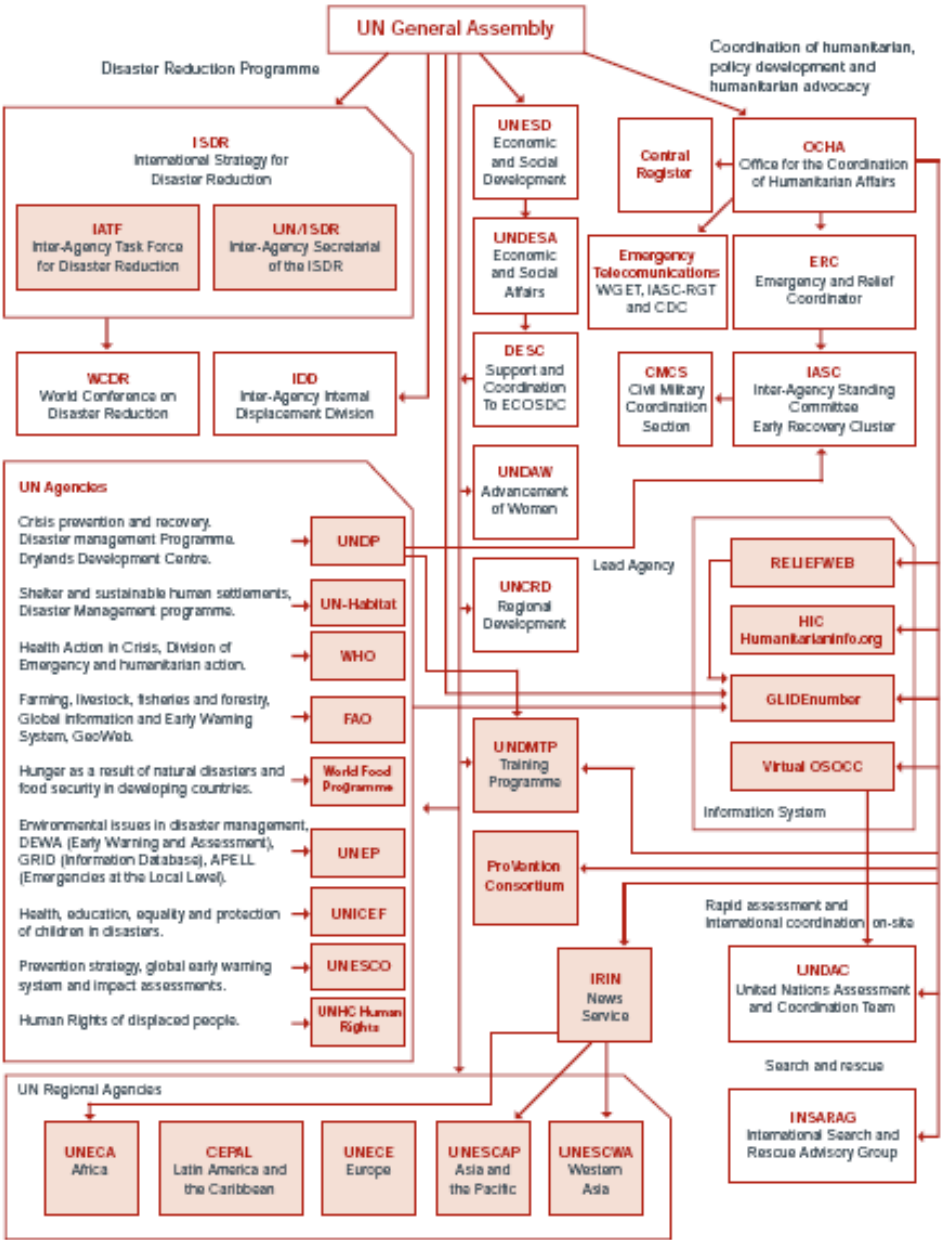
1. http://www.unisdr.org/eng/about_isdr/bd-yokohama-strat-eng.htm.
2. http://www.proventionconsortium.org/?pageid=36 and http://www.unisdr.org/wcdr.
3. http://www.unisdr.org/eng/hfa/docs/Words-into-action/Words-Into-Action.pdf.
4. http://gfdrr.org/docs/StockholmPlanofAction.pdf.

Key International Partner Institutions

The United Nations System

The United Nations System (UN) supports disaster risk reduction and recovery through various of its component organizations (see Figure 1 for a graphic representation of UN Agencies involved in disaster management).

Figure 1.
Disaster Management in the UN System



Source: *Tony Lloyd-Jones, 2006, Mind the Gap! Post-Disaster Reconstruction and the Transition from Humanitarian Relief (London: Max Lock Centre at the University of Westminster), http://www.rics.org/Newsroom/Keyissues/Disastermanagement/ mind_the_gap_f_060307.html.*

Due to an effort on the part of both parties to improve World Bank/UN coordination (see the summary of the EU/World Bank/UN Joint Declaration, below), Bank staff should be familiar with the roles the UN plays in disaster policy, research and particularly the field, where staff are likely to encounter UN agency staff playing a range of key roles. Two UN bodies whose roles in disaster response and recovery are particularly critical are the Office for the Coordination of Humanitarian Affairs (OCHA) and the Cluster Working Group on Early Recovery (CWGER).

The Office for the Coordination of Humanitarian Affairs. The Office for the Coordination of Humanitarian Affairs (OCHA) coordinates the work of operational agencies that deliver humanitarian assistance. OCHA supports the Humanitarian Coordinator (HC) in needs assessments, contingency planning and the formulation of humanitarian programs. The head of OCHA, as Emergency Relief Coordinator, chairs the Inter-Agency Standing Committee (IASC), which comprises all major humanitarian actors, including the Red Cross Movement and three non-governmental organization (NGO) consortia.

OCHA solicits donor support through the Consolidated Appeals Process (CAP), issues emergency appeals on behalf of countries affected by disasters, and manages the Central Emergency Response Fund (CERF), enables UN agencies to jump-start relief activities following natural disasters and armed conflicts.

OCHA deploys staff at short notice to disaster areas and supports several "surge capacity" mechanisms, including the United Nations Disaster Assessment and Coordination System (UNDAC), which can dispatch teams within 12 to 24 hours of a natural disaster to gather information, assess needs, and coordinate international assistance.

The United Nations Cluster Working Group. The United Nations Development Program coordinates the Global Cluster Working Group on Early Recovery (CWGER), one element of the reform agenda. CWGER is intended to strengthen humanitarian response capacity and effectiveness. It operates at the global level to strengthen preparedness and technical capacity by designating Cluster Leads that ensure leadership and accountability in sectors or areas of activity. At the country level, the CWGER ensures a more coherent and effective response by mobilizing agencies, organizations, and NGOs in all key sectors under the Humanitarian Coordinator and Humanitarian Country Team. It also establishes a clearer division of labor among organizations, defines the roles and responsibilities within sectors, and provides the Humanitarian Coordinator with a first point of call and a provider of last resort in all sectors or areas of activity. Decisions made in the Emergency Shelter Cluster are of particular importance for housing and community reconstruction.

The key actors in the cluster system are the following.
Cluster Leads (sometimes referred to as Sector Leads) support government coordination and response efforts, facilitate coordination between cluster partners within a given sector and between different sectors, encourage joint working, ensure that responses adhere to existing guidelines and standards, collate and share information, identify response gaps and duplication, and act as provider of last resort. Sector/cluster lead agencies are accountable to the Humanitarian Coordinator. (See table below.)

The **Emergency Relief Coordinator (ERC)** is the undersecretary general for humanitarian affairs, who also heads OCHA. The ERC ensures that an agreement is reached on country-level cluster/sector leads and that this decision is communicated to humanitarian partners, donors, and other stakeholders. (The Humanitarian Coordinator informs the host government and country-level humanitarian partners of the agreed arrangements.)

The **Humanitarian Coordinator (HC)** (or Resident Coordinator where an HC has not yet been appointed) is the most senior UN humanitarian official on the ground for an emergency. This person ensures the adequacy, coherence, and effectiveness of the overall humanitarian response and is accountable to the ERC. With the Humanitarian Country Team, the HC establishes coordination mechanisms and is responsible for adapting them to reflect government capability.

UN Global Cluster Leads

Sector or Area of Activity		Global Cluster Lead
Agriculture		FAO
Camp Coordination/Management	IDPs (from conflict) Disaster situations	UNHCR IOM
Early Recovery		UNDP
Education		UNICEF
Emergency Shelter	IDPs (from conflict) Disaster situations	Save the Children – United Kingdom UNHCR
Emergency Telecommunications		IFRC (Convener)
Health		OCHA/UNICEF/WFP
Logistics		WHO
Nutrition		WFP
Protection	IDPs (from conflict) Disasters/civilians affected by conflict (other than IDPs)	UNICEF UNHCR
Water, Sanitation, and Hygiene		UNHCR/OHCHR/UNICEF

Other UN-Related Activities in Disaster Management

International Strategy for Disaster Reduction

To help reduce human, social, economic, and environmental losses from natural hazards and related technological and environmental disasters, the ISDR promotes awareness of disaster reduction's importance as an integral component of sustainable development.[5] Combining the strengths of many key players, including the World Bank, the ISDR builds on partnerships and takes a global approach, seeking to involve every individual and community in reducing the loss of lives, the socioeconomic setbacks, and the environmental damage caused by natural hazards. It promotes the following four objectives as tools to achieve disaster reduction:

- Increase public awareness to understand risk, vulnerability, and disaster reduction on a global basis

5. http://www.unisdr.org/isdrindex.htm.

- Obtain commitment from public authorities to implement disaster reduction policies and actions
- Stimulate interdisciplinary and intersectoral partnerships, including the expansion of risk reduction networks
- Improve scientific knowledge about disaster reduction

Global Facility for Disaster Reduction and Recovery

The GFDRR, launched September 29, 2006, is a partnership of the ISDR system to support the implementation of the HFA.[6] Managed by the World Bank on behalf of the participating donor partners and other partnering stakeholders, GFDRR's mission is to reduce vulnerabilities to natural hazards by mainstreaming disaster reduction and climate change adaptation in country development strategies—such as poverty reduction strategies (PRSs), country assistance strategies (CASs), UN Development Assistance Frameworks (UNDAFs), and National Adaptation Plans of Action (NAPAs). GFDRR also fosters and strengthens global and regional cooperation among various stakeholders under the ISDR system—such as low- and middle-income country governments, international financial institutions (IFIs), UN agencies, research and academic institutions, intergovernmental organizations, civil society organizations (CSOs), and the private sector—to leverage country systems and programs in disaster reduction and recovery. The following are GFDRR's five business lines:

1. Track I: Global and Regional Partnerships
2. Track II: Mainstreaming DRR in Development
3. Track III: Standby Recovery Financing Facility for Accelerated Disaster Recovery
4. Economics of Disaster Risk Reduction
5. South-South Cooperation in Disaster Risk Reduction

ISDR Inter-Agency Group

The ISDR Inter-Agency Group was created as a venue for joint work programming among participating organizations and to improve coherence and coordination so that countries can better implement the HFA.[7] These organizations include the World Bank; the International Federation of Red Cross and Red Crescent Societies (IFRC); and the following UN agencies: ISDR; the Food and Agricultural Organization (FAO); the International Labor Organization (ILO); the Office for the Coordination of Humanitarian Affairs (OCHA); the World Meteorological Organization (WMO); the Children's Fund (UNICEF); the Development Program (UNDP); the Environment Program (UNEP); and the Educational, Scientific, and Cultural Organization (UNESCO). Besides the Inter-Agency Group, other ISDR system mechanisms include national, regional, and thematic platforms, as well as scientific and technical committees. (Key ISDR documents can be accessed at http://www.preventionweb.net/english/hyogo/key-documents/?pid:184&pil:1.)

Global Platform for Disaster Risk Reduction

The Global Platform for Disaster Risk Reduction (GPDRR) is the main global forum for the continued and concerted emphasis on disaster reduction.[8] In biennial GPDRR meetings, chaired

6. http://gfdrr.org.
7. The 2008–9 Joint Work Program, http://www.preventionweb.net/files/2572_Jointworkprogramme20082009FINAL3Marc08.pdf.
8. http://www.preventionweb.net/english/hyogo/GP/.

by the UN undersecretary general for humanitarian affairs, member states and other stakeholders assess progress made in implementing the HFA, enhance awareness of DRR, share experiences and learn from good practice, identify remaining gaps, and identify actions to accelerate national and local implementation.

The Inter-Agency Standing Committee

The Inter-Agency Standing Committee (IASC) is an inter-agency forum for coordination, policy development, and decision making involving key UN and non-UN partners.[9] It develops humanitarian policies, agrees on clear divisions of responsibilities for the various aspects of humanitarian assistance, identifies and addresses gaps in response, and advocates for effective application of humanitarian principles. Together with the Executive Committee for Humanitarian Affairs (ECHA), the IASC forms the key strategic coordination mechanism among major humanitarian actors. Its Full Members include FAO, OCHA, UNDP, and the United Nations Human Settlements Program (UN-HABITAT). Its Standing Invitees include the World Bank, the International Committee of the Red Cross (ICRC), the International Council of Voluntary Agencies (ICVA), IFRC, the American Council for Voluntary International Action (InterAction), and the United Nations Office of the High Commissioner for Human Rights (OHCHR).

IASC Guidelines on Human Rights and Natural Disasters

The United Nations regards human rights as the legal underpinning of all humanitarian work pertaining to natural disasters. The 2006 IASC guidelines provide a framework for a rights-based approach to these activities.[10] Developed to accompany the operational guidelines, the 2008 pilot *Field Manual on Human Rights Protection in Situations of Natural Disaster* helps people working in the field understand the human rights dimensions of their work in disaster response.[11]

[Reviewers: Please provide case studies on good and bad practices in donor coordination.]

EU/World Bank/UN Joint Declaration

In September 2008, the European Commission, the United Nations and the World Bank signed the Joint Declaration on Post-Crisis Assessments and Recovery Planning.[12] This declaration commits the signatories to the following:

- Communicate strategically at both headquarters and field level as we monitor situations of fragility and conflict, and imminent or actual natural disasters, and identify opportunities for joint initiatives where our combined efforts may offer advantages;
- Participate in the relevant in-country planning processes and support the development and use of shared benchmarks/results frameworks and joint processes for monitoring and review;

9. http://www.humanitarianinfo.org/iasc/.
10. http://www.humanitarianinfo.org/iasc/downloadDoc.aspx?docID=4463&ref=4.
11. http://www.humanitarianinfo.org/iasc/downloaddoc.aspx?docID=4503&type=pdf.
12. http://www.undg.org/docs/9419/trilateral-JD-on-post-crisis-assessments-final.pdf.

- Support the development and use of the common methodologies for post-conflict needs assessments, and a common approach to post-disaster needs assessments and recovery planning;
- Invest in development of toolkits and staff training to deepen our collective and institutional capacity for these processes; and
- Monitor progress in the implementation of the common platform through a senior level meeting that would take place once a year.

The Bank's activities in this partnership with respect to natural disasters are coordinated by the GFDRR.

Working with Civil Society in Reconstruction

Civil society organizations (CSOs) play a central role in post-disaster reconstruction. They bring institutional, human, technical, social, and financial resources to reconstruction and can link reconstruction efforts to longer-term sustainable development activities in the disaster-affected region.

"Civil society" refers to the wide array of nongovernmental and not-for-profit organizations that express the interests and values of their members or others based on ethical, cultural, political, scientific, religious, or philanthropic considerations.[13] CSOs carry out uncoerced collective actions around shared interests, purposes, and values. In theory, civil society is distinct from the state, the family, and the market. In practice, the boundaries between them can be indistinct. CSOs differ in their levels of formality, autonomy, power, and reach.[14] While most civil society activity remains local, over the decades CSOs have shaped global policy through advocacy campaigns and the mobilization of people and resources.

This section focuses on the typology of CSOs and the range of independent voluntary efforts they carry out during post-disaster reconstruction. It also provides guidance on how government can, when called for, formalize its relationship with CSOs. (See Chapter 17, "Community Participation," for the processes by which affected individuals, communities, and community-based organizations participate in reconstruction.)

Guiding Principles

- CSOs can contribute institutional, human, technical, social, and financial resources to reconstruction, alone or in partnership with government.
- CSOs are more effective when working within their area of expertise and the limits of their managerial capacity and financial resources.
- Governments have the right and responsibility to require that CSOs align their program objectives with those of the reconstruction strategy.

13. Centre for Civil Society, 2004, "What is civil society?" *London School of Economics*, http://www.lse.ac.uk/collections/CCS/what_is_civil_society.htm.
14. Centre for Civil Society. 2004, "What is civil society?" *London School of Economics*, http://www.lse.ac.uk/collections/CCS/what_is_civil_society.htm.

- The terms of partnerships between CSOs and government should be concretely defined and formalized in writing.
- Regular reporting by the CSO partners and monitoring and evaluation by government can preempt problems and improve accountability in CSO partnerships.

Risks and Challenges

1. CSOs can overstate their capacity.
2. CSOs may make financial and other commitments they cannot fulfill.
3. CSOs can conduct their work in a non-consultative, top-down decision-making manner, working on a turnkey basis to deliver finished products to "beneficiaries."
4. CSOs may require others to fulfill their agendas, including those of a religious nature, in order to qualify for the benefit being offered.
5. CSOs may not operate, by preference or policy, with transparent financial management practices.
6. CSOs may assume the role of the community instead of fostering a community voice.
7. CSOs may not apply environmental and social safeguards or follow reconstruction program policies.
8. CSOs' termination dates of commitments may not be in sync with the reconstruction development timeframe.

Technical Issues

Types of Civil Society Organizations

CSOs are categorized by their objectives, geography, and funding. The World Bank classifies a CSO according to whether its mission is charitable, service-oriented, participatory, or devoted to community empowerment. CSOs are also classified geographically as local, national, or international. In post-disaster situations, an important factor is whether a CSO is already working in a disaster area and therefore has local knowledge. Both local and international organizations can have local knowledge. There are different types of CSOs, including:

- community groups, indigenous peoples' organizations, charitable organizations, NGOs, foundations, self-help groups, social movements, coalitions, and private voluntary organizations;
- labor unions, professional associations, trade unions, business associations, professional associations or organizations, and private companies; and
- faith-based organizations, religious organizations, women's organizations, advocacy groups, foundations, humanitarian and development organizations (international and local), academic institutions, and scientific or technological organizations.

Role of Civil Society Organizations in Post-Disaster Reconstruction

The role and influence of CSOs in the disaster context varies considerably, depending on their scale, sponsoring organization, financial strength, purpose, and geographic reach. A list of common roles includes the following:

- Providing humanitarian, technical, manpower, material, advisory, scientific, and financial assistance to government or directly to the affected population in all phases of the reconstruction cycle

- Influencing reconstruction policy, especially when acting collectively
- Advocating for equity, human rights, transparency, accountability, and justice in the reconstruction process
- Coordinating and communicating between government, local people, and national and international organizations

Challenges in Collaborating with Civil Society Organizations

Need for systematic approach. The effective use of the resources that CSOs bring to reconstruction—institutional, human, technical, social, and financial—requires a planned approach. In outlining the reconstruction strategy, identify a CSO's role in consultation with the organization. CSOs are generally most effective working within their established area of expertise in activities that don't overtax their capacity. Assessments may be needed to identify CSO constituency, capacity, outreach, and skills.

Organizational agendas. CSOs bring their own agendas to the reconstruction context; these agendas may include promoting a political or religious ideology. Operating independently, their goals may not reflect government policy objectives. Even when working under partnership agreements, their interests, skills, and areas of influence need to be recognized and built into the partnership agreement and work plan.

Alignment with government objectives. Government must ensure that partner contributions are aligned with the long-term reconstruction approach. Government outreach and communication can help unify criteria, standards, and modalities of assistance. Transparency and public participation are not hallmarks of all CSOs; government may need to establish these as required conditions for operating in the country.

Capacity limits. One concern about the way CSOs operate is that they can take on too much responsibility at too large a scale with insufficient funding. Their capacities need to be assessed and possibly supported with training and technical assistance. Government review of CSO project initiatives can help detect in advance possible problems with their proposed activities.

Need for institutional strengthening. Government should also be careful not to discourage CSO contributions or overlook local resources. Local academic institutions, professional organizations, and licensing authorities are good examples of CSOs that can play a critical role in promoting hazard resilience in post-disaster reconstruction. Strengthening may be necessary, however, if the disaster taxes a CSO's institutional capacity to contribute its much-needed skills.

Formalizing the Government-Civil Society Organization Collaboration

Assessing CSOs. In working with CSOs, government must establish their legitimacy and confirm their capacity. Listed below are some of the key questions CSOs, whether operating independently or in partnership with government, should answer before being allowed to provide reconstruction services. A CSO registration system codifying the following information may also be necessary.

Data for Civil Society Organization Registration System

Name	Legal name and doing-business-as name, internationally and locally.
Legal status	National or international organization. Type of incorporation or other legal status. Legal basis for receiving funds from international and/or national sources. Permission to operate in the country.
Experience	Experience in the affected country and/or region and similar post-disaster reconstruction activities. Supervisory structure, and experience of senior officials.
Expertise	Principal services: financial, technical assistance, human resources. Language skills of staff. Systems for project management.
Beneficiary screening procedures	Screening criteria for beneficiaries, especially philosophical or religious preconditions, if any.
Financial capacity	Financial management capacity; availability and source of own funds. Experience with managing government and other outside funds. Ability to present accurate and timely financial information.
Institutional contacts	Headquarters and institutional information, including names of senior management and board members.
Local contact information	Location of office, telephone, fax, Web site, e-mail address.

Formalizing the CSO role. It is advisable that governments collaborating with CSOs define the terms of the partnership with formal agreements. Such agreements help ensure adherence to implementation, financial disclosure, and monitoring requirements. They also formalize the programmatic relationship, referencing benchmarks, and agreements on expected outcomes. One or more relevant government agencies should be assigned to establish and maintain relations with CSOs. To manage competition among partners, that agency (or agencies) should have the authority to require information sharing among the CSOs and establish a system for coordination and monitoring of partner activities.

[Guidance to be added on contracting with CSOs to provide services in post-disaster reconstruction.]

Oversight system. Delegating certain duties does not absolve government from its oversight responsibilities. Government monitoring is necessary to ensure that partners adhere to the established reconstruction guidelines and parameters. Reporting by a CSO should reference benchmarks, outputs, and outcomes, and it should include both programmatic and administrative expenditures. Counterpart contributions by a CSO, government, and affected communities and families must be accounted for.

Start-up and periodic meetings are useful for reporting issues, resource requirements, and any adjustments to prior estimates of need and results. The World Bank's good practice notes are

relevant in this context.[15] Mechanisms may be needed to consult with communities and affected families about their satisfaction with the services they are receiving. A continuity plan will guarantee continuity of services in cases where CSO presence in the country is only temporary.

Relation to Existing Public Policy

Legal and reporting requirements for CSOs vary from country to country. Even within the same country, requirements may be different for local and international CSOs, with local organizations having more autonomy and fewer requirements. Legal requirements often increase in proportion to the financial size of the organization, with large, wealthy organizations being required to disclose their financial operations in a manner similar to private firms. The registration of CSOs ensures that government is aware of their presence and is able to monitor their activities, shutting them down if minimal requirements are not met. On the other hand, such rules are also used to restrict public speech or the provision of services not sanctioned by government.

Governments may need help in establishing a system to register and track the CSOs, especially international CSOs entering the country to provide services. At a minimum, a registration or tracking system should ensure that CSOs are duly registered organizations in their own countries; can carry out legitimate, needed activities in a professional manner; are not coercive or imposing a particular philosophy or religion on the affected population as a condition for services; and are able and willing to regularly report on their programmatic activities and the financial resources under their control.

Recommendations

1. In developing a reconstruction strategy, identify those roles best suited to CSOs and deploy partner resources based on an assessment of their constituency, capacity, outreach, and skills.
2. Ensure that a CSO's role in the reconstruction process is consistent with the organization's existing mandate.
3. Create a reporting mechanism to monitor CSO project design, development, and implementation activities.
4. Establish a system to provide, when needed, technical, financial, and implementation support to CSO initiatives.
5. Formalize programmatic relationships and establish benchmarks for program activities.
6. Establish a monitoring and evaluation system for all CSO activity and mechanisms for surveying the satisfaction of the population being served.

Case Studies

2001 Earthquake Gujarat, India

Kutch Nav Nirman Abhiyan empowers villages through mediation with official bodies

The Kutch Nav Nirman Abhiyan, a coalition of 14 grassroots NGOs formed in the aftermath of the June 1998 Kandla cyclone, was widely praised for its role in post-disaster relief and

15. World Bank, 2000, "Involving Nongovernmental Organizations in Bank Supported Activities," *World Bank* (February), http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL/0,,contentMDK:20064711~menuPK:4564189~pagePK:64709096~piPK:64709108~theSitePK:502184,00.html.

rehabilitation following the 2001 Gujarat earthquake that killed or injured more than 26,000 people in India's Kutch District. With the Gujarat Disaster Management Authority (GDMA) retaining ultimate authority, Abhiyan worked in 600 earthquake-affected villages and towns in the Kutch District's wide geographical expanse to bring civic engagement to the reconstruction process, supplementing GDMA's lack of local knowledge with its in-depth knowledge of the district. Abhiyan linked technical experts with illiterate villagers and worked to ensure reconstruction efforts addressed the best interests of the people. It encouraged the formation of village committees to select partnering agencies in reconstruction. As a result, a large number of agencies not considered to be working the best interests of the community were rejected. Abhiyan also helped villagers conduct damage and needs assessments. It formed committees disseminate information on reconstruction packages and policies between villagers and government agencies and among the villages to ensure equity in reconstruction policy and implementation. It successfully lobbied for policy measures that greatly improved transparency, accountability, and community involvement, and it convinced banks and government agencies to route reconstruction funds directly to beneficiaries through bank accounts.[16]

2005 Hurricane Katrina, New Orleans, USA

Universities unite to help rebuild New Orleans

The ACORN Housing-University Collaborative was formed to assist in rebuilding New Orleans in the aftermath of Hurricane Katrina. Cornell University, Columbia University, the Pratt Institute, New Jersey's Science and Technology University, and Louisiana State University participated with ACORN. Four months after the hurricane, the collaborative issued "The People's Plan for Overcoming the Hurricane Katrina Blues: A Comprehensive Strategy for Promoting a More Vibrant, Sustainable, and Equitable 9th Ward." The plan was well received by all stakeholders in New Orleans. Residents considered it truly representative of their needs. It featured 56 immediate, short-term, and long-term revitalization measures to address all aspects of community revival, including social, economical, environmental, and physical planning issues. In March 2007, both the New Orleans City Planning Commission and the New Orleans City Council passed resolutions to incorporate the plan's main elements into the comprehensive Unified New Orleans Plan.[17]

2005 Hurricane Katrina, New Orleans, USA and 2004 Asia Tsunami

Express and logistics giant DHL's Disaster Risk Team aid with relief

DHL is the umbrella brand of Deutsche Post World Net, the world's largest express and logistics company. A strategic partnership between DHL and the United Nations in the field of disaster management resulted in the formation of disaster risk teams (DRTs) that reduces bottlenecks in airports close to natural disaster sites, thereby ensuring that relief reaches people quickly and efficiently. The DRTs staff of 80 people trained to work in humanitarian situations helped deliver some 4.77 million pounds of relief materials for post-tsunami and post-Hurricane Katrina relief operations. The teams, located across the world, are deployed for three weeks after a natural disaster. DHL and its DRTs also assist countries worldwide in disaster preparedness and awareness.[18]

16. Lena Dominelli, 2007, *Revitalising Communities in a Globalising World* (Farnham, UK: Ashgate Publishing, Ltd.).
17. Kenneth M. Reardon, Marcel Ionescu-Heroiu, Andrew J. Rumbach, 2008, *Equity Planning in Post-Hurricane Katrina New Orleans: Lessons from the Ninth Ward*, http://www.huduser.org/periodicals/cityscpe/vol10num3/ch4.pdf.
18. DHL, 2007, "DHL Launches Disaster Response Team for Middle East/Africa," *Middle East Events,* October, http://www.middleeastevents.com/site/pres_dtls.asp?pid=2244.

[Reviewers: Please provide additional case studies and good practices in donor coordination and civil society engagement in reconstruction.]

Resources

OCHA. 2006. *Exploring Key Changes and Developments in Post-Disaster Settlement, Shelter and Housing*, 1982-2006. Scoping study to inform the revision of Shelter after Disaster: Guidelines for Assistance. New York. Office for the Coordination of Humanitarian Affairs.

Wisner, Ben and Haghebaert, Bruno. 2006. *State/Civil Society Relations in Disaster Risk Reduction*. Discussion paper for "Strengthening Global Collaboration in Disaster Risk Reduction." Bangkok: ProVention Consortium Forum.

World Bank. 2000. *Involving Nongovernmental Organizations in Bank Supported Activities*, Washington DC: World Bank. http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL/0,,contentMDK:20064711~menuPK:4564189~pagePK:64709096~piPK:64709108~theSitePK:502184,00.html.

Chapter 12
Managing the Financial Aspects of Reconstruction

Introduction

Without financing, post-disaster reconstruction cannot take place. But the financing process is complex and fraught with risks. It is also an area where extensive coordination is required within the World Bank, between the Bank and its governmental and nongovernmental counterparts in the country, and with other international organizations. This section covers issues related to assessments and donor conferences, budgeting and coordinating funding sources, assessing government capacity to manage funds, and choosing tracking systems for reconstruction funds.

Guiding Principles

- Financial considerations begin with the needs assessment, which should be conducted in accordance with guidance provided by government.
- Reconstruction financing decisions should be made in the context of existing national and local sector plans.
- Financial management and budgeting for post-disaster reconstruction should use existing systems and procedures if this will not produce significant delays; otherwise, independent post-disaster procedures should be harmonized with existing systems to the maximum degree.
- Effective use of funds requires alignment of funding sources with programming.
- Transparent, timely systems must be established for tracking financial resources and reporting on reconstruction progress.
- Coordination of reconstruction finance is closely related, but separate from, the decision about reconstruction coordination. A separate reconstruction agency may use country systems or a centralized coordination board may require special financial administration.

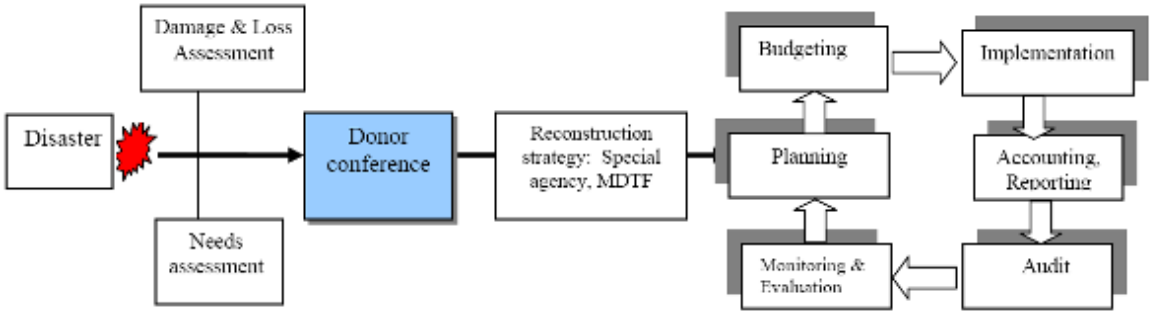
Risks and Challenges

1. Duplication of efforts among government and donors due to lack of coordination on financial programming and monitoring of execution.
2. Lack of transparency and accountability in the use of reconstruction funds.
3. Distribution of reconstruction funds that does not reflect actual needs.
4. Poor financial decision making due to out-of-date information.
5. Abandonment of good public financial management practices to speed up disbursements.
6. Overloading the public financial management system with the influx of recovery funds.
7. Donors in a MDTF lose their negotiating power with government by acting collectively.

Technical Issues

The Protocol of Events for Mobilizing and Executing Reconstruction Finance[1]

In the aftermath of a major disaster, a series of activities generally proceeds in rapid succession, including the post-disaster needs assessment; the donor conference; the development of a reconstruction strategy; the establishment of implementation mechanisms; and the integration of the reconstruction process into the budget cycle. The figure below shows the relationship among these activities.



Source: Wolfgang Fengler, Ahya Ihsan, Kai Kaiser, 2008, Managing Post-Disaster Reconstruction Finance: International Experience in Public Financial Management, Policy Research Working Paper 4475 (Washington, DC: World Bank).

Post-disaster needs assessments (PDNAs) are used to estimate damage and losses and may measure reductions in economic output. Damage and loss numbers are used to mobilize donor resources and as benchmarks during reconstruction. They are also an important input to the decision about implementation arrangements. PDNAs are the responsibility of government, and are often carried out in joint missions that government leads and in which the World Bank, the United Nations, and regional development banks participate.

Donors and nongovernmental organizations (NGOs) are likely to conduct detailed assessments for the purpose of programming their own funds. Government has a stake in these assessments and the data collected should be shared. (See Chapter 1, "Post-Disaster Needs Assessment.")

The financing requirement estimated by the PDNA will vary depending on the policy guidance given to the assessment team by government. Policies concerning minimal housing standards, relocation policy, and reconstruction technologies will affect the estimated cost of housing and community reconstruction identified in assessments. Goods estimates also depend on accurate quantification of damage; clearly defined criteria for categorizing housing condition, standards for housing and infrastructure reconstruction, and criteria for relocation of households; and the compensation scheme. If time permits, these decisions should be made by government in consultation with local government and the affected community, rather than being left to the assessment team. Local governments can provide housing census data and damage assessment at the micro level, and civil society organizations (CSOs) can assist government in carrying out local consultations.

1. Wolfgang Fengler, Ahya Ihsan, Kai Kaiser. 2008. *Managing Post-Disaster Reconstruction Finance: International Experience in Public Financial Management.* Policy Research Working Paper 4475 (Washington, DC: World Bank).

Donor conference. The impact of a disaster often far exceeds a country's resources and capacity to respond. As a result, financial assistance from international donors plays a significant role in recovery and reconstruction. Donor conferences provide the venue for mobilizing international assistance. In the conference, PDNA results are presented, together with the policies of government for directing the reconstruction. Outcomes from the donor conference, such as commitments to specific sectors, prioritization of needs by government, and sector policies, will affect the resources available for housing and community reconstruction. Donors are more likely to make commitments to support sector strategies or project proposals that are clearly defined.

Reconstruction strategy. A comprehensive reconstruction strategy includes institutional and financial arrangements of the reconstruction program, including whether a separate reconstruction agency will be created and whether its responsibilities will include financial management. In defining the strategy, governments may decide to establish a Multi-Donor Trust Fund (MDTF). The reconstruction strategy should include an institutional element that emphasizes the timeliness of execution on the ground.

Six Important Decisions Related to Post-Disaster Financial Management

There are at least six decisions that need to be made as part of developing the financial management approach for reconstruction. They are:

Management and institutional set-up. Depending on the disaster, the country, and the state of local institutions, affected countries may create independent reconstruction agencies or the reconstruction program may be carried out by existing central or sub-national institutions. While not a financial decision, this decision may influence the decision about financial administration. An independent reconstruction agency may require an independent tracking system or may be able to use country systems for budgeting, procurement, and accounting. (See Chapter 10, "Institutional Options for Reconstruction Management.")

Reconstruction planning versus rapid project implementation. A credible plan is one that incorporates key players and is consistent with existing policy frameworks, but lengthy planning exercises and overly detailed plans may not be possible. Reconstruction needs to start quickly to provide employment and to protect livelihoods, but flexibility is needed to adjust initial plans along the way.

On-budget versus off-budget. International partners emphasize the use of country PFM systems to channel aid even in reconstruction situations. However, some funds may need to be channeled outside regular budgetary processes, especially in the early phases, and particularly if NGOs and the UN system are playing a major role. This is feasible if robust monitoring takes place and disbursement procedures for the flexible system are already established. If this mechanism has to be created from scratch, it may be more sensible to adapt country systems.

Front-loading versus back-loading of funds. Front-loading reconstruction funds in the early months will increase inflation and reduce the resources available in the later recovery period once NGO funding is exhausted. Government should consider programming government funds for later in recovery.

Regular versus special procurement regimes. Reconstruction procurement must strike a balance between speed and control. With standard processes, caution must be exercised to ensure that the procurement system is not overtaxed, especially if it is already weak. Special

procurement arrangements and independent procurement agents are two alternatives to be considered.

Emphasis on *ex ante* or *ex post* controls. Reconstruction must promote accountability, without unduly slowing implementation. The key decision is between *ex ante* and *ex post* controls. The more rapidly reconstruction begins, the more governments need to rely on *ex post* controls. However, these *ex post* controls must be more rigorous than in regular development programs.

Assessing Government's Capacity for Management of Reconstruction Finance[2]

Although core fiduciary principles apply, management, planning, budgeting, and project implementation often need to follow a different sequence and use different modalities to be effective in the early years of reconstruction. Even under special modalities, good PFM is critical because it increases donor confidence that aid will reach the intended beneficiaries and can strengthen support from civil society for the reconstruction strategy.

The Public Expenditure and Financial Accountability (PEFA) framework identifies weaknesses in PFM and uses performance indicators to identify areas for reform and to monitor improvements.[3] The World Bank or other organization may have analyzed a country's PFM, by conducting a PEFA or other similar analysis. If not, a rapid assessment of country systems may be necessary, with special emphasis on the capacity to spend resources in a timely manner for their intended purposes. When weaknesses are detected, international agencies can play an important role by providing funds for technical assistance, along with their reconstruction funds, for improving PFM during the reconstruction period.[4]

HOW TO DO IT
Financial Management Capacity Assessment

The handbook will include specific instructions on how to organize and carry out a financial management capacity assessment.

Multi-Donor Execution Arrangements Can Improve Coordination and Management[5]

Reconstruction that relies on multiple sources of support, including government, multilateral, bilateral, private, and nongovernmental agencies, creates special needs for project coordination and management. In governments with weak and/or inefficient PFM arrangements, off-budget channels may be critical in the early phase of reconstruction. Yet project coordination and management can be nearly impossible when there are numerous off-budget arrangements. Multi-donor execution arrangements, such as MDTFs, have been used by many countries to improve the coordination and effectiveness of reconstruction where there is a large quantity of donor resources. Some of the benefits of MDTFs include improved resource mobilization by

2. Wolfgang Fengler, Ahya Ihsan, Kai Kaiser, 2008, *Managing Post-Disaster Reconstruction Finance: International Experience in Public Financial Management*, Policy Research Working Paper 4475 (Washington, DC: World Bank).
3. The Bank's Public Financial Management Web site: http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTFINANCIALMGMT/0,,menuPK:313336~pagePK:149018~piPK:149093~theSitePK:313218,00.html.
4. The key benchmarks that PFM systems can significantly influence are credibility of information, timeliness and equitability of implementation, and control of corruption. For a list of performance indicators for post-disaster PFM, see "Table 7. Selected performance criteria for reconstruction PFM."
5. Wolfgang Fengler, Ahya Ihsan, Kai Kaiser, 2008, *Managing Post-Disaster Reconstruction Finance: International Experience in Public Financial Management*, Policy Research Working Paper 4475 (Washington, DC: World Bank).

lowering risks for donors in countries with weak fiduciary systems; improved alignment of donor expenditures with national priorities; and reduced costs of coordination, information, and administration within the donor-financed portfolio.[6] Yet MDTFs also entail less visibility for each individual donor, which may make some reluctant to participate. Donors may lose their negotiating power with government in some cases, since a consensus on the donor side may be hard to reach. In at least one experience, the reconstruction plan proposed by government included numerous non-disaster related investments, and the donors in the MDTF were not able to convince government officials to dedicate the funds exclusively to disaster-related needs.

The World Bank has been both a trustee and an administrator of MDTFs. The United Nations Development Program (UNDP) also fulfills this purpose, and, in a limited number of cases, governments have managed an MDTF.[7] Where governments offer to assume this role, sound PFM must be in place, and fiduciary risks must be monitored to ensure accountability and transparency.

How Regular and Reconstruction Budget Cycles Differ

The budget cycle is used for the allocation, evaluation, and approval of public financial resources. A substitute process is usually called for in the post-disaster context, but an effort must be made to maintain good PFM practice and prevent the reconstruction budgeting from bypassing normal processes altogether. The table below summarizes the main features of standard budget processes and possible adjustments in reconstruction situations.

Regular budget cycle (PEFA principles)	Reconstruction financing
Planning	
Builds on past budget performance evaluation. Includes macro-framework based on economic outlook.	Builds on PDNA. Needs to avoid delays associated with standard annual planning cycles. Reconstruction agency may take on a special role.
Budget Preparation	
Detailed vetting of projects by Ministry of Finance and line ministries. Approval by legislative body.	Budgets are established from scratch. Requires flexibility in project identification. Needs to incorporate donor and NGO contributions. Standard unit costs are often higher.
Budget Execution	
Regular on-budget implementation.	Use of off-budget channels, particularly by UN and NGOs. Special procurement and/or disbursement arrangements common, including procurement agents.

6. See "Review, Post-Crisis Multi-Donor Trust Funds, Final Report," a review of 18 MDTFs in post-crisis, post-disaster, and post-conflict reconstruction, Scanteam, 2007, http://www.norad.no/default.asp?MARK_SEARCH=YES&SEARCH_ID=s1&V_ITEM_ID=7880.

7. UNDP acts as Administrative Agent for MDTFs and Joint Programs involving multiple UN agencies. An explanation of these arrangement can be found at "UNDP-Administered Multi-Donor Trust Funds and Joint Programs," http://www.undp.org/mdtf/overview.shtml.

Regular budget cycle (PEFA principles)	Reconstruction financing
Accounting and Reporting	
Standardized and timely accounting and reporting of transactions.	Emphasis on comprehensiveness and transparency of the reconstruction budget, including off-budget flows.
Audit and External Scrutiny	
A key fiduciary principle is that restricted funds are used for intended purpose. Both *ex ante* and *ex post* controls are used to ensure that funds are spent on intended purposes.	Onerous *ex ante* controls reduce flexibility and risk delays in implementation; however, some *ex ante* controls are necessary. *Ex post* audit is critical for assessing compliance and averting abuse. Preventive and follow-up measures and sanctions against corruption should be established early on.
Monitoring and Evaluation	
Evaluates budget performance according to regular budget indicators; examples include fiscal deficit, budget execution versus original budget, and disbursement ratios.	Information and analysis are more important in large reconstruction programs than in regular development projects. Updates should be more frequent than in regular development projects; real-time tracking may be unrealistic and unnecessary. Updates should cover fund flows, reconstruction progress, and basic economic indicators.

Systems for Tracking Post-Disaster Reconstruction Financial Flows[8]

Disaster-affected countries can receive large inflows of aid that require rapid disbursement immediately after a major natural disaster. Although countries normally develop reconstruction plans, the plans can rapidly become outdated as the situation on the ground evolves. The combination of large amounts of funding and the need for rapid action creates an environment in which reliable information and analysis are vital. Yet it is not unusual that many important financial decisions related to the reconstruction plan and its progress are made in an ad hoc manner based on insufficient data. The data most needed by decision makers are funds contributed and available for recovery; allocations of funds to projects, sectors, and locations; the physical progress of construction; and each of these measured against the benchmarks originally programmed and as they evolve.

HOW TO DO IT
Procuring Financial Tracking Services

The handbook will include specific instructions on how to select and procure financial tracking system capacity.

Reconstruction programs may need a more specialized financial tracking system than regular public programs, due to a number of unique features of reconstruction.

Aid comes from multiple sources, both on-budget and off-budget. A system needs to be capable of tracking all aid flows of all types, cash and in-kind, in all phases of the disaster.

8. World Bank, Tracking the money: international experience with financial information systems and databases for reconstruction, 2008, Global Facility for Disaster Reduction and Recovery.

Government may need to reallocate funding as reconstruction progresses. More accessible areas, such as the capital city, generally receive more funding than they need, while areas that are isolated or have security constraints and capacity gaps lag behind in funding or get shortchanged when initial allocations are slow to be disbursed. The system should track reconstruction by sector, geographical area, and against the PDNA to detect over- or underfunding and to assist in reallocation.

Donors expect a high level of accountability from government. When government financial administration systems can provide the timely and accurate information that donors expect, a specialized tracking system may not be necessary. A specialized system, if employed, should be as integrated as possible with the normal accounting framework and financial reporting system of government and should use similar procedures and norms.

Desirable features of tracking systems. Most third-party tracking systems do not employ a standard methodology for coding and organizing data. The host country is responsible for developing the coding scheme, and the system developer incorporates it into the system. Some desirable features of tracking systems and the reasons for them are discussed in the table below.

Feature	Explanation
Sector classification	Options include using OECD DAC sector classification or country financial system coding (preferable). Useful to be able to code multi-sector projects.
Geographical classification	Permits the disbursements to be tracked according to location.
Separation of data	Separation of data between emergency and reconstruction assistance is not provided in all systems and requires a separate step if needed.
Data verification	Coding system should have a data verification capability to minimize errors and double counting from multiple agencies entering data.
Funding-gap assessment	Sectoral and geographical allocations mapped against needs, and gaps identified. Not all available systems provide this functionality.
Trend analysis	Data archives are necessary to make time-series comparisons and monitor trends. Not all available systems provide this functionality.
Auditability	Detailed audit trail needed to facilitate auditing and ensure accountability. Simultaneous auditing is an option that has been used in various disasters.
Systems compatibility	Tracking system should be compatible with government IT infrastructure. Web-based systems require fast Internet connectivity. Security protocols may need upgrading to accommodate large numbers of users. Human resources capacity is a consideration in designing and implementing the system.
Training	Training should be provided by the vendor before system implementation, particularly if the application is based on a nonstandard technology.

Source: Cut Dian Agustina. Tracking the money: international experience with financial information systems and databases for reconstruction, 2008, Global Facility for Disaster Reduction and Recovery, World Bank.

Some examples of systems that have been used in recent years, their features, the countries in which they were implemented, and information about procuring services are shown in the Annex to this chapter.

Tracking funds at the local level. A financial tracking system is needed at the regional and project levels for project management during execution. Numerous project management systems are available as software and online. The ideal system would have similar capabilities to the national tracking system and would be able to exchange information with it easily. Since many tracking systems are web-based, the local system could be a component of the national system, although local Internet access may be a constraint. For housing and neighborhood reconstruction, the system should be accessible by community members and should be capable of incorporating micro-level data, such as reports on individual housing projects that may be required as a condition for the release of financing tranches to households. Indonesia developed a system with many of these features after the Jogyakarta earthquake as part of the World Bank Community-Based Settlement Reconstruction and Rehabilitation Project.[9]

Financial Tracking Service. The UN Office for Coordination of Humanitarian Affairs (OCHA) manages the Financial Tracking Service (FTS), a global, real-time database that records all reported international humanitarian aid (including that for NGOs and the Red Cross/Red Crescent Movement, bilateral aid, in-kind aid, and private donations).[10] FTS features a special focus on consolidated and flash appeals, because they cover the major humanitarian crises and because their funding requirements are well defined, which allows FTS to indicate to what extent populations in crisis receive humanitarian aid in proportion to needs. All FTS data are provided by donors or recipient organizations.

Other Concerns Related to Reconstruction Finance

How "Building Back Better" affects reconstruction costs. "Build Back Better," a phrase that was used widely after the 2004 Indian Ocean tsunami reconstruction, carries a variety of interpretations. Codified into Ten Propositions in a report to the UN Secretary General, the "Build Back Better" concept encourages reconstruction that reduces vulnerability and provides the community with improved living conditions, while also promoting a more effective reconstruction process.[11] Applying "Build Back Better" principles will generally not create a cost burden on the reconstruction process and should be supported wherever possible.

Budgeting for operation and maintenance. Policy makers must ensure that the assets created in rebuilding and the responsibility for operating and maintaining them are properly transferred to the relevant owner and/or operating entity (sub-national government, public corporation, etc.). The respective entity should be involved in the reconstruction decision and discussions about operations and budgetary support, including tariff adjustments. The alternative is new public investment that deteriorates from lack of maintenance in the years following reconstruction.

Reporting financial decisions to the public. Both the affected families and the general public can play a role in overseeing the use of reconstruction funding to ensure the equitable distribution and proper use of the funds. To promote accountability, financial decisions taken by

9. Community-Based Settlement Reconstruction and Rehabilitation Project for NAD and NIAS CSRRP Jogjakarta, http://www.rekompakjrf.org.
10. UN OCHA, ReliefWeb, The Financial Tracking Service. Web Site. http://ocha.unog.ch/fts/pageloader.aspx?page=home.
11. Special Envoy for Tsunami Recovery, William J. Clinton, http://www.sheltercentre.org/sites/default/files/UN_KeyPropositions4BuildingBackBetter.pdf.

government and donors, as well as progress in the reconstruction process and any uncovered irregularities, should be regularly communicated to the public through various media. The communications approach should be defined in the reconstruction strategy. (See Chapter 13, "Social Communication in Post-Disaster Reconstruction.")

Relation to Existing Public Policy

National and local governments increasingly have policies to guide public expenditures, as well as systems for prioritizing public investments and approving specific projects. Public Investment Systems (PISs) or *Sistemas Nacional de Inversión Publica* (SNIPs) are updated regularly and are usually organized according to executing agency, sector (housing, water and sanitation, environment, etc.), and geographic area within the country. In countries that rely on external donations, these systems should incorporate the projects funded by external sources. Efforts to improve PFM (including PEFA) encourage the incorporation in the PIS of all public-like investment, no matter the funding source. In programming reconstruction funds, two significant policy concerns emerge: the consistency of the reconstruction strategy with sector investment plans in the PIS and the future impact of reconstruction programming decisions on non-affected areas.

A reconstruction strategy runs the risk both of favoring the affected area to the point where the quality of life and standards for public investment far exceed what can be spent in non-affected areas and of retarding ongoing sector reforms. Where donor funds are allocated for a particular purpose, governments may be reticent to refuse or ask for modifications in the terms. Further, donors may expect a financial match from government that can make it difficult to revert to prior policies or equalize public investment with other regions in the medium term, especially if government funds are borrowed.

Post-disaster funding from external sources is rarely incremental over the medium term. Therefore, decisions regarding the use of external reconstruction funds may, in effect, set policy directions, and may have the effect of postponing other planned investment in a sector or region for years to come. Reconstruction planners should therefore be cognizant of sector investment plans and national investment capacity. Some sources for this type of information are the World Bank's country Web site (if there has been lending to the sector), relevant line ministries, the public investment system, and local governments.

Case Studies

[Reviewers: Please provide case studies on good practices in post-disaster financial management and project tracking.]

Recommendations

1. Define parameters, such as minimal public services and housing standards, in time to guide those estimating reconstruction costs as part of the damage and loss assessment.
2. Establish mechanisms for coordination of funding sources and plans, and flow as much of the funding through the budget system as possible without causing delays. Minimize off-budget expenditures once the response phase of recovery has passed.
3. Establish a tracking system that ensures timely, accurate, and transparent exchange of information with donors. Also establish a strategy for regularly and publicly disclosing financial information in a form that the public can understand.
4. Evaluate PFM capacity using existing PEFA outputs or a rapid assessment, and, where capacity is weak, provide relevant technical assistance.
5. Give sub-national governments a central role in designing and carrying out the housing and community reconstruction. If execution is decentralized, establish tracking systems all the way to the project level.
6. Take current sector policies and investment plans into consideration when programming investments in the sectors affected by the disaster.
7. Minimize the negative long-term impacts of reconstruction on development in other regions of the country and on ongoing sector reforms.

Resources

Agustina, Cut Dian. 2008. *Tracking the money: International experience with financial information systems and databases for reconstruction.* Washington, DC: Global Facility for Disaster Reduction and Recovery. http://www.preventionweb.net/english/professional/publications/v.php?id=2474.

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http://siteresources.worldbank.org/INTPOVERTY/Resources/335642-1130251872237/9780821374528.pdf.

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Fengler, Wolfgang, Ahya Ihsan, Kai Kaiser. 2008. *Managing Post-Disaster Reconstruction Finance: International Experience in Public Financial Management.* Policy Research Working Paper 4475. Washington, DC: World Bank. http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2008/02/11/000158349_20080211083440/Rendered/PDF/wps4475.pdf.

Annex

Types of Tracking Systems and Country Application

System	Countries	Main Focus	Procurement and Cost Information
Development Assistance Database (DAD)	Indonesia, Thailand, Sri Lanka, the Maldives, Pakistan, Afghanistan, Vietnam, Iraq, Lebanon	Reconstruction; general aid management possible	
Aid Management Platform (AMP)	Ethiopia, Bolivia	Aid management and coordination	
Aid Management Information System (AMIS)	Fiji, Syria, Egypt	General aid projects	
Council of Development of Cambodia (CDC) Official Development Assistance (ODA) Disbursement System	Cambodia	ODA disbursement	
Bulgarian Development Cooperation	Bulgaria	General aid projects	
Recovery Aceh Nias Database (RAN)	Indonesia	Funding flows, project information with planned and actual outputs indicators	

Principal source: Cut Dian Agustina. Tracking the money: international experience with financial information systems and databases for reconstruction, 2008, Global Facility for Disaster Reduction and Recovery, World Bank.

Section 4
Monitoring and Information Management

Chapter 13
Social Communication in Post-Disaster Reconstruction

[Reviewers: This chapter is still in development. Please provide examples of how social communication has been used effectively in post-disaster reconstruction programs.]

HOW TO DO IT
Social Communications Strategy

The handbook will include specific instructions on how to develop a social communications strategy.

Chapter 14
Information and Communications Technology in Reconstruction

Introduction

The need for information is constant throughout the disaster cycle. Information and communications technologies (ICTs) include all technology used to create, store, exchange, analyze, and process information in all its forms, and the procedures and resources to collect, process, and communicate data.[1] ICTs are used in a host of ways in post-disaster reconstruction, and the technology is evolving constantly. Some common examples of ICT tools used after a disaster include the Internet, management information systems (MIS), geographic information systems (GIS), remote sensing, satellite- and land-based communications, early warning systems, data tracking systems and data warehousing systems.

This chapter reviews the types of ICT tools that can be used to support post-disaster decision-making processes, and which, when deployed correctly, help connect each phase in the disaster cycle. Using ICTs, information outputs from prior phases provide vital input for the subsequent phases as reconstruction advances.

Guiding Principles

- ICT systems to be deployed or accessed in the field must be designed for an environment of damaged or weakened communications infrastructure and low bandwidth.
- Interoperability is crucial for MIS used by multiple entities over the course of the disaster cycle.
- Open, shared, and coordinated systems and information is beneficial in the reconstruction process; tightly controlled or difficult-to-access systems and information will cause delays and create redundancy.
- ICT standards help to ensure that data from multiple sources can be integrated and enhance interoperability, verifiability, assessment, analysis, and accountability.
- The quality of ICT systems and policies in place before a disaster will directly affect the effectiveness of ICT use in response and reconstruction.
- ICT systems should be compatible with existing government systems, since maintenance and updating are crucial and government is often the only entity with staying power.
- Integrating ICT into disaster response while avoiding ad hoc solutions requires a high level of technical capacity.
- The importance of strengthening ICT systems for post-disaster use is understood during the disaster, but interest may fade soon after.

1. Berna Baradan, 2006, "The Role of Information and Communication Technologies in the Process of Post-Disaster Housing Reconstruction" (paper at the First International CIB-Endorsed METU Postgraduate Conference, "Built Environment & Information Technologies," Ankara, Turkey, March 17–18), http://www.irbdirekt.de/daten/iconda/06059007139.pdf.

Risks and Challenges

1. Failing to keep databases and other information current, thereby incurring expenses or causing delays in replicating or re-creating them *ex post*.
2. Duplicating data collection activities because data are not treated as a "public good," or because governments, individuals, or agencies equate sharing data with losing control over them.
3. Withholding of sensitive or proprietary information by government. Without access to information, even so-called "open-source" systems become unviable.
4. Lack of standardization in the design of systems.
5. Reliance on a single communication system, such as mobile phones, that may become overloaded after a disaster.
6. Loss of data interoperability due to use of multiple languages in data collection.

Technical Issues

How ICTs are Used in Post-Disaster Reconstruction

Information retrieval, collection, dissemination. When critical post-disaster decisions are being made, crucial information is often inaccessible, damaged, or destroyed. Even when the information does exist, the agencies or people who have it are often busy responding to the disaster. This "information black hole" is inevitable, as existing systems are overwhelmed and replacement technology and systems are not in place. There is only one way to deal with the black hole: Be prepared. Develop information systems that can cope with disasters and be aware that common applications (such as the Internet and e-mail) do not generally work in the early stages.

Knowledge management. Knowledge management systems ensure that the right knowledge is in the right place at the right time. This is especially critical in post-disaster situations. For information (data) to become knowledge, it must first be framed within the context of a need and transformed into actionable knowledge for the community at risk. The experiences, approaches, and best practices for disaster management should be collected and codified for broad distribution and should not remain with individuals as tacit knowledge.

Community participation. The local community (including nongovernmental and civil society organizations, the private sector, and individuals) can be essential for collecting and disseminating information, both before a disaster (hazard mapping and risk assessments) and after (loss estimates, materials opportunities). ICTs can foster community engagement in the reconstruction process and bring local knowledge into the decision-making process using tools as basic as paper-based mapping, data collection and bulletin boards (for later input into databases or an online resource) or as advanced as laptops, handheld devices, and mobile phones.

Open access to systems (physical location) encourages broad participation from local, national, and international entities by helping support their activities. Partnerships with local experts and with housing and infrastructure agencies to conduct sectoral surveys and analyses will prove invaluable in data collection, especially when data will later be geo-referenced (e.g., latitude and longitude).

ICT resources for community data collection and dissemination include the Rapid Village Assessment[2] (RVA) and Humanitarian Information Centers (HICs).

HICs are a Web-based tool used by the UN Office for the Coordination of Humanitarian Affairs (OCHA) for systematic and standardized collection, processing, analysis, and dissemination of information to improve coordination, situational understanding, planning, and decision making.[3] HIC functions relevant to housing reconstruction include maps, contacts lists, meeting schedules, datasets from multiple sources, "survey of surveys" master list of assessments by partner agencies, GIS in key sectors, and physical space (meeting space, mailboxes, notice-boards, connectivity).

Monitoring and evaluation of the reconstruction progress. Monitoring and evaluation in housing reconstruction covers both the financial and physical progress. ICT systems and solutions can play a strong role in aggregating information from multiple platforms to facilitate reporting; promoting transparency among donors (organizations and private donors), national and local governments, and the recipient community; and ensuring that scarce resources are expended wisely based on actual results. Systems such as the Development Assistance Database (DAD) have become more common for this purpose.[4] Others may be imported applications or applications that "plug into" existing national systems.

Damage assessment. Accurate, comparable, and appropriately scaled information provides an evidence base for disaster needs assessments (PDNAs) and related decision making. PDNAs are time- and labor-intensive, and must be conducted rapidly and must meet quality and anticorruption standards. ICTs can reduce the time and increase the quality of the results. Portable devices and mobile phones can be deployed to collect, transmit and upload information to central databases. Information from post-disaster risk assessments, probable loss maps, and hazard and vulnerability assessments can superimposed and mapped (using GIS technology) to identify risks and priorities, and update monitoring systems as reconstruction progresses. The GFDRR and the World Bank Spatial Team are discussing a joint project to integrate spatial analysis into PDNAs to establish standards and develop technical and training manuals for PDNA mission teams and GIS and IM operators.

Geospatial information and mapping. Geospatial data can be used to assess damage, map hazards, identify resources, plan restoration, monitor progress, and evaluate results. Geographic Information Systems (GIS) can be sued to collect, store and process geospatial information such as location of homes and types of construction, socioeconomic data, as well as photos, and videos. The information can be "tagged" in databases with location data, and then "mapped" using GIS tools to assess the impact of a disaster on a specific location and to plan resource

2. HumanitarianReform, 2008, *EmergencyShelter*, http://www.humanitarianreform.org/humanitarianreform/Default.aspx?tabid=305.
3. United Nations Office for Coordination of Humanitarian Affairs, 2008, *Campaign in Focus*, http://ochaonline.un.org/.
4. The DAD enables stakeholders in the development process to capture the most critical international assistance data on a donor- and project-specific basis, including pledges, committed and disbursed amounts, sector and region of implementation, project description, relevant Key Performance Indicators, implementing agency, and other contacts." Development Assistance Database – Fact Sheet. Synergy International Systems (no date), Vienna, Virginia, http://www.synisys.com/resources/DAD%20Factsheet.pdf.

mobilization for reconstruction.[5] Geographically referenced information is used for hazard mapping and identifying environmental resources and critical infrastructure at risk.

When using Geospatial and GIS-related applications, consider the following.

- GIS is a multi-purpose tool; the information it provides can be used to promote more integrated planning and decision making.
- GIS software and equipment, and mapping expertise will be critical in planning reconstruction.
- Base maps and data will need to be located and incorporated; if local users had no disaster plan for protecting data, alternative solutions may be necessary.
- Data incompatibility between various collectors or providers of data will need to be overcome.
- Geo-spatial information must be validated or "ground-truthed" with a second data source.

Space-based applications and earth observation. Information, Communication and Space Technologies (ICST) can be mobilized for post-disaster damage assessments and monitoring and evaluation. Satellite imagery and remote sensing applications are the most common tools deployed. When tied to GIS systems, satellite imagery (and Google Earth, where aerial photography does not exist) can be used to obtain an approximate pre-disaster count of houses, identify structures destroyed or damaged, and provide a rapid overview of the extent of damage for eventual ground-truthing. (See Charter on Space and Major Disasters box and Case Study).

International Charter on Space and Major Disasters

The Charter provides space data acquisition and delivery to those affected by natural or man-made disasters. Users request the mobilization of space and ground resources of member agencies to obtain data and information on a disaster. A 24-hour operator verifies the request and an Emergency On-Call Officer prepares an archive and acquisition plan, and a Project Manager assists the user throughout the process. Rescue and civil defence bodies of participating agencies countries – currently ESA member states, Canada, India, Argentina, USA and Japan – are registered authorized users. Civil protection authorities of other countries may submit requests by contacting their partner organizations through existing cooperation mechanisms (UN-OOSA).

Source: http://www.disasterscharter.org

Telecommunications. Most likely, the telecommunications system will not be operable after a disaster in a developing country. This will affect both communications and ICT applications for recovery and reconstruction. Mobile phones generally function for only up to one hour after a disaster, and text messages for up to two hours, although messages may be received days later.[6] Closed systems such as two-way radio and satellite radio should be functioning. Cell broadcasting, an underused mass communications tool that uses bandwidth outside of normal calls and text messages, may be available. All communications require power, so if the electrical system is not running even battery-powered devices will eventually run out.

5. UN, *ICT for Disaster Risk Reduction*, UNPAN, http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN022470.pdf.

6. Chanuka Wattegama, 2008, "Disaster Management Role of ICTs" (presentation at "Disaster Risk Management in the Information Age," World Bank workshop, October 9).

Key Decisions

Innovate or collaborate? Choosing whether to innovate or collaborate is a key decision. While innovating custom ICT solutions for post-disaster housing and community reconstruction may seem expedient, they risk being duplicative or redundant. Although initially time-consuming, collaboration is preferred and can reap both immediate and long-term benefits. Ideally, establish agreements that specify the modalities of cooperation with other stakeholders before a disaster occurs. After a disaster, form alliances with housing and community reconstruction entities that have useful information. Any system employed should be standardized and open, to facilitate sharing of data. Consider offering your data to others in exchange for what you lack.

Data selection. The variety of data required after a disaster is exceeded only by the speed with which it is needed and the number of stakeholders requiring it. Types of data relevant to housing reconstruction include:

- Sociodemographic
- Land use and property ownership
- Age and condition of structures
- Settlements, buildings, and critical infrastructure most at risk
- Safety standards and building codes
- Local disaster plans, policies, and procedures
- Key contacts at community, local, regional, and national levels
- Existing procedures and policies for compensation or local examples (personal and business)
- Land title and ownership records (cadastres)

Practically all data, and especially built environment data, should be geo-referenced during collection to improve quality and availability, and for presentation on maps and GIS systems.[7] Satellite and aerial images, as well as remote sensing and mobile-device technology, are being used for DRM and post-disaster assessments. Incorporate GLIDE (GLobal IDEntifier) numbers into your datasets as unique identifiers for disasters.[8]

Data trade-offs include quality, cost, and time. Generally, you can optimize only two, compromising on the other.

Consider the following when evaluating data requirements.

- What data are critical in planning and implementing reconstruction in this situation?
- What data are already available?
- Do data from another source adhere to any standard? (If not, this can indicate poor quality.)

The Tampere Convention

The Tampere Convention is a globally binding treaty governing the provision and availability of telecommunications equipment during disaster relief operations. Ratified in 1998, it went into effect January 8, 2005. The first treaty of its kind, the convention is a means to influence states to pursue a set of common expectations regarding freedom and access of individuals providing emergency services in disaster situations.
Source: www.humanitarianinfo.org.

7. Charles Scawthorn, 2008, "Emerging Trends, Best Practices and Lessons Learned in ICT-Enabled DRM" (presentation at "Disaster Risk Management in the Information Age," World Bank workshop, October 9).
8. Glidenumber, 2008, *About Glide*, http://www.glidenumber.net/glide/public/about.jsp. A Google search for "tsunami Solomon Islands" yields 861,000 hits. But the same search using GLIDE number "TS-2007-000042-SLB" delivers only 152 hits—all specific to the April 2, 2007 event.

- Are there affordable mechanisms that can be employed to improve quality and accuracy of data? (Options: identity control, internal controls, and data analysis and verification.)
- How can data collected be used by others working in the disaster cycle?
- The more aggregated the data, the less precise the analysis; the more disaggregated, the more precise—but at an increased cost and burden.
- The disaster may call for a more simplified data collection and reporting process. Complete, quality data collection and dissemination is often subordinate to the immediacy of the response.
- Train members of the community to use the ICT system and interpret its data.

HOW TO DO IT
Acquiring Satellite Images

The handbook will include specific instructions on Information to be added related to purchasing pre- and post-disaster satellite imagery, including identification of vendors and attributes such as frequency of updating, resolution, cost, and time to acquire.

Relation to Existing Public Policy

Data

To be effective, data must be shared across jurisdictional boundaries. Separate jurisdictions may collect their own housing-related information on standards and policies. Valuable data are also held by private, commercial and nongovernmental organizations. Web-based applications and other ICT services make data sharing practical and bandwidth capacity, ICT, and GIS systems support Web-based data integration, so technological hurdles are no longer a significant barrier. But institutional cultures and concerns about the security of information still pose a significant hurdle that, even in an emergency, may have to be overcome.

Telecommunications

Telecommunications systems include landline and cellular telephones, the Internet, radios, and satellites. It is vital to understand the quality and status of telecommunications systems, both before and after a disaster. Government's prevailing policies for telecommunications and ICT systems will affect the effectiveness of information management, especially during response and reconstruction. If access to telecommunications services is at odds with national defense policies, then crucial post-disaster telecommunications deployment will be hampered, perhaps severely. For example, following the 2005 Pakistan earthquake, NGOs reported that government restricted the use of cell phones in certain areas for political reasons.

ICT Systems

Barriers may be encountered if ICT equipment and software are not available in the local market, but rather must be imported, including customs regulations, license approval, frequency allocation, and restrictions on Internet access. If equipment must be imported, it's important to know the policies and procedures, and how to navigate them.

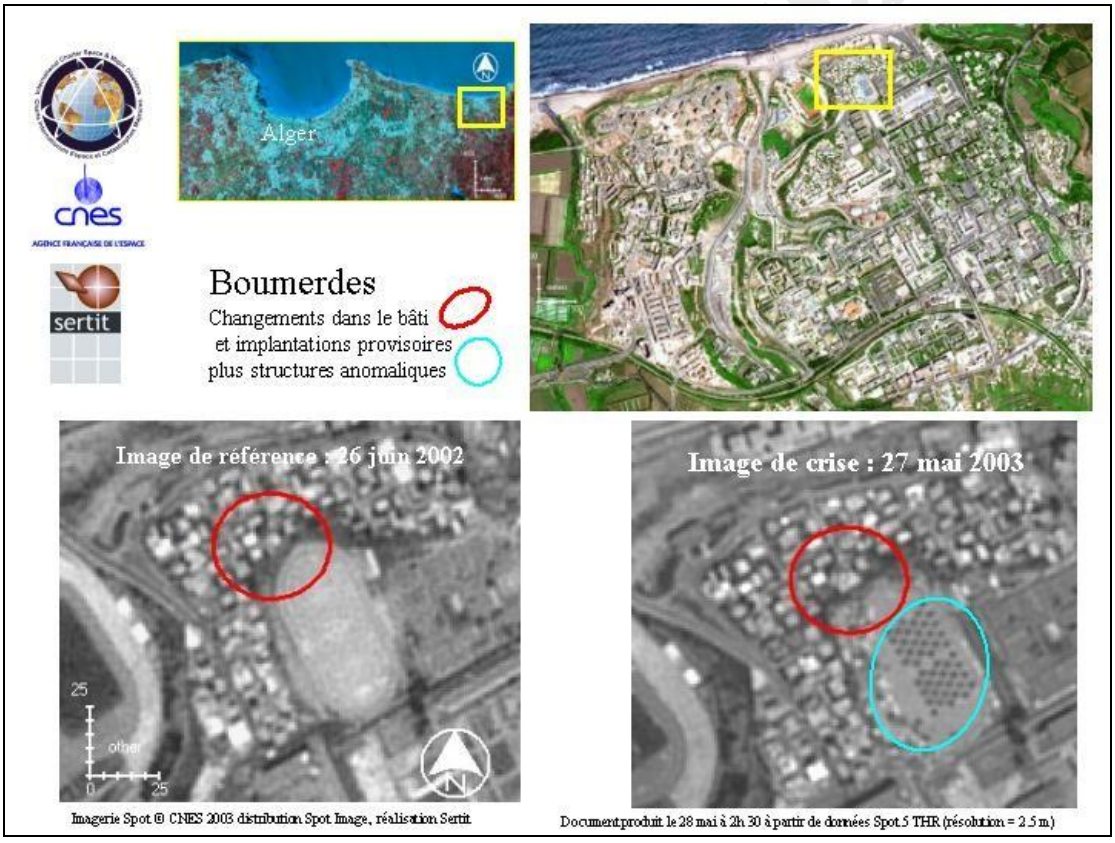
Case Studies

2003 Algeria Earthquake

Space and Major Disasters Charter Activation

On 21 May 2003 around 19:44 local time a magnitude 6.6 earthquake rattled the town of Boumerdes near Algiers, followed by a series of strong aftershocks. Electricity supplies were cut off and the telephone network was affected and overloaded. Tens of thousands were made homeless in the calamity, with buildings crumbling to dust in the matter of seconds. The Charter was triggered by the French Civil Protection Agency, which sent a team to assist national authorities. Over 2100 lives were claimed and almost 9000 people were injured by the disaster. Some maps derived from high-resolution SPOT-5 satellite and showing damaged areas were handed over to Algerian authorities. The analysis of the detailed images provided an initial damage assessment for emergency aid organizations, and a focus for response and recovery efforts.

Source: http://www.disasterscharter.org/disasters/algeria_e.html

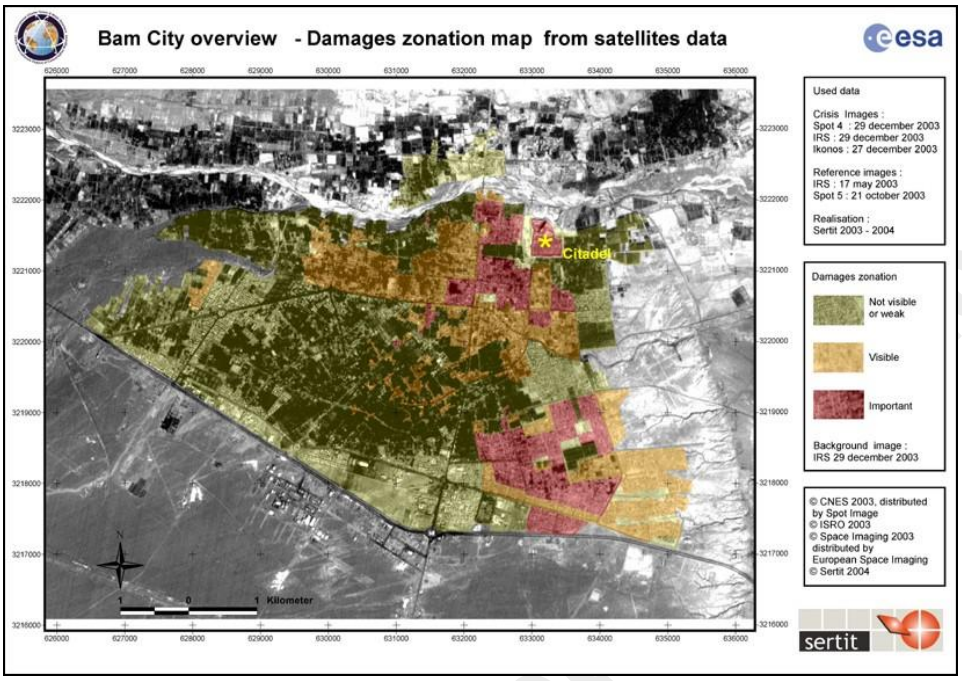


Bam, Iran Earthquake, 2004

Space and Major Disasters Charter Activation

Civil protection agencies from Germany, France and Portugal activated the Charter after the earthquake which razed the town of Bam, Iran. Bam – about 1,000 kilometers south-east of

Tehran – had a 2,000 year-old citadel "Arg-e-Bam that was on UNESCOs list of World Heritage Sites before it was destroyed by the quake. More than 43,000 people were killed according to official estimates. Images from SPOT and IRS satellites were used together with an Ikonos image provided thanks to DLR and Space Imaging Europe, to produce a map of most damaged areas and reference cartography.
Source: http://www.disasterscharter.org/disasters/iran_e.html



Aceh Tsunami, 2004
Using Databases to Track Cash Transfers
Databases were developed by a number of organizations in order to track progress. The BRCS (British Red Cross Society) database in Aceh involved a significant investment (three months of a consultant's time) to be able to accommodate the needs of the cash transfers and other programs, but the Aceh team found the database extremely useful for tracking and managing the cash transfers. The database linked up all stages of the assistance process from registration to instructing the bank to disburse tranche payments. The BRCS database linked the various sectoral elements of the overall BRCS program: shelter, livelihoods recovery grants, registration for title to land, and so on. The lack of an adequate database for food relief programs was a particular weakness, particularly because it could have represented the foundation for the registration of all sectoral programs—in theory it could have registered everyone who had been directly affected by the disaster. Cross-referencing of data between different agency databases proved vital.
Source: Learning from cash responses to the tsunami: An HPG Background Paper, Final Report Lesley Adams Humanitarian Policy Group, January 2007, http://www.odi.org.uk/hpg/Cash_vouchers_tsunani.html

[Reviewers: Please provide case studies on good and bad practices in use of information and communications technology in housing reconstruction.]

Recommendations

1. Support use of open systems and standards to ensure interoperability; avoid ad hoc or one-off systems.
2. Purchase ICT equipment, software, and services from local sources in the disaster area, in order to contribute to economic and livelihood recovery.
3. Promote and follow data sourcing, dating, and geo-referencing standards for disaster MIS across the disaster cycle in collaboration with NGOs, government, local actors, and donors.
4. Require ICT systems developers to incorporate standards into projects.
5. Incorporate GLIDE numbers into project documentation, including historical datasets, in order to create a common reference point for relating Bank projects to sources of data.
6. Apply the "build back better" approach in reconstructing ICT and MIS infrastructure to improve coordination and to reduce recovery and reconstruction time and costs in the aftermath of the next disaster.
7. Support field-level, community-based ICT and information management and exchange systems in reconstruction project funding, and explore the viability of supporting HIC (or a similar standard) within the Bank's response and reconstruction activities.
8. Advise government officials to activate the International Charter on Space and Major Disasters directly, if they are a member, or through the cooperation mechanism with the UN-OOSA.
9. Encourage governments to set out in policy and law the right to access information on hazards and risks.[9]

Resources

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Currion, Paul. 2005. *Assessment Report: Pakistan Earthquake Response.* Inter-Agency Workgroup on Emergency Capacity, Information and Technology Requirements Initiative. http://74.125.47.132/search?q=cache:Bl41ZbndRboJ:www.ecbproject.org/pool/ecb4-itr-assessment-pakistan-mb-28aug06.pdf+Assessment+Report:+Pakistan+Earthquake+Response,&hl=en&ct=clnk&cd=1&gl=us&client=firefox-a.

9. Dr. Hiroyuki Kameda, 2007, *Collaboration of a Worldwide Information Platforms for Disaster Reduction*, presentation at 3rd Asian Science & Technology Forum (Saitama, Japan: Japan Science and Technology Agency). . http://www.jst.go.jp/astf/en_index.html.

GIS standards and guidelines. http://www.ungiwg.org/activities.htm and http://geonetwork.unocha.org/geonetwork/srv/en/main.home.

Guha-Sapir, D. 2006. "Collecting Data on Disasters: Easier Said Than Done." *Asian Disaster Management News* 12, no. 2 (April–June).

Government of India. No date. *ICT for Disaster Risk Reduction—The Indian Experience.* New Delhi: Ministry of Home Affairs. National Disaster Management Division. http://www.ndmindia.nic.in/WCDRDOCS/ICT%20for%20Disaster%20Risk%20Reduction.pdf.

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Karelia, Hemang, and Rajeev Issar. No date. *Knowledge Management in Disaster Risk Reduction: The Indian Approach.* New Delhi: Ministry of Home Affairs. http://www.ndmindia.nic.in/WCDRDOCS/knowledge-manageme.pdf.

United Nations Office for the Coordination of Humanitarian Affairs. 2002, 2005. "Symposium on Best Practices in Humanitarian Information Exchange." http://www.reliefweb.int/symposium/docs/symposium5_final_report.pdf.

Chapter 15
Monitoring and Evaluation

Introduction

Monitoring and evaluation are often confused. Monitoring is the routine, daily assessment of ongoing activities and progress, while evaluation is the periodic assessment of overall achievements. Monitoring looks at what is being done, whereas evaluation examines what has been achieved or what impact has been made.

Monitoring and evaluation (M&E) of development activities provide government officials, development managers, and civil society with better means for learning from past experience, improving service delivery, planning and allocating resources, and demonstrating results as part of accountability to key stakeholders. M&E are more difficult for disaster-related projects, because project assessments and designs may have been prepared rapidly, baselines are often not established, and important data may be hard to locate. But the monitoring and evaluation of these projects, if it improves project outcomes as it should, is extremely important to project stakeholders. As a result, creativity may be needed to do effective M&E in post-disaster projects. Fortunately, good tools and other resources are available to assist experts in the field with M&E. Some of these resources are discussed in this chapter.

Sidebar 1
Through monitoring, information collected in a planned, organized, and routine way can be used to report on a project and answer questions about how it is going.

Sidebar 2
Through evaluation, monitoring and other information can be used to make judgments about a project, report on impacts, and make changes and improvements.

Guiding Principles

1. Effective monitoring in an emergency situation requires flexibility and imaginative use of limited resources, including information.
2. For government, the post-disaster needs assessment should be the first step in establishing the monitoring and evaluation process.
3. At the project level, monitoring should be seen as a key component of the recovery and reconstruction efforts, which is incorporated from the beginning when projects are in the identification and design phases.
4. Coordination by government will help guarantee usefulness and wide availability of monitoring and evaluation information.

Risks and Challenges

1. Poor coordination of monitoring and evaluation within the housing sector or at the national level prevents data collected from being aggregated across the sector.
2. Assessment and baseline data is not shared among donors, others stakeholders, and government, causing inconsistencies and excess data collection costs.

3. Project staff lacks commitment to monitoring, leading to delays in the implementation and limited use of the information by project managers.
4. The monitoring system produces irrelevant and unreliable information that is not trusted.
5. Internal project self-evaluation does not take place until external evaluations are conducted.
6. Participatory M&E methods are not employed because of limited capacity or lack of commitment.
7. There is a lack of baseline data for projects or insufficient time to develop baselines.
8. Multiple baselines are developed and multiple monitoring indicators are used.

Technical Issues

What to Monitor and Evaluate in Reconstruction

Evaluation is used to determine the worth or significance of a development activity, policy or program, to determine the relevance of objectives, the efficacy of design and implementation, the efficiency of resource use, and the sustainability of results.

In essence, both monitoring and evaluation are about two things: learning and accountability.
Assessment of a project or program focuses on the following elements:

- Inputs: The human, financial, and technical resources deployed; their effectiveness, cost-effectiveness and appropriateness can be assessed.
- Activities and processes: The performance of tasks and factors affecting this performance.
- Outputs: The immediate results the project achieves (sometimes called "deliverables")
- Outcomes and impact: Significant or lasting changes in people's lives brought about by a given action or series of actions.

HOW TO DO IT
Reconstruction Monitoring Plan

The handbook will include specific instructions on how to develop a reconstruction monitoring plan.

The following graphic of the results chain shows the questions that can be answered by the results from each element.

The Results Chain

How should this project be implemented?		What should the project produce?	What outcomes do we expect from the investment? (How are outputs used?)		Why should we do this?
Inputs	Activities	Outputs	Short-term outcomes	Medium-term outcomes	Long-term impacts

Definition of indicators and data. Monitoring should take place at the global and sector level (based on reconstruction objectives established in the post-disaster needs assessment), and at the project and household level. Household satisfaction surveys may be used as both a monitoring and an evaluation tool.

The program sponsor will be most concerned about establishing M&E systems at the project level. However, there may be other similar projects within the sector, and all of them are contributing to an overall reconstruction effort.

The government reconstruction agency should define—and communicate to all executing agencies—the monitoring indicators it wants monitored at the project level so that project-level results can be aggregated across projects. This should include, but not be limited to, financial indicators. (Donors will monitor additional indicators for internal purposes.) Government should also establish requirements for disclosure of information, data formats, and reporting protocols. In the absence of this guidance, donors in the housing sector should collaborate to define interim protocols for the sector.

Relationship to project tracking. Monitoring at the project level and expenditure tracking by government are directly related. (See Chapter 12, "Managing the Financial Aspects of Reconstruction.") Government and donors may use highly compatible tracking systems or only establish uniform criteria for the provision of monitoring data from each project. Either will provide government the inputs needed to track the overall reconstruction effort.

Joint monitoring and evaluation. Where coordination mechanisms are being employed or funds have been commingled, such as in a multi-donor trust fund, the M&E scheme and/or the indicators to be applied in projects and sectors may be defined under the coordination of the trust fund. For monitoring purposes, input and output indicators are appropriate. For evaluation purposes, outcome and impact indicators are needed.

Challenges in Post-Disaster Monitoring and Evaluation

Lack of baseline and monitoring data. Baseline data for post-disaster reconstruction is collected at an aggregate level during the initial post-disaster needs assessment. This information is generally too aggregated for monitoring purposes, so detailed information suitable for monitoring and evaluation may be collected from later assessments, although there is no guarantee this will happen. Some data suitable for baselines may be available locally, although damage to data and communications systems can make information difficult to find. Information and communications technology, including photographic and geographic information systems, can be used in monitoring and to collect baseline data. (See Chapter 14,"Information and Communications Technology in Reconstruction.") Donors should share whatever information they collect, either through the Humanitarian Information Center or other means.

HOW TO DO IT
Household Satisfaction Survey

The handbook will include specific instructions on how to organize and conduct a Household Satisfaction Survey.

Volatility of the situation. Turnover or inexperience in the sponsoring agency and the counterpart government agency, rapidly designed projects, changes in institutional roles and responsibilities, incompatible data systems, and the ad hoc nature of project operations make post-disaster monitoring difficult.

Time constraints. Some M&E activities use data collected in accounting or performance systems. In other cases, interviews or other contact with key individuals must be made. A problem may be that these individuals—whether affected population, government officials or other aid workers—do not have time to meet. Similarly, a general sense of urgency may cause those involved in M&E activities to take shortcuts in data collection and analysis.

[Reviewers: Please provide examples of how baselines have been established in post-disaster situations and of key monitoring indicators to use in post-disaster housing reconstruction programs.]

Monitoring and Evaluation Tools

Useful M&E tools include formal surveys such as citizen report cards, living standards measurement surveys, and core welfare indicators questionnaires; performance monitoring indicators; the logical framework; theory-based evaluation; rapid appraisal methods such as key informant interviews, focus group discussions, and facilitated brainstorming by staff and officials; participatory methods such as participatory impact assessment; public expenditure tracking surveys; rigorous impact evaluation; and cost-benefit and cost-effectiveness analysis.[1] (See this chapter's "Resources" section for international organizations that provide these tools.)

Participatory Impact Assessment. Impact as defined in the development and humanitarian assistance fields involves the concept of change, which can be positive or negative.[2] A participatory impact assessment (PIA) combines participatory tools with more conventional statistical approaches to measure the impact of humanitarian assistance and development projects on people's lives. The PIA was created to evaluate livelihood projects; however, many of the tools in the PIA guidebook would be useful for housing and community reconstruction projects and complements the community-led assessment methodology discussed in Chapter 1, "Post-Disaster Needs Assessment."

Planning the Evaluation

The evaluation plan must be clear and accessible to all project staff and local project partners. In providing guidance on the preparation of a post-disaster evaluation, UN-HABITAT suggests that the plan address the following key questions:

1. Why is the evaluation being undertaken?
2. What is the evaluation expected to achieve?
3. How will the results be used and by whom?
4. Who will conduct the evaluation?
5. What type of evaluation is most suitable?
6. How will the follow-up be carried out?

HOW TO DO IT
Evaluation Plan

The handbook will include specific instructions on how to organize and carry out an evaluation of a housing reconstruction project.

1. World Bank, 2004, *Monitoring and Evaluation: Some Tools, Methods and Approaches* (Washington, DC: World Bank), http://lnweb90.worldbank.org/oed/oeddoclib.nsf/InterLandingPagesByUNID/A5EFBB5D776B67D285256B1E0079C9A3.
2. Andrew Catley, John Burns, Davit Abebe, Omeno Suji, 2008, Participatory Impact Assessment: A Guide for Practitioners (Boston: Feinstein International Center at Tufts University), https://wikis.uit.tufts.edu/confluence/display/FIC/Participatory+Impact+Assessment--+a+Guide+for+Practitioners.

In addition, the plan should include a detailed breakdown of the specifics of the evaluation: budget, timeline, responsible actors, etc. (A format for an evaluation plan and sample terms of reference are available from UN-HABITAT.[3])

In 1991, the Development Assistance Committee (DAC) of the OECD agreed on principles to be used for the evaluation of development programs by DAC members.[4] The criteria were later adapted to cover the evaluation of complex emergencies, and became the seven criteria shown in the table below. The DAC criteria are intended to be comprehensive and complementary, although all they may not apply in every evaluation.[5]

Criteria	Definition	Main use
Relevance/ Appropriateness	Relevance is concerned with assessing whether the project is in line with local needs and priorities (as well as donor policy). Appropriateness is the tailoring of humanitarian activities to local needs.	All evaluation types except those with a mainly institutional focus
Connectedness	Refers to the need to ensure that activities of a short-term emergency nature are carried out in a context that takes longer-term problems into account.	Evaluations assessing institutional structures and partnerships
Coherence	The need to assess security, developmental, trade, and military policies, as well as humanitarian policies, to ensure that there is consistency and that all take into account humanitarian and human rights considerations.	Joint evaluations, large-scale evaluations, and those with a focus on policy
Coverage	The need to reach major population groups facing life-threatening suffering wherever they are.	All evaluation types except those with a mainly institutional focus
Efficiency	Measures the outputs—qualitative and quantitative—achieved as a result of inputs. This generally requires comparing alternative approaches to achieving an output, to see whether the most efficient approach has been used.	All evaluation types where adequate financial information is available
Effectiveness	Measures the extent to which an activity achieves its purpose, or whether this can be expected to happen on the basis of the outputs. Implicit within the criterion of effectiveness is timeliness.	Single-sector or single-agency evaluations
Impact	The wider effects of the project—social, economic, technical, environmental—on individuals, groups, communities, and institutions. Impacts can be intended and unintended, positive and negative, macro (sector) and micro (household).	Multi-sector, multi-agency evaluations; joint evaluations; and sector-wide evaluations

3. United Nations Centre for Human Settlements, 2001, Guidelines for the Evaluation of Post-Disaster Programmes: A Resource Guide (Nairobi, Kenya: UN-HABITAT), http://www.unhabitat.org/content.asp?cid=1264&catid=286&typeid=16&subMenuId=0.
4. OECD Development Assistance Committee (DAC), 1991, "Principles for Evaluation of Development Assistance Development Assistance Committee" (Paris), http://www.oecd.org/document/22/0,2340,en_2649_34435_2086550_1_1_1_1,00.html.
5. ALNAP, 2006, Evaluating Humanitarian Action Using the OECD-DAC Criteria. An ALNAP Guide For Humanitarian Agencies, pp. 20–21, http://www.odi.org.uk/alnap/pubs/pdfs/eha_2006.pdf.

Audits versus Monitoring and Evaluation

Formally, an audit analyzes:

- The legality and regularity of project expenditures and income, in accordance with laws, regulations and contracts such as loan contracts and accounting rules;
- The efficiency of the use of project funds measured against accepted financial practices; and
- The effectiveness of the use of project funds, that is, whether they were used for the intended purposes.

The table below compares the features of monitoring, evaluation, and audit processes, and how they relate to the results chain.

	Monitoring	**Evaluation**	**Audit**
Who does it	Internal management responsibility at all levels	Incorporates external inputs	Incorporates external inputs
When it is done	Ongoing	Periodic—mid-term and upon completion, at a minimum	*Ex ante*, *ex post*, or at special points in time
Why it is done	Check progress, take remedial actions, update plans	Learn broad lessons applicable to other programs and projects, and as an input to policy review; provide accountability	Provide accountability to stakeholders and funding sources; ensure compliance with contracts and laws
Link to project objectives	Inputs, activities, results	Results, impact, purpose, overall objective	Inputs, activities, results.

Source: European Commission. Aid Delivery Mechanisms. Volume 1. Aid Delivery Guidelines. 2004. Brussels. http://ec.europa.eu/europeaid/multimedia/publications/documents/tools/ europeaid_adm_pcm_guidelines_2004_en.pdf.

Case Studies

[Reviewers: Please provide case studies on good and bad practices in monitoring and evaluation.]

Resources

Catley, Andrew, John Burns, Davit Abebe, and Omeno Suji. 2008. Participatory Impact Assessment—A Guide for Practitioners. Boston: Feinstein International Center at Tufts University. https://wikis.uit.tufts.edu/confluence/display/FIC/Participatory+Impact+Assessment--+a+Guide+for+Practitioners.

International Fund for Agricultural Development (IFAD). *Practical Guide on Monitoring and Evaluation of Rural Development Projects.* http://www.ifad.org/evaluation/oe/process/guide/ index.htm.

Mackay, Keith. 2007. *How to Build M&E Systems to Support Better Government.* Washington, DC: World Bank. http://lnweb90.worldbank.org/oed/oeddoclib.nsf/DocUNIDViewForJavaSearch/E58A95EC2BF96E378525731D00668AD3/$file/building_monitoring_and_evaluation_systems.pdf.

Molund, Stefan, and Göran Schill. 2007. *Looking Back, Moving Forward: SIDA Evaluation Manual.* 2nd ed. Stockholm: Swedish International Development Agency. http://www.sida.se/sida/jsp/sida.jsp?d=118&a=3148&language=en_US.

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World Bank. 2004. *Monitoring and Evaluation: Some Tools, Methods and Approaches*. Washington, DC: World Bank. http://lnweb90.worldbank.org/oed/oeddoclib.nsf/ InterLandingPagesByUNID/A5EFBB5D776B67D285256B1E0079C9A3.

PART 2
CROSS-CUTTING ISSUES IN RECONSTRUCTION

Chapter 16
The Context of a Reconstruction Project

The context affects decisions about reconstruction strategy. This chapter presents several contextual factors and prior decisions that deserve consideration when planning reconstruction. First, the characteristics of the disaster and the community's response should be considered, since they provide important signals about institutional capacity. Second, agencies and individuals will already have made decisions about temporary or transitional shelter that will also affect reconstruction. In addition, a warning is sounded about the gap between humanitarian assistance and the reconstruction phase, and the need to ensure that commitments made to the affected population in the relief phase are not forgotten.

The Disaster Event

A disaster is a function of the risk process, and results from the combination of hazards, conditions of vulnerability, and insufficient capacity or measures to reduce the potential negative consequences of risk.[1] Understanding how a disaster happened and how the community initially responded are important considerations in designing the reconstruction strategy.

The United Nations International Strategy for Disaster Reduction (ISDR) defines a disaster as a serious disruption of the functioning of a community causing widespread human, material, economic, and/or environmental losses that exceed the ability of the affected community to cope using its own resources. A following hierarchy shows how a disaster is distinguished from other events.[2]

Emergency	Capacity is challenged by demand, but local assets are able to manage the demand.
Disaster	Demand exceeds capacity, necessitating a call for outside assistance.
Catastrophe	Demand overwhelms and destroys local capacity, creating near-total dependence on outside response.

The amount of damage from a disaster depends on a community's vulnerability, defined as the conditions—determined by physical, social, economic, and environmental factors or processes—that increase the susceptibility of the community to the impact of disasters.[3] The same conditions that affected the community's vulnerability may also affect its ability to manage recovery, and these should be taken into consideration in planning reconstruction.

1. UN International Strategy for Disaster Reduction, 2009, "Terminology: Basic Terms of Disaster Risk Reduction," http://www.unisdr.org/eng/library/lib-terminology-eng%20home.htm.
2. E. L. Quarantelli, 2006, *The Disasters of the 21st Century: A Mixture of New, Old, and Mixed Types* (Newark, DE: Disaster Research Center, University of Delaware), http://magrann-conference.rutgers.edu/2006/_papers/quarantelli.pdf.
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Types of Disasters

There are numerous ways to categorize disasters that distinguish one from another. The future vulnerability of the community to these disasters must be understood, since it will affect site selection, reconstruction cost, and the choice of the reconstruction approach. (See "Disaster Risk Management Principles," in Part 4, for a detailed discussion of the DRM cycle and information on risk analysis and mitigation.)

Period of onset	Sudden onset disasters	Earthquakes, tsunamis, floods, tropical storms, volcanic eruptions, and landslides
	Slow onset disasters	Environmental degradation, deforestation, insect infestation, famine, drought, and sea-level rise
Origin	Natural disasters	• Hydrometeorological disasters, which result from weather-related events, such as tropical water-related occurrences (hurricanes, typhoons, cyclones), windstorms, winter storms, tornadoes, and floods
	Geophysical disasters	• Seismic events (earthquakes, tsunamis, volcanic eruptions, landslides) related to the motion of the earth's tectonic plates • Droughts, which are generally grouped with additional events (extreme hot and cold temperatures, wildfires, forest fires, insect infestations) • Pandemic diseases, which are distinguished by the global spread of newly emerging infectious diseases or uncharacteristically virulent strains of well-known foes (influenza)
	Human-generated disasters	• War (including terrorism and other types of conflict) • Environmental degradation • Technological hazards (including nuclear power plant emergencies, hazardous material emergency, heat, and chemical emergencies)
Complexity and scale	Complex disasters	Multidimensional events of long duration often spawned by human-generated events, such as war and civil strife.
	Global disasters	Worldwide impact. Precipitous global warming, global economic market collapse, or massive planetary collision, nuclear world war or highly virulent pandemic influenza.

Factors in Disasters

Many social factors affect vulnerability and exacerbate or, at times, directly cause disasters.[4] These factors also become part of the context in which recovery from a disaster and reconstruction take place, and may affect decisions about the reconstruction approach. These factors include: poverty, ungoverned population growth, rapid urbanization and migration, transition in cultural practices, environmental degradation, lack of awareness and information, and war and civil strife.

[4]. UN Department of Humanitarian Affairs (DHA), 1995, "The Use of Military and Civil Defence Assets in Relief Operations," *MCDA Reference Manual*,. http://www.reliefweb.int/rw/lib.nsf/db900sid/ASUG-5CRD7F?OpenDocument&query=mcda.

Effect of Natural Disasters on Housing and Communities

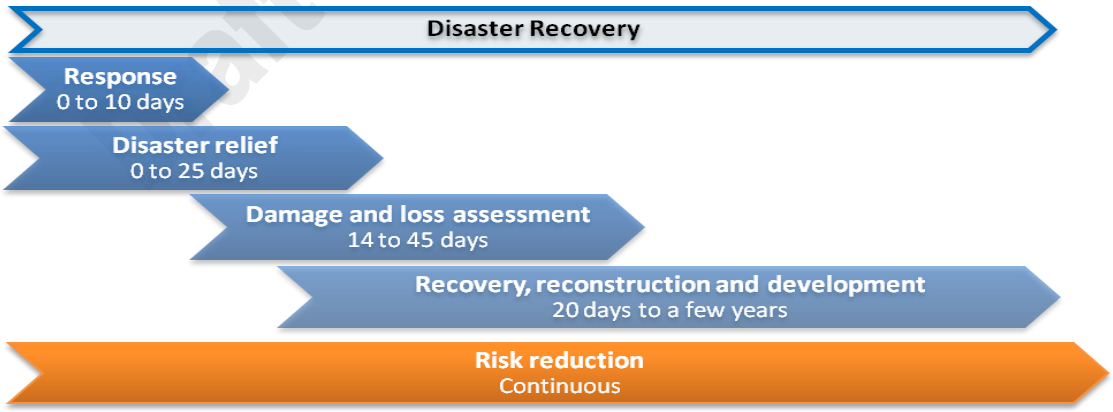
Disasters have social, environmental, economic, and material impacts on communities, including loss of livelihoods and assets; disruption of services; loss of food sources; and lack of cooking fuel, water, and shelter. Disasters result in increased communicable diseases, orphaned children, disrupted families, and political and economic insecurity due.

As the world's population and wealth increases, population and investment are more concentrated in urban and coastal areas. In addition, where cities are growing without a corresponding control of urban development patterns, more of this urban growth is occurring in vulnerable locations. However, not only is the vulnerable population increasing, the incidence of disasters is increasing as well, as illustrated by the graphics in this chapter. Loss of land and tenure, the process of resettlement and rehabilitation, housing policy, construction methods, and technology are all critical issues, especially in the process of post-disaster reconstruction planning and implementation.[5]

Housing is generally one of the largest categories of investment affected by natural disasters, as data from numerous post-disaster needs assessments demonstrates. As a result, improving the resilience of housing and communities is vital for reducing the risks to which these increasingly large populations are exposed.

The Disaster Cycle and Reconstruction Process

The disaster cycle, also known as the disaster risk management (DRM) cycle, refers to the series of phases undertaken by different stakeholders before and after a disaster to address its various impacts on communities. The DRM cycle is usually divided into five phases: Prevention/Mitigation, Preparedness, Emergency Response, Recovery, and Rehabilitation/Reconstruction. While sometimes shown as a circle in which the "preparedness" stage leads to a new disaster, the ultimate goal, of course, is for prevention and preparedness to break the disaster cycle. The following figure shows how these phases take place over time following a disaster:



5. UN Department of Humanitarian Affairs (DHA), 1995, "The Use of Military and Civil Defence Assets in Relief Operations," *MCDA Reference Manual*, http://www.reliefweb.int/rw/lib.nsf/db900sid/ASUG-5CRD7F?OpenDocument&query=mcda.

[This chapter will include two timelines as graphic elements to show how long it took to reach key milestones in specific disasters (Hurricane Katrina and a second disaster, depending on the availability of chronological information).]

The Housing and Community Reconstruction Process

The Importance of Integration

Post-disaster reconstruction is a complex process involving a number of interrelated activities. Like all development projects, it involves a cycle: assessment, planning, project development, implementation, and monitoring. An integrated approach to reconstruction must simultaneously address *what will be done* (for example, land use, reconstruction approach, environmental management, infrastructure rehabilitation, choice of housing design and technology, and cultural and natural heritage conservation) and *how it will be done* (including, institutional roles and the means of financing). Each chapter in Section 2 of this handbook covers one of these elements.

The post-disaster reconstruction process almost always takes much longer than expected or planned. Except in life-threatening situations, compromises that ignore the need for integration, or for quality, safety, or governance of the reconstruction, should not be made to save time. Time is rarely saved, and people will live with the consequences of these compromises for years to come.

The Influence of Early Decisions

Decisions made about resettlement and housing policy in the immediate aftermath of a disaster can have a major negative or positive impact on long-term recovery and reconstruction. A particular problem arises when early decision makers, who may be humanitarian relief officials, lack the necessary qualifications in the housing field to make such decisions.

The housing reconstruction process is usually understood as either a 3-stage process or a 2-stage process. The 3-stage process is summarized as follows:

Stage 1. Immediate post-disaster emergency relief phase, with immediate shelter provision.
Stage 2. Rehabilitation phase, with temporary housing. This may be a specific shelter product or it may be a solution that will progressively evolve into a permanent dwelling.
Stage 3. Housing reconstruction with permanent dwellings set in completed human settlements.

For some time, the 3-stage process was regarded as the norm for housing reconstruction after a disaster. But this approach has the following defects:

- It is an expensive; temporary housing requires funding needed for building permanent dwellings and supporting infrastructure.
- It wastes human and material resources that could be used to build permanent shelter or other priority reconstruction.
- It can be socially disruptive, requiring families to resettle twice.
- It is hard to coordinate; paradoxically, the Stage 2 transition houses are often ready after the Stage 3 permanent dwellings.
- It risks leaving a legacy of unused temporary houses.

Therefore, the 2-stage approach, in which reconstruction moves directly from Stage 1 to Stage 3, is often more effective. This approach was successfully used following the 1985 Mexico City earthquake. It requires reconstruction to begin as quickly as possible; while the occupancy of temporary shelters is extended (the risks associated with this decision must be carefully evaluated). In extreme climatic conditions it may not be feasible to extend the use of emergency shelter and is therefore necessary to pursue the 3-stage approach.

Transitional Shelter

A joint initiative by Shelter Centre, the United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA), and the Department for International Department (DFID) has resulted new guidelines concerning transitional housing. "Transitional Settlement and Reconstruction after Natural Disasters" is the most authoritative manual on the subject of transitional shelter. It describes transitional shelter as having two (not mutually exclusive) modalities.

Transitional settlement The movement of those who have been displaced by a disaster between shelter options starting from the disaster, over the period of their displacement, which may be days or years.

Transitional reconstruction The process by which people who have not been displaced by a disaster or are returning from displacement regain longer-term housing.

The shelter process as envisioned in the manual ceases to be a series of progressive stages; rather, these activities merge together into a continually evolving sequence. Figures 1 and 2 show the options for transitional shelter discussed in the manual for each of the two modalities.

Figure 1.
The Six Options for Non-Displaced Populations
The six options for those populations not displaced presented in the Field Edition of *Transitional Settlement and Reconstruction after Natural Disasters* (TSAR) (United Nations, 2008) complete the comprehensive categorization of the options facing affected populations.

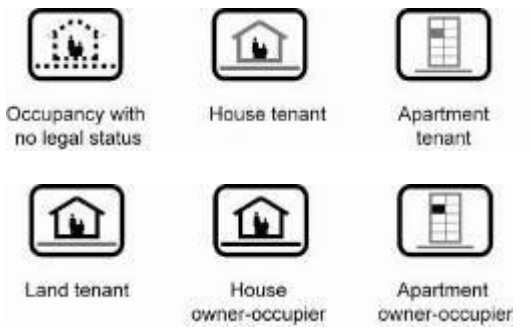


Figure 2.
The Six Options for Displaced Populations
The six options for displaced populations have, since the publication of *Transitional Settlement: Displaced Populations* (Corsellis and Vitale, 2005), become accepted throughout the humanitarian community and are included in UNHCR and IASC cluster guidance, as well as forthcoming OCHA NAF/CAP tools.

The manual makes an important contribution to standardizing the terminology related to shelter solutions after natural disasters, in an effort to improve planning and coordination of shelter responses, including coordination across the gap from response to reconstruction. Standard terminology is used to discuss both the options for transitional shelter and the assistance methods that are employed. The categories of assistance considered are human capital, natural capital (environmental management), social capital, physical capital, and financial capital.

The ultimate goal of housing reconstruction is to ensure that all those affected by a disaster, whether displaced or not displaced, are situated in a "durable solution." The formal housing and community reconstruction strategy must encourage and incorporate both transitional settlement and transitional reconstruction, the authors argue, since they will already be taking place and because they form the basis for durable solutions. If transitional settlement has relocated a significant number of the population from the affected area, for example, then an effort may be required to ascertain how many plan to return so that the housing need is not overestimated. Also, if transitional reconstruction, which often begins spontaneously, is being carried out in a way that creates unacceptable risks, the reconstruction strategy may need to compensate families for work already done to get them to collaborate.

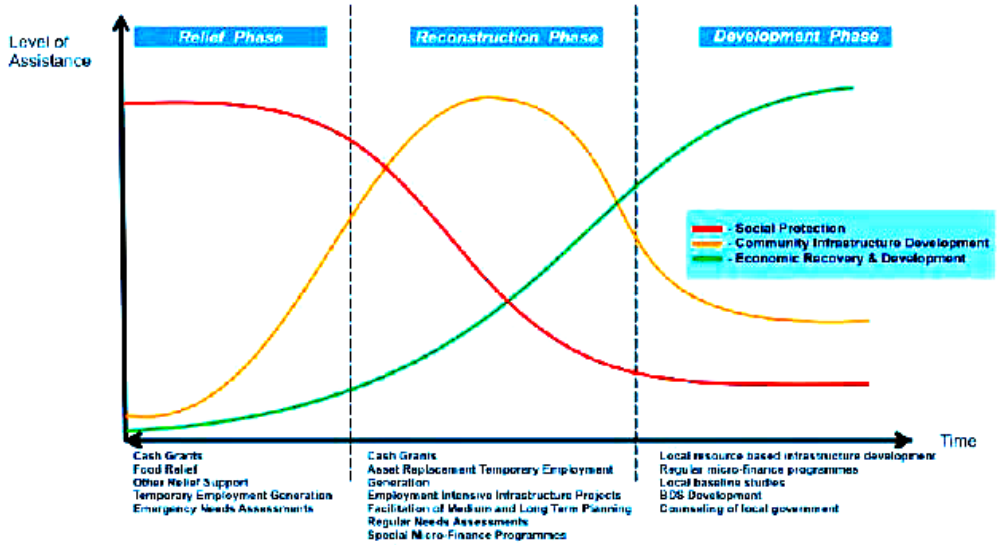
Unequal Distribution of Resources within the Cycle

Viewing disaster management from a distance, one might think that each phase of the disaster cycle receives an equal volume of resources. However, this is not the case. The normal pattern in major disasters is for relief and emergency assistance to receive the overwhelming proportion of human, material, and financial resources. This reality can lead to significant funding shortfalls for reconstruction in certain regions or sectors as time goes along, and bad decisions about reconstruction, as agencies (including government) attempt to start reconstruction immediately, while resources for relief are still plentiful.

An additional risk is that when resources are insufficient for reconstruction, they are even more limited for preventive and risk-reduction activities within reconstruction, and risk is rebuilt.

Overloading the response and relief phases with financial resources while short-changing risk reduction and reconstruction is not a supportive of either reconstruction or the long-term improvement in resiliency. The following figure shows how disaster-related costs accumulate over time.

The Stages of Recovery Related to the Level of Assistance Costs



Minding the "Gap"

The gap between the emergency effort and reconstruction is of particular important in housing and community reconstruction and deserves careful management. The transitional shelter and reconstruction approach is an attempt to bridge this gap by acknowledging that for affected families this division is artificial; therefore, interventions should be planned to better integrate these phases. One of the challenges in "the gap" is the change of institutional involvement. As humanitarian organizations pull out, a second set of institutions takes their place. This second set includes government in its developmental role and the bilateral agencies and development banks, such as the World Bank. Significant and costly shifts in policy and funding approaches may take place in this transition, and in the process, commitments made to the affected population can be forgotten.

The report *Mind the Gap! Post-Disaster Reconstruction and the Transition from Humanitarian Relief*, prepared by the Max Lock Centre for the British Royal Institution of Chartered Surveyors, proposed that chartered surveyors, geographic information systems (GIS) technicians, disaster risk professionals, and other "built environment" experts can play a crucial role in closing the gap between humanitarian relief and reconstruction and development.[5] (See Chapter 5, "Land Use and Physical Planning.")

Toward the same end, the indicators proposed by the Development Assistance Committee (DAC) of the Organisation for Economic Co-operation and Development (OECD) in 1991for the evaluation of humanitarian programs (as updated) include an indicator for program "connectedness."[6] As explained by the Active Learning Network for Accountability and Performance in Humanitarian Assistance (ALNAP) in its evaluation guide, connectedness refers

5. Tony Lloyd-Jones, 2006, *Mind the Gap! Post-Disaster Reconstruction and the Transition from Humanitarian Relief* (London: Max Lock Centre at the University of Westminster), http://www.rics.org/Newsroom/Keyissues/Disastermanagement/mind_the_gap_f_060307.html.
6. OECD DAC, 1991, Principles for Evaluation of Development Assistance Development Assistance Committee, Paris, http://www.oecd.org/document/22/0,2340,en_2649_34435_2086550_1_1_1_1,00.html.

to the need to ensure that activities of a short-term emergency nature are carried out in a way that takes longer-term problems into account.[7] However, the guide also states that although the links among humanitarian action, recovery, and development is generally accepted, no consensus exists concerning the extent to which humanitarian action should support longer-term needs, mentioning natural disasters as an example of where this objective is particularly difficult to achieve.

Recommendations

1. Make risk reduction an overriding consideration when planning reconstruction.
2. Take the time to make good decisions. Careless early decision making can have long-term negative impacts on the reconstruction process and development.
3. Make sure decision makers and implementers are professionally competent and experienced in the work they are carrying out.
4. Take an integrated approach to reconstruction. Do not view housing in isolation or reconstruction as separate from prevention/mitigation.
5. Seek consensus among key stakeholders regarding distribution of responsibilities to avoid duplication and repetition in each stage of the DRM process.
6. Don't shortchange reconstruction. Adequate financial and material resources must be made available throughout the response, recovery, and reconstruction process. Governments should make long-term commitments a condition for donors providing short-term financial assistance.
7. Expect reconstruction to take a long time, and encourage communities to think in those terms without undermining their determination to recover.

Case Studies

1963 Skopje Earthquake

The Influence of Early Decisions on Long-Term Recovery in Skopje

Early decisions had a major impact in the reconstruction of Skopje, following the earthquake of 1963. Vladimir Ladinski, an architect and urban planner who lived in the city throughout the recovery process, has written a highly detailed 30-year longitudinal study of the transition of the relief to full reconstruction process. He notes that the relief operation was probably one of the most efficient on record, with minimal aid being wasted and with the authorities having very clear priorities that avoided the waste of temporary housing (skipping Stage 2). But despite such achievements, Ladinski raises "serious doubts whether the rapid initial planning decision on the location of new settlements was correct." His reference is to the decision of various military officers, within a few days of the earthquake, to locate temporary housing in sites surrounding the city. They had a naïve expectation that these temporary houses in Stage 1 would be subsequently demolished, to make way for permanent dwellings nine months after the disaster. However, in modified form many remained in place and had a negative impact on the development of the overall city plan (Ladinski, 1997 and Davis, 1975).

7. ALNAP, 2006, Evaluating Humanitarian Action Using the OECD-DAC Criteria. An ALNAP Guide for Humanitarian Agencies, pp. 20–21, http://www.odi.org.uk/alnap/pubs/pdfs/eha_2006.pdf.

[Reviewers: Please provide additional Case Studies on good and bad practices regarding the transition between phases of recovery.]

Resources

United Nations. Transitional Shelter after Natural Disasters (Field Edition). 2008. UN OCHA: Geneva. http://www.sheltercentre.org/library/Transitional+settlement+and+reconstruction+after+natural+disasters.

International Federation of Red Cross Societies is the lead cluster agency with responsibility for shelter following natural disasters. http://www.ifrcs.org.

International Recovery Platform (IRP) identifies gaps and constraints in disaster recovery and serves as a catalyst for the development of tools, resources, and capacity for resilient recovery. IRP has a range of resources that address reducing risks in recovery. http://www.recoveryplatform.org.

Lloyd-Jones, Tony. 2006. Mind the Gap! Post-Disaster Reconstruction and the Transition from Humanitarian Relief. London: Max Lock Centre at the University of Westminster.

ProVention Consortium seeks to reduce the risk and social, economic, and environmental impacts of natural hazards on vulnerable populations in developing countries in order to alleviate poverty and contribute to sustainable development. Has also prepared excellent guidelines on earthquake recovery management. www.proventionconsortium.org.

UN-HABITAT has probably done more than any agency to promote user-build approaches to disaster reconstruction in India, Afghanistan, Sri Lanka, Indonesia, Pakistan, and China. http://www.unhabitat.org

UN-HABITAT promotes socially and environmentally sustainable towns and cities and adequate shelter for all. Its disaster management program helps governments and local authorities rebuild from war or natural disasters. http://www.unhabitat.org/categories.asp?catid=286.

United Nations Development Program Crisis Prevention and Recovery (UNDPCRP) works around the world to restore the quality of life for people who have been devastated by natural disaster or violent conflict. http://www.undp.org/cpr/.

————. *Preliminary Post-Disaster Recovery Guidelines.* http://www.proventionconsortium.org/themes/default/pdfs/social_analysis/UNDP_Recovery_Guidelines.pdf.

————. *Guidance Note on Early Recovery.* 2007. http://www.humanitarianreform.org/humanitarianreform/Portals/1/cluster%20approach%20page/clusters%20pages/Early%20R/ER_Internet.pdf.

U.S. Federal Emergency Management Agency (FEMA) has extensive resources on disaster preparation and response and on training of local officials. http://www.fema.gov.

Chapter 17
Community Participation

Introduction

According to the World Bank, community participation is a way for stakeholders to influence development by contributing to project design, influencing public choices, and holding public institutions accountable for the goods and services they provide.[1] Taking the concept further, participation is the engagement of affected populations in the project cycle—assessment, design, implementation, monitoring, and evaluation—in a variety of forms. An even more expansive view considers participation as an operating philosophy that puts affected populations at the heart of humanitarian and development activities as social actors with insights, competencies, energy, and ideas of their own.[2]

Critical in every stage of post-disaster recovery and reconstruction, community participation has numerous benefits. This chapter encourages offering affected communities a range of options for participation.[3] It focuses on participation by individuals, communities, and community-based organizations (CBOs). (See Chapter 11, "Effective Partnerships and Donor Coordination," for a typology of civil society institutions that participate in reconstruction.)

Guiding Principles

- "The community" is not a monolith, but a complex entity that needs to be understood and engaged in order to identify its concerns, assets and abilities.
- Consistent and timely contact with the community builds the confidence required for positive reconstruction results.
- Being a process of engagement, community participation will bring preferences and expectations to the surface. It is essential that participation be accompanied by an openness on the part of funding agencies to changes in the reconstruction process**.**
- The community participation strategy should be defined before projects are in development.
- Numerous established participation methods exist, but they may need to be adapted to the context.
- Transparency and communication are essential to maintaining engagement and credibility with the community during the reconstruction process.
- The reconstruction approach will affect the type and level of participation in reconstruction.
- Training can play an important role in building community capacity to take on project management responsibilities, skills that build sustainability into the reconstruction process and longer term development programs.

1. World Bank, 1996, *The World Bank Participation Sourceboo* (Washington, DC: The International Bank for Reconstruction and Development/World Bank), http://www.worldbank.org/wbi/sourcebook/sbhome.htm.
2. Active Learning Network for Accountability and Performance in Humanitarian (ALNAP), 2003, *Participation by Crisis-Affected Populations in Humanitarian Action: A Handbook for Practitioners* (London: Overseas Development Institute), http://www.alnap.org/publications/gs_handbook/gs_handbook.pdf.
3. Opportunities for participation are also discussed throughout the *Handbook* chapters.

Risks and Challenges

1. Lack of support because of limited involvement of stakeholders in planning and design.
2. Failure to understand the complexity of participation and belief that "the community" is a unified, organized body.
3. Ignoring how the community is already organized when introducing participatory activities.
4. Thinking that all community organizations are democratic and representative, or forgetting that they have their own agendas.
5. Confusing the role of national nongovernmental organizations (NGOs) with that of community-based organizations (CBOs) or loosely affiliated community groups.
6. Agencies believing that they are being participatory by establishing a relationship with one specific local organization or leader.
7. Underestimating the time and cost of genuine participatory processes.

Technical Issues

As shown in the table below, forms of participation differ in terms of the extent of citizen involvement in decision making and with respect to the desired outcomes.

Type of participation	Role of affected population	Level of control
Passive	Informed of what is going to happen or what has occurred.	Low
Through the supply of information	Provides information to agency in response to questions but has no influence over the process.	
By consultation	Asked for its perspective on a given subject but has no decision-making powers.	
Through material incentives	Supplies materials and/or labor needed to operationalize an intervention. Receives cash or in-kind payment from agency.	
Through the supply of materials, cash, or labor	Supplies materials and/or labor needed to operationalize an intervention or co-finances it. Helps decide how these inputs are used.	
Interactive	Participates in the analysis of needs and in program conception, and has decision-making powers.	
Local initiatives	Conceives, initiates, and runs project independently; agency participates in the community's projects.	High

Source: Active Learning Network for Accountability and Performance in Humanitarian (ALNAP), 2003, Participation by Crisis-Affected Populations in Humanitarian Action: A Handbook for Practitioners (London: Overseas Development Institute), http://www.alnap.org/publications/gs_handbook/gs_handbook.pdf.

Purposes of Participation

For the World Bank, participation allows stakeholders to collaboratively carry out a number of activities in the program cycle.[4] These include the following.

- Analysis: Identifying the strengths and weaknesses of existing policies and service and support systems.

4. World Bank, 1996. *The World Bank Participation Sourcebook* (Washington, DC: The International Bank for Reconstruction and Development/World Bank), http://www.worldbank.org/wbi/sourcebook/sbhome.htm.

- Setting objectives: Deciding and articulating what is needed.
- Creating strategy: Deciding, in pragmatic terms, directions, priorities, and institutional responsibilities.
- Formulate tactics: Developing or overseeing the development of project policies, specifications, blueprints, budgets, and technologies needed to move from the present to the future.

Participation also has outcomes that are social in nature: empowering individuals, increasing local capacity, strengthening democratic processes, and giving voice to marginalized groups. Another set of benefits concerns program effectiveness and leverage: creating a sense of ownership, improving program quality, mobilizing resources, and stimulating community involvement in execution.

Community Participation in Different Phases of Reconstruction

The community can play an important role in every phase of post-disaster reconstruction. Since communities have more knowledge of the local environment, culture, and building techniques, their contribution in the planning process is invaluable. The following table identifies ways in which communities can participate.

Reconstruction Phase	Opportunities for Community Participation in Reconstruction
Assessment	Conduct housing census; community-led needs assessments; local environmental assessments; mapping of affected area and changes; and stakeholder analysis.
Planning and design	Carry out participatory site planning and site evaluations. Identify targeting criteria and validate household eligibility. Participate in reconstruction training to reduce risk. Assist with grievance procedures.
Project development and implementation	Owner-driven housing reconstruction. Volunteer, receive direct payment, or be subcontracted for reconstruction of community facilities (schools, meeting places, and clinics), infrastructure rehabilitation, and housing reconstruction. Volunteer or receive direct payment to manage community stores.
Monitoring and evaluation	Participate in construction supervision and oversight, steering committees and social audit (control) committees, and participatory evaluations.

The housing reconstruction approach will affect the level and type of community participation. (See Chapter 4, "Reconstruction Approaches.") Of the five approaches considered in that chapter, the cash, owner-driven, and community-driven approaches offer the most opportunity for direct involvement. Owners have some limited opportunities for involvement in a contractor-driven *in-situ* project; however, contractor-driven reconstruction in a relocated site effectively excludes the owner from having any role. For community-driven reconstruction, community contracts have been a useful tool to establish the terms of community involvement.[5]

5. United Nations Human Settlements Programme, UN-HABITAT, no date, *Community Contracts* (Regional Office for Asia and the Pacific), http://www.fukuoka.unhabitat.org/event/docs/EVN_081216172311.pdf.

Institutional Context

The context can enable or constrain participation, depending on such factors as the enabling environment, the constraints created by the developing agency, and the community's existing organization.

The enabling environment. The term "enabling environment" refers to the rules and regulations, both national and local that provide the freedom and incentives for people to participate. Examining the legal framework within which affected beneficiaries and communities operate will ensure effective participation in projects and will identify any legal constraints that must be addressed. There are three important considerations: whether the community has the right to information; whether the community has the right to organize and enter into contractual agreements; and the impact of the donor's rules on encouraging or limiting community involvement in projects.[6]

Development agency constraints. The participatory process can be affected by constraints emanating from development agencies, including a lack of commitment, skills, or capacity to conduct participatory reconstruction activities; operating with a short-term emergency mind-set rather than a development perspective; and an inability to make a long-term commitment to a community because of the nature of the agency's programs. Donors may also have a limited understanding of the context, especially if it is complex or changing rapidly, and may therefore be reticent to make plans with the community when the outcomes are so unpredictable.[7]

Developing a Community Participation Profile

A Community Participation Profile will assist agencies in making judgments about the feasibility of and the starting point for community participation. It can answer questions such as:

1. Is there a viable community structure still in place that can establish priorities and respond to the most needy and vulnerable?

2. Can the community provide support to screen offers of financing and oversight to the distribution of resources as they arrive?

3. Are systems in place to ensure transparency and accountability at the community level?

4. What resources and skills are available in the community to contribute to reconstruction or other aspects of recovery? (These resources may include skilled and unskilled labor, building materials, land and financial resources.)

5. What training will be required for the community to successful carry out its role and responsibilities?

Community's existing organization. A community's organization can be invisible to outsiders, but such tools as community assessments and institutional mapping can help reveal it and any effects it may have on the proposed project.[8] A range of organizations at varying levels of formality are already operating in any given community, performing a variety of functions,

6. World Bank, 1996. *The World Bank Participation Sourcebook* (Washington, DC: The International Bank for Reconstruction and Development/World Bank), http://www.worldbank.org/wbi/sourcebook/sbhome.htm.
7. ALNAP, 2003. *Participation by Crisis-Affected Populations in Humanitarian Action: A Handbook for Practitioners* (London: Overseas Development Institute), http://www.alnap.org/publications/gs_handbook/gs_handbook.pdf.
8. Jeremy Holland, 2007, *Tools for Institutional, Political, and Social Analysis of Policy Reform. A Sourcebook for Development Practitioners* (Washington, DC: World Bank), http://siteresources.worldbank.org/EXTTOPPSISOU/Resources/1424002-1185304794278/TIPs_Sourcebook_English.pdf.

including channeling community demands.[9] Planning intervention without understanding this reality is not only disrespectful of the community, but can also lead to unexpected delays, protests, and rejection of the project. In addition, the sponsors of any new initiative—even if it is just a single project that seeks the community's participation—need to decide how the project will relate to the community as it is already organized. As early as possible, an analysis should be carried out of the community's characteristics, including its existing organizational structure and its capabilities. An organizational structure may be based on wealth, political party, caste, culture, or power relationships, among other things. Organizations that claim to be representative of local community needs and aspirations may not be seen that way by members of the community.

Participation Strategy and Tools

While the participation strategy may be refined during the participatory process itself, the responsible agency should define the basic parameters before it is set in motion. A participation strategy defines why participation is called for, proposes who will be involved, and defines the objectives. It also defines the purpose of the participatory activities, which participation approach is most suitable, the tools and methods to be used, whether community members will be engaged directly or through existing organizational structures, and which, if any, partnering agencies will be involved.

HOW TO DO IT
Community Participation Profile

The handbook will include specific instructions on how to develop a community participation profile for a housing reconstruction program.

It is not necessary to create participatory processes; over the years, organizations have systematized myriad instruments and methodologies that can be adapted to the context in which the participation will take place. The table below contains examples.[10]

Tools for Facilitating Community Participation

Contextual Analysis	Understanding Stakeholders	Identifying Assets and Vulnerabilities	Defining Needs, Demands, and Projects
Interviews with key informants Storytelling Focus groups Timelines Mapping damage, risks, land uses Activity or climatic calendars Community mapping	Socioanthropological analysis Participatory stakeholder analysis Interaction diagrams Venn diagrams Proximity-distance analysis Wealth ranking	Capacity and vulnerability analysis Proportional piling Institutional analysis Cultural-asset inventories	Surveys Hearings Participatory planning Design charts Participant observation Preference ranking Information centers and fairs

9. World Bank, 1996, *The World Bank Participation Sourcebook* (Washington, DC: The International Bank for Reconstruction and Development/World Bank), http://www.worldbank.org/wbi/sourcebook/sbhome.htm.
10. ALNAP, 2003, *Participation by Crisis-Affected Populations in Humanitarian Action: A Handbook for Practitioners* (London: Overseas Development Institute), www.alnap.org/publications/gs_handbook/gs_handbook.pdf.

Who Are Stakeholders?

Stakeholder involvement is context specific; thus, who needs to or is willing to be involved will vary from one project to another.[11] The graphic, right, depicts a common set of project stakeholders. The table below uses a hypothetical project (helping a community avoid relocation by implementing structural measures to reduce risk) to show common stakeholder categories.

Type of stakeholder	Example
Those who might be affected (positively or negatively) by the project.	*Homeowners who prefer to relocate the community versus homeowners who prefer the existing site.*
The "voiceless" for whom special efforts may have to be made.	*Squatters who risk being relocated if structural DRR investments are built.*
The representatives of those likely to be affected.	*Existing community group that has managed the response.*
Those who have formal responsibility related to the project.	*Government risk management agency or local planning department.*
Those who can mobilize for or against the project.	*Unaffected communities that were already awaiting assistance now delayed by the disaster-related project.*
Those who can make the project more effective by participating or less effective by not participating.	*Another NGO working on a related issue in the same community.*
Those who can contribute financial and technical resources.	*Microfinance institution or governmental agency.*
Those whose behavior has to change for the effort to succeed.	*Government agency already planning the community's relocation.*
Those who must collaborate for the project to succeed.	*Landowner who will need to sell land where structural measures will be built.*

The level of power, interests, and resources of each stakeholder will affect his or her ability to collaborate. Therefore, an environment needs to be created in which stakeholders can participate and interact as equals. Consensus-building is difficult; mechanisms may be needed to promote negotiation and resolve disputes.

Stakeholders can also have different "stakes" in a project. For instance, the head of a household that may be resettled has more invested in the outcome of a resettlement project than the representative of the local planning department, although both are considered stakeholders.

Unintended Consequences of Participation

Because good participation empowers the community, its outcomes can be unpredictable. The participatory process may give rise to new actors or interests and may create outcomes unlike those that were expected. Guiding the process includes keeping people's expectations within bounds, especially if they come to believe that large amounts of funding are available.

Relation to Existing Public Policy

Participation in donor-funded projects is largely voluntary, yet the commitment to participation is generally quite high. This situation may not be the case in public projects. Some countries and local governments have laws that require community participation and information disclosure for publicly supported projects, including anything from public hearings on budgets to comment periods on procurement documents. Yet even in democratic states where laws support access and participation, compliance can be perfunctory; such pro forma compliance is even more likely if government is on an emergency footing and fears that projects will be delayed. Suspension of these participatory mechanisms because of the emergency should be avoided to allow community oversight and involvement when large sums of money are being spent. Project sponsors may need to address these issues with government to conduct an effective participatory process.

Recommendations

1. Analyze the context in which participation will take place by carrying out an institutional assessment early in the reconstruction cycle.
2. Select the participatory activities and develop a participation strategy based on assessment results.
3. Do not disempower existing community initiatives by introducing an independent participatory process; find ways to combine forces.
4. Become familiar with existing tools that foster participation, adapting them to the project and context.
5. Understand that stakeholder identification is one of the most important steps in a participatory process; consider using a participatory method to identify and engage stakeholders.
6. Be prepared for participation's unintended consequences. By maintaining a constructive relationship with all participants, the project sponsor should benefit from activities that spin off from the participatory process.

Case Studies

1993 Latur, Maharashtra, India Earthquake

Community participation in the Maharashtra Emergency Earthquake Rehabilitation Program
With the help of the World Bank, the government of Maharashtra, India created the Maharashtra Emergency Earthquake Rehabilitation Program (MEERP), which institutionalized community participation and ensured that beneficiaries were formally consulted at all stages of the post-earthquake program. Every village created a local committee headed by the *sarpanch* (head of village council), and its subcommittees included women and disadvantaged groups. Consultative committees were also proposed at the level of the *taluka* (an administrative unit that includes several villages) and the district. To ensure the village-level committees interacted with the project management unit at all levels, government took an innovative step and appointed two respected community organizations to carry out the process, the Tata Institute of Social Sciences and the Society for Promotion of Resource Area Centre.

1992 Pakistan Floods

Grassroots NGO introduces measures to engage women in housing reconstruction

After the 1992 Pakistan flood, PATTAN, a local NGO, introduced a number of measures to reduce women's vulnerability. Female relief workers were engaged to assess the needs of women during the floods and to involve them in the planning, implementation, and rehabilitation activities. Local women were registered as heads of their households to help ensure efficient distribution of relief food. Village women's organizations were established (in parallel to men's groups) to articulate women's needs and to take responsibility for community development. As a result, women became actively involved in reconstruction activities. Women were made responsible for collecting money to repay loan installments on the houses. And women's groups provided forums for discussing women's views regarding the design and layout of new houses. Some women also participated in construction, traditionally a male activity. Perhaps most important, PATTAN introduced the concept that married couples should own houses jointly.

[Reviewers: Please provide additional case studies on good and bad practices in Community Participation.]

Resources

Abarquez, Imelda, and Murshed, Zubair. 2004. *Community-Based Disaster Risk Management: Field Practitioners' Handbook.* Bangkok: ADPC, UNESCAP, and DIPECHO.

Active Learning Network for Accountability and Performance in Humanitarian (ALNAP). 2003. *Participation by Crisis-Affected Populations in Humanitarian Action: A Handbook for Practitioners.* London: Overseas Development Institute, 22. http://www.alnap.org/publications/ gs_handbook/gs_handbook.pdf.

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World Bank. 1996. *Participation Sourcebook.* Washington, DC: Office of the Publisher. http://www.worldbank.org/wbi/sourcebook/sbhome.htm.

World Health Organization. 2002. *Community Participation in Local Health and Sustainable Development: Approaches and Techniques.* http://www.euro.who.int/document/e78652.pdf, p. 4 (Local Agenda 21).

Chapter 18
Compensation and Household Finances

Introduction

The compensation scheme for affected populations is an issue to be resolved in the context of the broader social protection strategy as early as possible before post-disaster reconstruction begins. Compensation can be provided to households in several forms, including cash transfers and in-kind contributions, and careful administration of these programs is crucial. At the same time, reconstruction will not be sustainable unless household finances are stabilized and families have the resources they need to both rebuild.

This chapter discusses how households can be provided compensation for reconstruction and the other financial sources including microfinance and worker remittances which may be important. It also covers is the need for grievance redressal mechanisms as a part of compensation schemes.

Guiding Principles

- Government cannot reestablish household finances simply by giving compensation; it must ensure that access is available to other forms of household finance.
- Remittance totals often exceed official assistance, and are likely to increase in the year following the disaster; therefore, reinstating remittances flows is a top priority.
- Careful administration of compensation programs is crucial; logistical and security issues must be addressed before cash compensation is delivered.
- Compensation schemes are needed for owners, landlords, and renters, but will likely take a different form in each case.
- Compensation programs will always receive complaints, and mechanisms must be in place *ex ante* to receive and resolve them.
- Pressuring microfinance institutions (MFIs) to play an assistance role during a disaster can undermine the relationship with clients on which their future solvency depends.
- Communities may know better than outside agencies who deserves disaster compensation.
- The choice of reconstruction approach will influence the choice of compensation scheme.

Risks and Challenges

1. Delays and inefficiencies in the delivery of reconstruction funds.
2. Liquidation of assets and savings in poor households.
3. Ignoring the importance of remittances in household income.
4. Inequitable compensation between remittance-receiving and non-remittance-receiving households.
5. Security risks for those delivering cash and voucher assistance.
6. Distortions in the market for reconstruction goods and services that make it difficult for owners to make their own purchases.
7. Difficulties in identifying households eligible for compensation.

8. Not designing a compensation scheme that includes both tenants and landlords.

Technical Issues

Post-Disaster Constraints on Household Finances

Households have a number of options to meet their financial needs after a disaster, many of which undermine the health and security of the household.[1] The options include reducing household consumption, often by reducing food intake; drawing down savings (cash or non-cash assets); selling physical assets, including livestock; using remittances; sending family members to search for work in less-affected areas; and borrowing from family, informal sources, or microfinance institutions. Timely, well-designed compensation schemes can help reduce the negative impacts of these strategies.

Household Compensation for Reconstruction

Cash and vouchers are the principal methods for providing households with resources for post-disaster reconstruction. Other forms of compensation include in-kind assistance and credit. Cash assistance should be given to tenants or those temporarily renting and to landlords, not only home-owners. Assisting landlords does not eliminate the need to help tenants.

Cash transfers and vouchers. Cash transfers and vouchers can be used to provide resources to affected populations to carry out housing reconstruction, to pay for work on infrastructure projects, and for numerous other purposes.[2] They are particularly useful where livelihood and economic production opportunities have been lost.

The following chart describes the general forms of transfers.

Type of cash transfer	Description
Unconditional cash transfers	Given with no conditions as to how the money should be used. Often used immediately after an emergency.
Conditional cash transfers	Given on the condition that recipients do something (for example, rebuild their house, plant seeds, provide labor, or establish or re-establish a livelihood).
Commodity or cash vouchers	Stipulate the items or services for which the recipient can exchange his or her voucher, including construction materials; have a specific value; can either define a service or good that the voucher can be exchanged for or allow the recipient freedom as to purchases; exchanged with specified vendors or at organized fairs.

1. Joan Parker and Geetha Nagarajan, 2000, *Can Microfinance Meet the Poor's Financial Needs in Times of Natural Disaster?* (Washington, DC: USAID Microenterprise Best Practices Project), http://www.microfinancegateway.org/content/article/detail/2942?print=1.
2. This section borrows from ICRC and International Federation of Red Cross and Red Crescent Societies, 2007, *Guidelines for Cash Transfer Programming* (Geneva: ICRC and International Federation of Red Cross and Red Crescent Societies). See especially Section B: Guidance Sheets, http://www.icrc.org/web/eng/siteeng0.nsf/html/publication-guidelines-cash-transfer-programming.

Type of cash transfer	Description
Cash for work (CFW)	Payment for work on public works programs; wages should be slightly below market levels to avoid competing with labor market.
Social assistance transfers	Repeated, unconditional cash transfers provided to vulnerable households or individuals (for example, the elderly or pregnant women); best implemented in partnership with government agencies.

The transfer program should be based on the following:

- Clear program objectives and assurance of political acceptance.
- Mechanisms for consultation with the affected population throughout the program,
- Needs assessments for deciding on the level and type of assistance.
- A clear targeting rationale and a reliable recipient identification system.
- Institutional capacity sufficient to carry out the program in a timely manner.
- Good coordination between governmental and nongovernmental actors if both are involved.
- A reliable and secure delivery system for payments or voucher delivery.
- A system for monitoring, reporting on, and evaluating the program, and making adjustments, if necessary.
- A clear withdrawal strategy.

At the same time, in order for the transfer program to actually provide households with the materials they need for reconstruction, the following conditions must be in place on the "supply side."

- Availability and/or production chain capacity for goods.
- A functioning market for the goods and/or services people need and geographical access.
- Willing traders with financial and logistical capacity to get goods into the region and assurance that traders will accept vouchers (in the case of voucher systems).
- A reliable recipient identification system.
- A reliable and secure delivery system for payments to traders who accept vouchers.
- No excessive taxation of goods.
- Ability to monitor price levels and control price gouging.
- Risk mitigation to offset inflation of materials and labor costs.

HOW TO DO IT
Compensation Strategy

The handbook will include specific instructions on developing a compensation strategy, including the design of grievance redressal mechanisms.

Delivery mechanisms. Assessment and monitoring logistics must be carefully considered when planning the delivery mechanism for cash and vouchers, especially when using direct deliveries. A variety of delivery mechanisms can be used, including the following:

1. Transfer cash into bank/post office accounts
2. Transfer cash to local remittance and money transfer companies and burial societies
3. Direct cash, check, or voucher distribution to recipient
4. Mobile ATMs (for cash withdrawals), smart cards, or money orders
5. Local businesses or community-based organizations

In selecting a delivery mechanism, program sponsors should factor in travel costs, gender mix, possible security issues (especially if women are delivering or picking up the cash or vouchers), cultural familiarity with the mechanisms chosen (ATMs, for example), and delivery methods for those who cannot travel.

[Reviewers: Please provide information on experiences with the distribution of cash and vouchers for reconstruction.]

In-kind compensation. Providing compensation in-kind of fully built houses is common, especially with international organizations concerned about the speed of the response. A variation is to provide in-kind building materials, which works well if they can be purchased in bulk at a lower cost. The risks with the in-kind strategy have led some governments and donors to conclude it is preferable, if materials markets are functioning, to provide cash compensation. Concerns related to providing a contractor-built house as a form of compensation are discussed in detail in Chapter 4, "Reconstruction Approaches." These include:

- it often entails resettlement;
- participation of the household in the project and housing design is less likely;
- housing designs and construction technologies are more likely to be imported, especially if a large number of houses are being built;
- the cost of the house may be high; and
- it is subject to corruption, especially if beneficiaries are not identified before the houses are built.

Experience shows that households sometimes sell a house soon after it is awarded. This is common if the location is considered unsuitable, the value is more than the cost of a house the family could build itself, or there are pressing needs for cash. Some agencies attempt to force the family to remain in the house; however, these requirements can be bypassed by renting or arranging a transaction that is not formally a sale. If the compensation strategy is to provide a fully built house, households should generally be given the liberty to use this wealth as they prefer, as they would with cash.

Compensation is often provided in the form of direct delivery of building materials, especially where markets are not functioning properly or there are significant cost savings from buying materials in bulk. These may be provided to households according to an allocation scheme without a financial exchange, or may be traded for cash or vouchers.

[Reviewers: Please provide information on experiences with the direct distribution of building materials for reconstruction.]

Compensation for landlords and tenants. Most of the issues discussed here apply equally to landlords and owner-occupants, in cases where landlords are given the right to compensation. The complexity with rented properties is balancing the compensation scheme between landlords and tenants. In many countries, renters' rights, like ownership rights, are weak or difficult to prove or enforce. Ideally, the compensation scheme should compensate both landlords and tenants, and reward the landlord for guaranteeing the tenant's return once the property is

reconstructed or repaired. Otherwise, tenants will require compensation adequate to assist them in finding proper substitute housing.

Relationship between reconstruction approach and compensation scheme. Five reconstruction approaches are discussed in Chapter 4, "Reconstruction Approaches." Different compensation schemes are more appropriate than others for each one of them, as shown below.

Reconstruction approach	Description	Appropriate compensation approaches
Cash approach (CA)	Unconditional financial assistance without technical support.	Unconditional cash transfer.
Owner-driven reconstruction (ODR)	Conditional financial assistance with regulations and technical support.	Conditional cash transfer in progress payments. In-kind compensation.
Community-driven approach (CDA)	Agency-led approach with participation of communities in decision making and construction.	In-kind compensation. CFW.
Contractor-driven reconstruction *in-situ* (CRIS)	Agency-led approach. Construction company replaces damaged houses in pre-disaster location. Owner-led CRIS for multi-family reconstruction (landlord).	In-kind compensation. Unconditional cash transfer for rental assistance. Conditional cash transfer and/or credit for multi-family reconstruction.
Contractor-driven reconstruction in relocated site (CRRS)	Agency-led approach. Construction company builds new houses in a new site. Owner-led CRRS for multi-family reconstruction (landlord).	In-kind compensation. Unconditional cash transfer for rental assistance. Conditional cash transfer and/or credit for multi-family reconstruction.

Targeting Recipients of Compensation

The first decision in a cash transfer or any other compensation program is whether to target. The next decision is who to target. (See Chapter 2,"Who Gets a House? Social Dimensions of Housing Reconstruction," for a full discussion on establishing targeting criteria, and Chapter 19,"Mitigating the Risk of Corruption," for mechanisms to prevent fraud.) Local communities, government, and external agencies can help with targeting and qualifying potential recipients, based on targeting criteria. Targeting procedures can be community-based or administrative. Some options for targeting and qualifying recipients are shown below.

Targeting and Qualifying Recipients

Type	Method by which list is established	Possible risks
Community-based targeting	Through established community leaders.	Community leaders may include their own family. Poorest may not always be selected. In some situations, community structures may have broken down. Women might be excluded from the process.
	Through committees specially elected by communities.	Time and resource heavy.

Type	Method by which list is established	Possible risks
	Triangulation of three or more lists of those in need, compiled by groups of, e.g., men, women, elders.	Socially marginalized may be excluded.
	Through a committee elected by the community (based on pre-established criteria).	Interpretation of criteria may vary from location to location. Communities may not feel ownership of the criteria.
	Self-targeting: Individuals or households choose to opt in to the program.	May only benefit those who register first. The housebound, elderly, etc. may not be able to come and register, and therefore risk being excluded.
Administrative targeting	Government structures according to government criteria.	Can lack flexibility for people who move in and out of eligibility criteria. Less room for participatory processes. Lists may be out of date.
	External/administrative criteria.	Verification of list can be challenging in an emergency. Lack of local knowledge and data mean wrong people can be targeted. Communities feel less ownership. Costs can be high with surveys, monitoring. Communities may ignore imposed criteria.

Targeting in urban environments. Targeting in urban environments is frequently more complex than in rural settings, where people tend to know one another. The following are options for improving targeting in urban areas:

- Forming local selection committees composed of religious leaders, respected families, women, and representatives of respected professions (for example, teachers)
- Discussing the program and its eligibility/targeting criteria with as many community groups as possible
- Dividing the urban area into smaller units
- Selecting specifically vulnerable locations (for example, collective centers, refugee camps, or slums) for initial targeting

Establishing Complaint and Grievance Redressal Mechanisms

Complaint mechanisms[3] help to ensure transparency and fairness, and reduce the risk of errors or manipulation in a compensation program. The SDC Cash Workbook says it best: "There is no Cash Project without complaints."[4] As it explains, victims are in a precarious situation, and program criteria related to compensation schemes – no matter how well-defined -- are subject to misinterpretation, creating fertile ground for complaints. This is particularly so when

3. Complaint and grievance redressal are generally considered interchangeable labels for the same process, although some agencies have a sequence of mechanisms, the first of which may be called the complaint process and the second, a grievance process.

4. "SDC Cash Workbook: A practical user's guide for the preparation and implementation of Cash Projects. Egon Rauch and Helmut Scheuer. Mathias Rickli, Editor Swiss Agency for Development & Cooperation (SDC), 2007. http://www.sdc cashprojects.ch/en/Home/SDC_Cash_Workbook/media/Documents/Cash_Workbook/061207_SDC%20Cash%20Workbook%20 FINALVERSION%20SCREEN%20VarLayoutLHP.pdf

compensation amounts are large, such as those related to housing reconstruction. Lessons from experience include the following:[5]

Design requirements. Complaint mechanisms can't be added when complaints arise; they must be designed into any program that provides cash, vouchers or other compensation from the beginning. The characteristics of good complaint program are:

- Staff and beneficiaries understand the complaint mechanism.
- The mechanism is set up early, with well documented procedures, and good recordkeeping of intake and outcomes.
- It is timely in responding, so grievances don't build.
- Processing is confidential, impartial and transparent, so people feel fairly treated.
- Decisions are based on good information, validated locally wherever possible.
- The agency is capable of providing redress for the issues on which complaints are taken and of guaranteeing the safety of staff involved.

Communicating procedures. Complaint procedures should be designed in detail when eligibility criteria and registration procedures are defined, and communicated clearly and repeatedly to beneficiaries. The elements of a good program from the beneficiary standpoint include:

Announcement	The right to complain and procedures for complaints must be explained in detail to beneficiaries.
Complaint intake	The procedure must be clear. Appointments may be advisable. All complaints must be registered in a database regardless of source. A telephone hotline, if used, should include a reliable system to register complaints. Complainants should receive a receipt, ideally a copy of the written record.
Location	A safe place is needed to present complaints and to be interviewed, ideally away from where cash or vouchers are being distributed. However, complainants should not be allowed to congregate at this location.
Enquiry and verification	Each complaint should be verified within a given period, using local information.
Communicating decisions	The complainant should be notified in writing as to whether the complaint has been accepted or dismissed.

Nature of complaints. The matters people will complain about are fairly predictable:

- Exclusion: People neglected or forgotten who should actually be registered.
- False claims: People who know that they are not eligible trying to get money anyway.
- Reinstatement: Eligible beneficiaries deleted from the registration list due to clerical errors.

5. Christian J. Hansen, 2006, *Concept Paper: Complaint Mechanisms* (Copenhagen : Danish Refugee Council).

- Hardship: People who don't strictly meet the criteria asking for inclusion for reasons of hardship. (These persons' names may be either included or held for a later round of compensation, but procedures for exceptions should be transparent and well-documented, and their use recorded.)
- Inclusion: People objecting to presence of certain other people on the beneficiary list.
- Staff or program procedures: People lodging complaints against the program administration, employees or rules, including the compensation amount.

Second hearing. It is often advisable to have a second level appeal mechanism that provides arbitration if the complaint cannot be satisfactorily resolved within the program's complaint system. In the case of an arbitration process:

- The steps and controls in the process should be similar if not identical to the complaint procedure.
- The appeal committee may be composed of a wider range of actors, including representatives from the community or local officials.
- More extensive investigation may be carried out.
- The decision of the grievance committee should be final.

Other feedback mechanisms. Feedback mechanisms should be available at each level where accountability is required; at a minimum: the agency, its staff, and the program. It is important that a mechanism exists to report corruption in the system. There may be a separate system for doing this, or those reports may be accepted through the complaint mechanism and forwarded to the appropriate location. (See Chapter 19, "Mitigating the Risk of Corruption.") Complaint procedures should be evaluated once they have been in operation for a period of time to ensure that the outcomes are fair and acceptable to the community being served. The database of complaints is an important input for this evaluation.

Lending for Post-Disaster Reconstruction

Providing credit for post-disaster reconstruction can be done through the banking system or administered by government. Providing credit is more common in countries with good property insurance systems, where the insurance proceeds provide the bulk of the funds needed for reconstruction and the lender a lesser share. The need for credit is greater for urban reconstruction, since owners of multi-family housing can rarely rebuild without it. Governments with experience providing housing loans for a population similar to the one affected by a disaster are in the best position to provide credit for reconstruction.

Unless potential borrowers' income has not been affected by the disaster, banks should not be pressured to provide credit for reconstruction under conditions that expose them to unacceptable risks, without government guarantees, or other risk reduction strategies.

[Reviewers: Please provide information on where credit has been used successfully in post-disaster reconstruction.]

Importance of Migrant Worker Remittances in Reconstruction

Migrant worker remittances, by diversifying the recipient family's income, play a significant role in helping manage risk within the family's finances.[6] They smooth consumption patterns when work is seasonal and help households absorb unexpected shocks and demands, including those created by natural disasters. Remittances therefore act as a type of insurance that improves a family's ability to respond to crises.

The labor migration that produces remittances is an important part of the context in which disaster reconstruction will take place. Migration varies by season, degree of permanence, and location (such as urban/rural, domestic/regional/international), and it has different demographic characteristics (migration by families, men, or women), all depending on the country and culture. Analyzing household income in post-disaster situations will reveal an affected population's level of dependence on remittances and the extent to which the disaster has affected them.

Aid agencies should avoid discouraging post-disaster migration or penalizing families for whom migration is an economic coping strategy. This may mean permitting cash grants to be used to support and sustain remittances, including returning to jobs abroad or communicating with relatives. Reestablishing the local communications and banking systems through which remittances flow should be a priority in recovery.

Assistance schemes and reconstruction approaches should reflect the fact that people will want to blend the compensation resources with remittances and other household resources in reconstruction and in productive activities. Cash-based support generally provides greater flexibility and choice.

Unique characteristics of households that receive remittances. Remittance households may appear wealthier than other households, but they too will need immediate post-disaster assistance if the loss of communications and finance infrastructure disrupts remittance flows. Therefore, pre-disaster remittance receipt should not be grounds for exclusion from immediate assistance. Households that receive remittances have unique characteristics as well that the reconstruction strategy should take into consideration. For instance, based on experience from the 2005 north Pakistan earthquake, these families tend to have the following traits:

- Better able to access relief resources because they have the funds to travel to aid distribution points
- Able to mobilize more of their own resources for reconstruction since remittances are likely to increase significantly in the year following the disaster
- Can make expenditures that have important secondary effects as they share remittances with extended family and neighbors, and spend locally
- Have less vulnerable homes if past remittances were used to upgrade housing
- May need government assistance to ensure that migrant-worker family members who return temporarily to help out can re-emigrate once their families are secure

6. Abid Qaiyum Suleri and Kevin Savage, 2006, *Remittances in Crises: A Case Study from Pakistan* (HPG Background Paper, London: Overseas Development Institute), http://www.odi.org.uk/hpg/papers/BGPaper_RemittancesPakistan.pdf; and Kevin Savage and Paul Harvey, eds., 2007, *Remittances during Crises: Implications for Humanitarian Response* (HPG Report 25, London: Overseas Development Institute), http://www.odi.org.uk/hpg/papers/hpgreport25.pdf.

Role of the diaspora community in reconstruction. Assistance for entire communities is often financed by collective remittance programs, organized by the diverse set of diaspora groups sometimes known as hometown associations (HTAs).[7] (See the "Case Studies" section of this chapter.) As Indonesia did in 2006, governments may take actions to facilitate the entry of remittances following a disaster.[8]

Preserving Microfinance in Post-Disaster Situations

The survival of MFIs will be essential for reactivating the local economy because these institutions are often the principal source of credit for low-income, disaster-affected households.[9] After analyzing post-tsunami evidence, the Banking With the Poor Network concluded that microfinance not only provides capital for the development of clients' microenterprises, it can also assist clients in preparing those businesses for the impact of disasters.[10]

The survival of MFIs may also help accelerate reconstruction, which, in turn, supports livelihoods, since the base of operations for microenterprises is frequently the home. Some recommended guidelines for MFIs that funding agencies should also keep in mind include the following.

Provide appropriate services. MFIs should adjust services to a client's circumstances, since some clients will be more severely affected by a disaster than others.

Do not overextend. MFIs should avoid activities beyond their capacity and mission. Unless by operating through partnerships with banks or other MFIs, an MFI may not be able to provide medium-term loans to rebuild assets.

Limit relief activities. An MFI's participation in relief efforts should usually be limited to locating clients, linking clients to relief, and transporting people to where they can receive services. MFIs should avoid subsidizing interest rates or providing other forms of economic relief, since these activities may send mixed messages to clients and damage the credit culture.

Adjust requirements. MFIs may need to lift compulsory savings requirements until clients have begun reconstruction, to ensure that clients have cash to cope with the crisis.

Reschedule loans. Rescheduling loans preserves a client's cash flow and, ultimately, helps MFIs avoid losses through defaults. Less established MFIs may need to strictly supervise their clients to ensure loan repayment.

Finance reconstruction. MFIs might need to wait until an emergency is over and MFI staff can assess clients' property damage and credit standing before making reconstruction loans. Loans for purposes that don't generate cash income must be monitored carefully. Funders should not pressure MFIs with reconstruction lending targets.

7. Also called township associations and *organisations de solidarité international issues de l'immigation* (OSIMs), among other names.
8. Kevin Savage and Paul Harvey, eds., 2007, *Remittances during Crises: Implications for Humanitarian Response*, HPG Report 25 (London: Overseas Development Institute), http://www.odi.org.uk/hpg/papers/hpgreport25.pdf.
9. Consultative Group to Assist the Poor (CGAP), no date, *Sustaining Microfinance in Post-Disaster Asia: Guidance for MFIs and Donors* (Washington, DC: CGAP), http://www.cgap.org/p/site/c/template.rc/1.26.1882#key. Also, a range of research on the topic of microfinance and disasters by the Banking With the Poor Network can be found at http://www.bwtp.org/arcm/mfdm/index.html.
10. Foundation for Development Capacity, 2007, *Capacity Building for Microfinance in Post-Tsunami Reconstruction, Summary Report* (Brisbane: FDC), http://www.bwtp.org/arcm/mfdm/Capacity_Building_Brief_Report.pdf.

Enter new areas cautiously. MFIs entering previously unserved areas to provide emergency financial assistance may find that clients view the organization as a relief agency or donor program. Being explicit with clients about the organization's mission is essential.

Manage claims with care. Insurance claims should be processed quickly to give clients access to emergency cash, while screening out false claims that undermine the sustainability of the micro-insurance program. If disbursement delays are expected or experienced, emergency loans can be provided against approved claims.

Relation to Existing Public Policy

Few governments have policies in place to address post-disaster housing or household compensation. If something similar exists—for instance, a policy for compensation in cases of eminent domain—it will probably have to be adjusted to the particularities of the emergency at hand. There may be social transfer programs in operation (such as welfare or housing subsidies) that have relevance for setting renters' compensation, and such programs may have pre-existing census data that can facilitate the determination of eligibility. Or they may have administrative systems in place that can be adapted to support the delivery of compensation. If other subsidy programs are already operating, public agencies should calibrate the level of assistance and qualification rules so the housing assistance program is seen as fair and consistent with existing public policies.

Countries in which MFIs are prevalent may have a government financial or social sector agency supporting their operations that can assist if an MFI needs technical or financial support. If the legal framework for MFIs includes capital requirements, care should be taken to ensure these are not breached in assisting the affected clientele.

Recommendations

1. Consider the restoration of household finances a pillar of reconstruction strategy. Without it, reconstruction efforts may collapse when outside compensation disappears.
2. Take advantage of the reconstruction process to provide livelihood opportunities. Seek the advice of experts in developing a comprehensive livelihood program.
3. Understand that remittance flows may equal official aid in amounts. Facilitate their arrival in both family and collective forms.
4. View microfinance institutions as mechanisms that can aid reconstruction, but don't press them into activities that undermine their long-term survival.
5. Realize that the community may know best who needs assistance and can help in reviewing compensation criteria and identifying eligible households.
6. Design the compensation system so that it corresponds to the reconstruction approach.
7. Strongly consider providing cash compensation to households for reconstruction, especially if the production chain and materials markets are functioning.
8. Provide the necessary oversight to ensure that proper reconstruction takes place with conditional cash programs.
9. Create a delivery system for cash that is both accessible and secure for those delivering it and receiving it, including special measures for those unable to travel.
10. Adapt the compensation system to the needs of owners, landlords, and tenants.

Case Studies

2004 Indian Ocean Tsunami in Sri Lanka

Addressing Post-Disaster Price Increases

After the 2004 Indian Ocean tsunami in Sri Lanka, several governments and agencies developed cash responses to permanent housing. The Sri Lanka government provided a cash grant to fund a self-build program: $2,500 for a new house and $1,000 for repairs to a damaged house. For full rebuilding, grants were released in four installments over six months. As repairs to the foundations, walls, roof, and windows of damaged houses were completed, the money was released in two installments of $500 over six months. The value set by the government proved to be inadequate; demand had increased the price for construction materials, skilled labor, and land by at least three times their original costs. As a result, NGOs provided additional support, either through top-up payments or in-kind assistance, so people could complete construction.

Source: Lesley Adams and Paul Harvey, 2006, Cash and Shelter, Learning from Cash Responses to the Tsunami, Issue Paper 4 (London: Humanitarian Policy Group), http://www.odi.org.uk/hpg/Cash_vouchers_tsunani.html.

2004 Indian Ocean Tsunami in Sri Lanka

Role of Diaspora Financing

The worldwide diaspora of Sri Lankans working abroad played a significant role in the relief effort. In the eight months following the disaster, the influx of remittances jumped to $1.23 billion from $1.02 billion in the corresponding period in 2004. Most foreign remittances came from Sri Lankans living outside the country. The total net amount of private remittances grew by 28.6 percent, from $1.35 billion in 2004 to $1.736 billion in 2005, according to the Central Bank of Sri Lanka. The actual amount was likely higher, since many international migrants do not use a fixed method for remitting their earnings. (Such transactions would normally involve smaller amounts.) In addition to individual remittances, many Sri Lankans living abroad collected funds and basic materials for the relief effort. The Tamil Rehabilitation Organisation (TRO) set up committees in 10 countries: Australia, Denmark, France, Germany, Holland, Italy, Norway, Sweden, Switzerland, and the United Kingdom. In Canada alone, the TRO raised more than $900,000 in just one month.

Source: Will Somerville, Jamie Durana, and Aaron Matteo Terrazas, 2008, Hometown Associations: An Untapped Resource for Immigrant Integration?, MPI Insight (Washington, DC: Migration Policy Institute), http://www.migrationpolicy.org/pubs/Insight-HTAs-July08.pdf .

[Reviewers: Please provide case studies on good and bad practices on managing social protection and compensation schemes and supporting household finances in housing reconstruction.]

Resources

Banking With the Poor. *Microfinance and Disaster Management*. Banking With the Poor Network. http://www.bwtp.org/arcm/mfdm/index.html.

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Chapter 19
Mitigating the Risk of Corruption

Introduction

Governance is the sum total of the traditions and institutions by which authority in a country is exercised for the common good. In countries with "good governance," citizens respect the government because it does a good job selecting and overseeing those in authority and manages resources effectively. However, during disaster recovery, those same citizens are prone to believe, rightly or wrongly, that resources are not being managed well and that corruption is rampant.

While construction projects are magnets for corruption, they are not the only source. This chapter examines where corruption is found in recovery and reconstruction, particularly in public procurement, and discusses approaches to reduce it. Part 3 of the handbook provides specific information on the World Bank's procurement requirements.

Guiding Principles

- The larger the cost and the faster the pace of reconstruction, the more opportunities there are for corruption.
- Fragmented aid procedures increase the risk of corruption.
- Executing agencies without procurement experience create corruption vulnerabilities.
- Corruption risks are found not only in procurement but also throughout the reconstruction process.
- Disaster-affected communities, corruption's ultimate victims, can play a key role in combating it.
- Tracking reconstruction inflows and outflows, while important, is not the same as managing procurement.
- Measures to reduce corruption in post-disaster reconstruction can be successfully introduced even if the country's overall integrity system was previously weak.

Risks and Challenges

1. Bypassing sound procurement practices to speed up reconstruction.
2. Slowing procurement processes to eliminate all possibility of corruption.
3. Executing agencies with no knowledge of prices and other local market characteristics.
4. Making integrity pacts optional for private firms bidding for and participating in post-disaster reconstruction.
5. Not following through on the threat to sanction violators of anticorruption measures.
6. Hiring staff members whom other organizations fired for corrupt practices.
7. Failing to train government and other executing agency employees in preventing and reporting corrupt practices.
8. Not protecting the confidentiality of whistleblowers reporting corruption.

Technical Issues

Where Corruption Can Occur in Reconstruction

Corruption is the misuse of an entrusted position for private gain, by employing bribery, extortion, fraud, deception, collusion, and money laundering. TI states that private gain should be interpreted broadly to include gains accruing to a person's family members, political party, or institutions in which the person has an interest.[1] The World Bank's procurement guidelines define corruption and fraud in terms of corrupt, fraudulent, collusive, coercive, and obstructive practices.[2] These activities are criminal offenses in most countries although the precise definition of the offense may differ.

A disaster creates fertile conditions for corruption, waste, and mismanagement. These conditions include large quantities of aid inflows and goods being procured; pressure to spend quickly; institutions with differing administrative procedures; agencies unfamiliar with contracting large projects; competition among aid agencies; poor staff communication, screening, or training; weak administration and oversight systems; and the economic desperation of the affected population. A wide range of actors can perpetrate corruption, including government officials; aid agency staff and officials; citizens, including the affected population and their representatives; contractors; and vendors.

HOW TO DO IT
Corruption Risk Assessment

The handbook will include specific instructions on how to organize and carry out a corruption risk assessment for post-disaster reconstruction.

Post-disaster construction projects are especially prone to corruption because of their complex contractual structures, organization in phases, and scale and complexity. There are also difficulties in specifying the work *ex ante* and nontransparent practices in the construction industry, and there may be limited government capacity to oversee numerous large-scale projects. Not all corruption, however, is related to procurement. For instance, deceptively attempting to qualify for post-disaster compensation is fraud. At the same time, not all appearances of corruption are, in fact, corruption. Some examples of questionable activities that may—or may not—entail corruption are listed in the following table.

Questionable or Corrupt Practices

Activity	Questionable or corrupt activities
Assessment	Overstating the extent of damage and needs by providing falsified data to assessors. Damaging property to give the false impression that it is disaster-affected. Homeowners or local officials influencing those conducting the assessment. Assessor recommends projects in which he or she has a personal interest.

1. Kenneth Kostyo, ed., 2006, *Handbook for Curbing Corruption in Public Procurement: Experiences from Indonesia, Malaysia and Pakistan* (Berlin: Transparency International), http://www.transparency.org/publications/publications/other/procurement_handbook.
2. World Bank, 2006, Section 1.14, *Guidelines: Procurement under IBRD Loans and IDA Credits* (Washington, DC: World Bank, May 2004 [rev. October 2006]), http://go.worldbank.org/RPHUY0RFI0.

Activity	Questionable or corrupt activities
Planning and pre-bidding	Unaffected population claim eligibility for compensation. Affected people claim additional compensation (extra house) using false information. Reconstruction projects are unnecessary, overdimensioned, or not based on the reconstruction procurement plan. Inflated cost estimates, including for land purchases. Information leaked to a private owner or buyer about land needed for a public project. Projects approved without proper permits or designs. Projects prepared for bidding without comment by the public or responsible local officials. Projects specifications defined to limit the number of bidders. Deviation from standard bidding documents. Direct contracting of bids without proper justification. Restricted advertising; insufficient notice; inadequate time for preparing bids. Advance release of bid information to one bidder. Bids accepted after the submission deadline.
Awarding and project implementation	Bid evaluation committee has conflicts of interest with bidders. Evaluation criteria are amended after receipt of bids. Competing bids presented by same company. Government allows bid evaluation report to be revised or reissued. Government imposes subcontracting requirements on prime contractor. Staff members involved in contract award become involved in contract supervision. Contract variations and change orders approved without proper verification. Workmanship not up to specifications. Materials and equipment used are not as specified; paperwork is not consistent with items delivered. Project inspectors are coerced to approve progress payments or certify conformance with building permits. Inaccurate as-built drawings presented or accepted.
Monitoring	Staff responsible for oversight have conflicts of interest. Control systems are inadequate, unreliable, or inconsistently applied. No follow-up to indications, suspicion, or accusations of corruption. Lack of confidentiality on accusations of corruption. Delayed or superficial audit; delayed publication of the audit report. Failure to disqualify companies impugned in audit reports.

Characteristics of Transparent Procurement Processes

The principal hallmarks of proficient public procurement are the economy, efficiency, fairness, transparency, accountability, and application of ethical standards.[3] Controls and sound, standardized procedures are the first line of defense against corruption in procurement. TI promotes minimum standards for public contracting. These include the following.

3. Kenneth Kostyo, ed., 2006, Handbook for Curbing Corruption in Public Procurement: Experiences from Indonesia, Malaysia and Pakistan (Berlin: Transparency International).

- A code of conduct is in force that commits the contracting authority and its employees to a strict anticorruption policy.[4]
- Only companies that enforce a strict anticorruption policy are allowed to tender.
- A blacklist is maintained that bars companies from tendering for a specified period of time.
- Public contracts above a low threshold are open to competitive bidding, with limited, clearly justified exceptions.
- All procurement information, including direct contracting or limited bidding processes, is made public; only legally protected information is kept confidential.
- No bidder is given access to privileged information related to the contracting or selection process.
- Bidders are allowed sufficient time for bid preparation and to prequalify.
- Sufficient time is allowed to give an aggrieved competitor the opportunity to challenge the award.
- Contract change orders beyond a cumulative threshold (for example, 15 percent of contract value) are monitored at a high level, preferably by the body that awarded the contract.
- Control and auditing bodies are independent and functioning effectively; their reports are publicly accessible.
- Key functions of a project—demand assessment, preparation, selection, contracting, supervision, and control—are kept separate.
- Safeguards, such as use of committees and staff rotation, are applied, and staff members responsible for procurement are adequately trained and remunerated.
- Civil society is allowed to participate as independent monitors of both the tender and execution of projects.

HOW TO DO IT
Public Procurement Assessment

The handbook will include specific instructions on how to organize and carry out a public procurement assessment for post-disaster reconstruction.

Assessing the Risk of Corruption

An assessment may be necessary to evaluate whether the controls and procedures in place are adequate and which, if any, additional anticorruption measures should be employed. Two sources of information are the public expenditure and financial accountability (PEFA) framework and corruption risk assessments.

Public expenditure and financial accountability. The public expenditure and financial accountability (PEFA) framework identifies weaknesses in public financial management, including procurement, and uses performance indicators to identify areas for reform and to monitor improvements.[5] (See Chapter 12, "Managing the Financial Aspects of Reconstruction.") The World Bank or other organizations may have conducted a PEFA or similar analysis. If not, a rapid assessment of country systems may be necessary, with special emphasis on procurement capacity.

4. United Nations Office on Drugs and Crime, 2004, "Case Study #8, UN Model Code of Conduct for Public Servants," *The Global Programme Against Corruption: UN Anti-Corruption Toolkit,* 3rd ed. (Vienna: UNODC), http://www.unodc.org/documents/corruption/publications_toolkit_sep04.pdf.
5. World Bank *Financial Management,* http://go.worldbank.org/0HI4LODL60.

Corruption risk assessments. There are no definitive post-disaster governance or corruption risk assessment methodologies for development projects. However, the following are some worthwhile resources:

- The UN's *Anti-Corruption Toolkit,* "Tool #2: Assessment of Institutional Capabilities and Responses to Corruption"[6]
- The Corruption Risk Assessment Questions table developed by MANGO for TI and the U4 Anti-Corruption Resource Centre.[7]
- A list of risk assessment tools has been compiled by the U4 Anti-Corruption Resource Centre on their Web site.[8]

Tools for Mitigating Corruption

Integrity pacts. The Integrity Pact (IP) is promoted by TI as a useful tool for fighting corruption in public contracting.[9] It consists of an agreement between government and bidders for public contracts that neither side will pay, offer, demand, or accept bribes. Nor will they collude with competitors in obtaining or carrying out the contract. It requires bidders to disclose all expenses paid in connection with the contract and to agree to be sanctioned if there are violations. Sanctions can include loss of the contract, forfeiture of the company's performance bond, damage liability, blacklisting, and criminal or disciplinary action against government employees.

IPs cover all phases of a project, from planning to operation, and can be used for any kind of reconstruction contract. IPs enable companies to abstain from bribing by assuring them that their competitors will do the same, and that government and its officials will take the necessary precautions to prevent corruption. IPs reduce the costs of corruption in public procurement, strengthen trust in the public sector and its procurement activities, and improve the overall investment climate.

In addition, IPs are flexible and adaptable to many legal settings, with conflict resolution and sanction imposition generally handled through arbitration mechanisms rather than the judicial system. Independent monitoring of the pacts is required and can be carried out by a civil society organization (CSO) or other independent and accountable entity. Although IPs should be mandatory in reconstruction, not all governments require them.

Audits. Audits make corruption riskier and more difficult by determining and exposing whether project financial flows were handled in accordance with laws, regulations, contracts (such as loan contracts), and accounting rules. They examine the efficiency (measured against accepted financial procedures and practices) and the effectiveness (compared to the agreed-upon purposes) of the use of project funds. They may also point out weaknesses in administrative structures and controls, identify malfeasance, provide the basis for referring problems to law enforcement or disciplinary authorities, and establish a baseline for monitoring reforms. (See

6. United Nations Office on Drugs and Crime, 2004, "Tool #2: Assessment of Institutional Capabilities and Responses to Corruption," *The Global Programme Against Corruption: UN Anti-Corruption Toolkit,* 3rd ed. (Vienna: UNODC), http://www.unodc.org/documents/corruption/publications_toolkit_sep04.pdf.
7. Pete Ewins, Paul Harvey, Kevin Savage, and Alex Jacobs, 2006, *Mapping the Risks of Corruption in Humanitarian Action* (London: Overseas Development Institute and Management Accounting for NGOs [MANGO]).
8. U4 Anti-Corruption Resource Centre. http://www.u4.no/helpdesk/helpdesk/queries/query85.cfm#1.
9. Transparency International, 2009, "Integrity Pacts," *Global Priorities: Public Contracting,* http://www.transparency.org/global_priorities/public_contracting/integrity_pacts.

Chapter 15, "Monitoring and Evaluation," for a comparison of monitoring, evaluation, and auditing.)

Audits work primarily through transparency. Some auditors can act on their own findings, but they are usually restricted to investigation, reporting, making recommendations, and referring findings to another body for action. Auditors generally report to a body inside the organization, but outside of management, such as a board of directors or the legislature. However, a large measure of the auditor's power resides in the fact that audit reports, especially in the public sector, are generally made public.

Auditing requirements, though different among governments and agencies, should always be carried out by an entity independent from the organization under audit.[10] Audits vary in scope, subject matter, and the degree of the auditor's power and independence, as well as with respect to what is done with results. Specific types of audits include the following.

Pre-audit/post-audit. Audits of specific activities, such as public procurement, can be carried out before and/or after the activity itself takes place. A forensic audit is a form of post-audit in which evidence is gathered specifically for investigation and prosecution of criminal acts.

Concurrent or simultaneous audit. A type of *ex-post* audit that avoids the delays inherent in pre-audits, while drastically reducing the time between the activity and the post-audit.

Internal/external audits. Audits may be carried out by specialized internal units of government or a company, fully independent government institutions, or private contractors.

Nonpublic audits. Even if protected by government, official secrets, such as national security matters or sensitive commercial information, should not be exempt from auditing.

HOW TO DO IT
Reconstruction Program Audits

The handbook will include specific instructions on how to contract and supervise the common types of audits used in reconstruction programs.

The World Bank regularly conducts audits to review the procurement, contracting, and implementation processes in Bank-financed projects. These audits verify that procurement and contracting were carried out according to the loan agreement and achieved the expected economy and efficiency, evaluate the Bank's oversight of the project, and identify ways to improve procurement and contracting.[11]

Special audit authorities. The volume and speed of disaster procurement or questions about the auditing capacity of government may make a special audit entity necessary. This may be an operational unit auditing concurrently or a higher-level body that oversees the budgeting, procurement, and auditing processes. If government procedures already contemplate such a mechanism, it should be mobilized. If not, procedures should be established so it can be created

10. United Nations Office on Drugs and Crime, 2004, *The Global Programme Against Corruption: UN Anti-Corruption Toolkit*, 3rd ed. (Vienna: UNODC), http://www.unodc.org/documents/corruption/publications_toolkit_sep04.pdf.
11. World Bank, 2001, *Bank-Financed Procurement Manual*, Procurement Policy and Services Group, Operations Policy and Country Services VPU, http://siteresources.worldbank.org/PROCUREMENT/Resources/pm7-3-01.pdf.

and staffed with either private auditors or trained auditors from within the public sector. The United Nations suggests that such an entity be composed of a combination of national and international experts.[12] The design and staffing process must ensure the independence of the entity, the avoidance of conflicts of interest for those working within it, and the transparency of its operations. A national public accountants association may be able to advise on design and start-up.

Complaint mechanisms. Complaint mechanisms allow corruption to be reported by social actors, including public employees, in a confidential manner. (Grievance processes related to compensation schemes are a special use of complaint mechanisms. For a discussion of grievance redressal, see Chapter 18, "Social Protection and Household Finances.") Ideally, complaint mechanisms are formalized in a larger "integrity system," but they can also be employed on a situational basis during post-disaster recovery. Described below are just a few of the potential instruments available.

Whistleblower laws. In establishing laws or other legal instruments to protect whistleblowers, a balance should be sought between protection of the whistleblower and accountability of the whistleblower, to minimize fraudulent complaints.

Telephone hotlines. A hotline should be introduced as part of a larger strategy; it should be well publicized. It must be staffed by trained operators and have a secure phone line, and the conversation must treat the information collected systematically and with confidentiality.

Civil society monitoring. CSOs can provide advice and counsel to whistleblowers. The same rules of confidentially and accountability apply. (See Chapter 11, "Effective Partnerships and Donor Coordination," for information on how government can work effectively with these institutions.)

Ombudsmen. Ombudsmen receive and consider a wide range of complaints that fall outside the jurisdiction of courts or administrative bodies. Their specific roles depend on whether other similar official bodies exist and how effective they are. Ombudsmen require a clear and relatively broad mandate, independence, public accessibility, transparency, integrity, and sufficient resources to carry out their duties. They can provide the following services:

- Investigate relatively minor complaints while avoiding expensive legal proceedings
- Provide remedies in certain cases
- Serve as a clearinghouse, referring complaints to a more appropriate forum for further action
- Educate government staff about standards of conduct, raise questions about the appropriateness of established codes or service standards, and recommend adjustments
- Raise awareness about the public's rights to information and the level of efficient and honest public services they should expect
- Conduct proactive research regarding complaints and complaint patterns

Redundancy of complaint mechanisms. Whistleblowers should always have at least two complaint mechanisms available to them: the first, an entity within the "offending" organization, such as a supervisor or internal oversight body, and the second, to provide backup if the first

12. United Nations Office on Drugs and Crime, 2004, "Tool #14: Authority to Monitor Public Sector Contracts," *The Global Programme Against Corruption, UN Anti-Corruption Toolkit*, 3rd ed. (Vienna: UNODC), http://www.unodc.org/documents/corruption/publications_toolkit_sep04.pdf.

body fails to investigate, complete the investigation, take appropriate action, or report back in a timely fashion. Within the public sector, the first may be the general auditor, for example. The second mechanism also provides the whistleblower protection against retribution or a cover-up.

[Reviewers: Please provide information on the use of social audits or other community-based anti-corruption mechanisms in reconstruction.]

Relationship to Existing Public Policy

The majority of the concepts and tools discussed in this chapter are best implemented through specific laws and policy initiatives, such as anticorruption strategies or integrity systems. There are also a number of international conventions and agreements that address governance and the fight against corruption in public procurement, two of which mentioned below.[13]

United Nations Convention Against Corruption

The United Nations Convention Against Corruption (UNCAC), adopted by the General Assembly in October 2003 and entered into force two years later, is the first legally binding, international anticorruption instrument.[14] The UNODC Global Programme against Corruption helps countries implement the convention's provision. A Conference of the States Parties was established to review implementation and facilitate activities required by the convention.

OECD Framework for Action

In 2005, representatives of the six Indian Ocean tsunami-affected countries, along with donor organizations and civil society, met to discuss the risks of misuse of the tsunami aid funds. They agreed on a framework for action to counter corruption in all disaster-related relief and reconstruction efforts.[15] This framework encourages organizations to work collaboratively to ensure that aid is effectively channeled to affected communities and not tainted by corruption. The elements of the framework address country ownership, community participation, access to information, transparency of aid flows, monitoring and evaluation, complaint mechanisms, mutual accountability among donors, and needs for capacity building to mitigate the risks of corruption.

Recommendations

1. Take a proactive approach to minimize corruption in reconstruction projects by assessing corruption risks even while the project is still being designed.
2. Recognize that corruption can be perpetrated by any stakeholder in the reconstruction program if given the opportunity. Think creatively when identifying where opportunities for corruption may exist.

13. Transparency International, "Introduction," *TI Anti-Corruption Handbook: National Integrity System in Practice,* http://www.transparency.org/policy_research/ach/introduction.
14. United Nations Office on Drugs and Crime, *United Nations Convention Against Corruption,* http://www.unodc.org/unodc/en/treaties/CAC/index.html.
15. ADB/OECD Anti-Corruption Initiative for Asia and the Pacific, 2005, "Meeting Conclusions and Framework for Action" (proceedings from the Expert Meeting on Corruption Prevention in Tsunami Relief, Jakarta, April 7–8), http://www.adb.org/documents/events/2005/Tsunami-Relief/default.asp#purpose.

3. Some anti-corruption mechanisms can be implemented on an ad-hoc basis, even if a comprehensive governance strategy is not in place. However, advocate for a systematic approach to establish credibility with civil society.
4. Establish systems that ensure confidentiality for whistle-blowers.
5. Don't assume public officials know what corruption is, or that they shouldn't do it.
6. Look for ways to involve social actors in the anti-corruption campaign.
7. Funding sources should work to establish common transparency standards. They should require, whether individually or collectively, that the use of their funds be widely disclosed to the public.
8. Use audits as an anti-corruption mechanism that can be tailored to the requirements of specific programs.

Case Studies

2005 Hurricanes Katrina and Rita

U.S. GAO Uncovers Extensive Fraud in Post-Katrina Audit

In December 2005, the General Accountability Office (GAO), the investigative arm of the U.S. Congress, began an audit of the process used by the Federal Emergency Management Agency (FEMA) for registering the people affected by the 2005 Hurricanes Katrina and Rita and providing them with "expedited assistance" (EA) payments. Using both Internet and telephone registration systems, FEMA registered 2.5 million households in the three months following the disaster, 60 percent of them by telephone. By December 2005, FEMA had disbursed $2.3 billion (officially at $2,000 per household). (Those eligible for EA were also potentially eligible for further assistance of up to $26,200.) GAO identified significant flaws in procedures for preventing, detecting, and deterring fraud, including limited controls to verify the identity and residence of those registering. As a result, registrants using bogus Social Security identification numbers and property addresses were able to register, some multiple times, and were not screened out of the registration lists. FEMA's lack of controls also meant that many legitimately registered recipients erroneously received multiple payments. FEMA later estimated that as many as 900,000 of the 2.5 million people registered were duplicates. Using data-mining techniques, GAO projected in 2006 that as much as $1.5 billion of FEMA's EA payments were fraudulent.

Source: U.S. General Accountability Office, 2006, Hurricanes Katrina and Rita Disaster Relief: Improper and Potentially Fraudulent Individual Assistance Payments Estimated to Be Between $600 Million and $1.4 Billion (Washington, DC: GAO), http://www.gao.gov/new.items/d06844t.pdf.

2004 Indian Ocean Tsunami in Malaysia

Preventing Corruption through Existing Systems in Malaysia

Since its founding in the 1960s, Malaysia has had a history of fighting corruption. An independent Anti-Corruption Agency (ACA) was established in 1961 to enforce the Prevention of Corruption Act (http://www.bpr.gov.my/English/mainact.htm). The ACA has branches in each of the 14 states, and sub-branches throughout the country. In 1998, Integrity Management Committees (IMCs) were established in all its federal and state agencies. Therefore, when the tsunami struck the states of Penang, Perlis, Kedah, and Perak on December 26, 2004, a solid framework for corruption prevention was already in place. The National Disaster Aid Fund was set up to manage the RM89,673,280.74 for disaster relief, and the ACA Penang took action to head off the corruption threat. The national Practices, Systems and Procedure Examination Unit,

deployed to analyze procedures in the disbursing and executing agencies, determined that the measures already in place were adequate. The compensation process began with a police report detailing each affected person's loss and property damage. Three separate state committees, each with elected and local community representatives, then reviewed these reports, as did other government entities before they were sent to the National Disaster Aid Fund Management Committee for approval. Other anticorruption measures included announcing compensation amounts for victims in the media, publicly displaying information on the compensation at the time of disbursement, and requiring that the government official and the recipient sign a form that warned of consequences of false claims and false information. Fewer than fifteen complaints were received from the four affected states.

Source: Abu Kassim Bin Mohamad, 2005, Effective Anti-Corruption Enforcement and Complaint-Handling Mechanisms: The Malaysian Experience (proceedings of the Jakarta Expert, Meeting Curbing Corruption in Tsunami Relief Operations, Jakarta, April 7–8), http://www.u4.no/document/literature/adb-ti-2005-curbing-corruption-tsunami-relief-operations.pdf.

[Reviewers: Please provide case studies on effective and ineffective approaches to mitigating corruption risk in housing reconstruction.]

Resources

ADB/OECD Anti-Corruption Initiative for Asia and the Pacific. 2005. Expert Meeting on Corruption Prevention in Tsunami Relief. "Meeting Conclusions and Framework for Action." Jakarta. http://www.adb.org/documents/events/2005/Tsunami-Relief/default.asp#purpose.

Kostyo, Kenneth, ed. 2006. *Handbook for Curbing Corruption in Public Procurement*. Berlin: Transparency International. http://www.transparency.org/publications/publications/other/procurement_handbook.

Stansbury, Catherine, and Neill Stansbury. 2008. *Anti-Corruption Training Manual (Infrastructure, Construction and Engineering Sectors),* international version. Global Infrastructure Anti-Corruption Center (UK)/Transparency International. http://www.transparency.org/tools/contracting/construction_projects.

Transparency International. 2009. "Contracting: Preventing Corruption on Construction Projects." *Tools.* http://www.transparency.org/tools/contracting/construction_projects.

Transparency International. 2009. "Public Contracting: The Integrity Pacts." *Global Priorities.* http://www.transparency.org/global_priorities/public_contracting/integrity_pacts.

United Nations Office on Drugs and Crime. 2004. *The Global Programme Against Corruption: UN Anti-Corruption Toolkit,* 3rd ed. (Vienna: UNODC). http://www.unodc.org/documents/corruption/publications_toolkit_sep04.pdf.

World Bank. Governance & Anti-Corruption Web site and related resources. http://www.worldbank.org/wbi/governance.

World Bank. 2004. *Guidelines: Procurement under IBRD Loans and IDA Credits,* rev. 2006. Washington: DC: World Bank. http://go.worldbank.org/RPHUY0RFI0.

Chapter 20
Training Requirements in Reconstruction

[Reviewers: This chapter is still in development. Please provide input on issues that should be covered and examples of how training programs have been used effectively in post-disaster reconstruction.]

HOW TO DO IT
Training Plan

The handbook will include specific instructions on how to design a training program for post-disaster reconstruction.

PART 3
INFORMATION FOR WORLD BANK STAFF

Chapter 21
World Bank Response to Crises and Emergencies

BACKGROUND

In 2007, the World Bank Executive Directors approved a new policy on emergency lending set out in OP/BP 8.00, Rapid Response to Crises and Emergencies (replacing the previous policy OP/BP 8.50, Emergency Recovery Assistance). OP/BP 8.00 attempts to align the Bank's outdated prior emergency policy with its evolving role in responding to crises and emergencies, and to improve the speed, effectiveness and impact of the Bank's support to emergency recovery efforts.

The key policy features introduced in OP 8.00 include:

i) a broader definition of an "emergency" that allows the Bank to address the economic and social impacts resulting from an actual, or imminent, natural or man-made crises or disaster;
ii) application to a broader set of objectives, including support to the preservation of human, institutional, and social capital and facilitation of peace building;
iii) emphasis on coordination with development partners in the delivery of integrated response efforts; and
iv) a call for a more strategic approach to disaster management and crisis prevention.

Under the Policy, the Bank may provide a rapid response to a borrower's request for urgent assistance to address an event that has caused, or is likely to imminently cause, a major adverse economic and/or social impact associated with natural or man-made crises or disasters.

FORMS OF BANK RAPID RESPONSE

OP 8.00 is premised on principles that include: the need to focus Bank assistance on its core development and economic competencies while remaining within its mandate, establishment of appropriate partnership arrangements with other development partners, including the UN, and adoption of adequate oversight arrangements.

Objectives. The Bank may provide rapid response in support of one or more of the following objectives:

a) rebuilding and restoring physical assets;
b) restoring the means of production and economic activities;
c) preserving or restoring essential services;
d) establishing and/or preserving human, institutional, and/or social capital, including economic reintegration of vulnerable groups;
e) facilitating peace building;
f) assisting with the crucial initial stages of building capacity for longer-term reconstruction, disaster management, and risk reduction; and
g) supporting measures to mitigate or avert the potential effects of imminent emergencies or future emergencies or crises in countries at high risk.

Selection of Instruments. The assistance strategy is developed by the CD in consultation with borrower, may include one or more of the following:[1]

a) non-lending support such as
   i) provision of assistance for damage/needs assessment, and other technical assistance;
   ii) mobilization of donor assistance including establishment of multi-donor trust funds; and
   iii) accessing grants from the Bank's programmatic post-conflict, LICUS and other trust funds.
b) lending/financial support through a combination of
   i) new lending via an Emergency Recovery Loan (ERL) or credit (ERC);
   ii) restructuring, or reallocation within existing projects with or without additional financing, including provision of additional financing for such activities under OP/BP13.20, Additional Financing for Investment Lending;
   iii) redesigning investment projects not yet approved to include recovery activities; and
   iv) supplemental development policy loans or credits;
   v) contingent emergency loan to countries at high risk of natural disasters (see paragraph 13 of the Policy; and
   vi) transfers from the surplus, in exceptional cases.

The form and scope of the response can be adapted to the emergency's particular circumstances, taking into account the Bank's assistance strategy for the country. The country lending program may be adjusted to accommodate emergency operations, normally within the country's general lending allocation, taking credit risk and IDA lending policies into account.

Recipient. The Bank's assistance should be focused in its core development and economic competencies, and may include:

a) assistance to borrower agencies and institutions involved in the emergency recovery effort; and/or
b) support, in partnership with other donors, of an integrated emergency recovery program that includes activities outside the Bank's traditional areas, such as relief, security, and specialized peace-building. The Bank recognizes the lead of other international institutions, in particular the UN, in such activities, and forms partnership arrangements with other donors for the preparation, appraisal, and supervision of activities outside its core competencies.

FEATURES OF BANK RESPONSE

The Bank recognizes the risks involved in emergency situations, including the risks and lost opportunities associated with a delayed response, and the critical importance of speed, flexibility, and simplicity to an effective rapid response. As a result, emergency operations may have the following features:

[1]. For a more detailed discussion of the operational instruments available, see Chapter 27, "World Bank Post-Disaster Operational Options."

Simplified, streamlined procedures: are processed under accelerated, consolidated, and simplified procedures and are subject to streamlined ex-ante requirements (including ~~in~~ fiduciary and safeguards areas).

Risk management: involve a different balance between ex-ante and ex-post controls and risk mitigation measures compared to regular operations, including on issues of fraud and corruption, requiring intensified supervision support to address such risks;

Financing percentage: unless the country director determines otherwise, include Bank financing of up to 100 percent of the expenditures needed to meet the development objectives of such operations, including recurrent expenditures, local costs, and taxes;

Retroactive financing: may include retroactive financing of up to 40 percent of the loan amount for payments made by the borrower not more than 12 months prior to the expected date of signing the legal documents;

Larger PPA limit: may benefit from a Project Preparation Advance of up to US$5 million to cover start-up emergency response activities.

Quick disbursement and streamlined procedures: may include a quick-disbursing component designed to finance a positive list of goods i) required for the borrower's emergency recovery program, and ii) procured following procedures that satisfy the requirements of economy and efficiency (normally the national emergency procurement procedures of the borrower). Streamlined financial management, procurement, and disbursement procedures may include:

a) rapid processing of withdrawal applications and additional flexibility on financing eligibility, direct payments, and use of letters of credit;
b) higher prior review thresholds;
c) simplified procurement methods;
d) pre-qualified procurement and project management agents through sole-source or qualification-based selection; and
e) expedited procedures for establishing and activating trust funds.

INITIATION AND MANAGEMENT OF BANK RESPONSE

BP 8.00 identifies the steps involved once the Policy has been triggered. These include:

Internal Communications. The Regional Vice President (RVP) communicates with the Managing Director (MD) of the affected Region, the Chief Financial Officer (CFO) and VP (OPCS); and, depending on the nature of the emergency, the Conflict Prevention and Reconstruction Unit (CPR), Fragile States Unit (OPCFS) and the Hazard Management Unit.

Establishment of a Rapid Response Committee (RRC). An RRC is immediately convened by the responsible MD in the case of corporate emergencies (see paragraph xx). Otherwise, an RRC is convened under the chairmanship of the RVP or the CD, depending on the nature of the emergency and/or the extent to which inter-departmental resource transfers are necessary. The RRC may assist in identifying and supplementing staff to prepare and implement the Bank's response, including from the callable roster.

Processing Timelines. For emergency projects of a simple design, task teams should aim to seek Board approval within 10 weeks from initiation of project discussion with government. For simple project restructuring, task teams should aim to seek approval within 4 weeks. (Detailed Processing Steps and turnaround times are found in the Annex to this chapter.)

FINANCIAL MANAGEMENT ASPECTS OF OP/BP 8.00

The Bank requires under OP/BP 10.02, Financial Management, that for each Bank-funded operation the borrower maintain acceptable financial management (FM) arrangements that can provide reasonable assurance that the proceeds of the loan are used for the purposes for which the loan was granted.[2] Consistent with this requirement, one of the guiding principles of OP 8.00, Rapid Response to Crises and Emergencies, is the provision of appropriate oversight arrangements, including corporate governance and fiduciary oversight, to ensure appropriate scope, design, speed, and monitoring and supervision of rapid response operations.

For FM staff, the main difference between preparing "normal" and rapid response operations lies in the timing of the FM arrangements. To respond quickly to an emergency, FM staff streamline and simplify ex ante requirements while relying more heavily on such ex post requirements as additional fiduciary controls and reviews. They need to ensure that risk-mitigating measures suitable to available capacity are in place during implementation, and as appropriate they may rely more heavily than usual on partner institutions. Key considerations are:

1. Include in project design, and agree on at negotiations, only the most critical ex ante controls; non critical mitigating measures can be implemented during the course of the project.

2. Plan carefully for intensive supervision, particularly early in implementation when FM arrangements are being put in place, because it is the principal mitigating measure.

3. Appoint a seasoned senior FM staff, along with the Regional point person for the implementation of OP 8.00, to work on the operation and integrate lessons from similar Regional/Bank operations

Table 1, below, shows some examples of FM arrangements for operations under OP 8.00.

STAFF AND CONSULTANT ROSTERS

In an effort to improve the availability and readiness of experienced staff and consultants to deploy on short notice, a Staff Roster has been established with over [100] staff registered from [20] sectors/units of the Bank, as of mid-2009. This can be used to identify expertise in response to requests from country units.

A Consultant Roster is also being developed, to improve the sharing of expertise with bilateral and multilateral agencies.

[2]. See: "Guidelines: Financial Management Aspects of Emergency Operations Processed under OP/BP 8.00" *and* "Financial Management in Operations processed under new OP/BP 8.00: FM for TTLs", January 16, 2008 (Power Point presentation).

EMERGING IMPLEMENTATION ISSUES UNDER OP 8.00

An analysis of the experience to date with OP 8.00 shows the limitations of policy and procedural reforms in overcoming the challenges of working and delivering assistance in high risk, insecure and low capacity environments.[3] These findings point out risk factors for project teams:

1. Rapid response operations are processed within shorter time frames, but the actual delivery of assistance was still slow. Time saved from flexible procedures is lost in weak-capacity environments including in delays negotiating UN-World Bank fiduciary agreements and contracting out fiduciary arrangements, or in setting up project implementation units.

2. Exogenous factors in the operating environment of rapid response operations are difficult for the Bank to control. These include insecurity, rapid turn-over in government, constrained capacity of the private sector, restricted access to project sites, and a limited market for goods and technical staff. In addition, the Bank's client governments must commit to overcoming their own internal constraints.

3. Bypassing government may set back state-building, creating long-term aid dependency, and decreasing the legitimacy of the state in the eyes of its citizens. The Bank needs to engage with governments and development partners to design early interventions that support the legitimacy of the state, rather than undermine it. Simplifying project design is useful. It is also critical that country-based staff have the right skills and experience.

4. Significant resources–both technical and financial–and management attention are needed to support implementation and monitoring.

5. Collaboration with the UN has been an operational challenge, although the agreements are now in place to facilitate these arrangements.[4]

3. World Bank, April 2009, *Rapid Response To Crises And Emergencies (Op 8.00): Progress Report (Draft)*, Operations Policy and Country Services, Fragile and Conflict-Affected Countries Group.
4 [list agreements and links]

Table 1: Examples of FM Arrangements for Operations Processed under OP 8.00[5]

Area	*Ex ante arrangements*	*Ex post arrangements*
Budget	• Support 100% financing of activities to avoid delays in counterpart financing. • Provide adequate funds for essential initial operations even if sound estimates are not completed. • Reevaluate existing operations to find "excess" funds that can be quickly mobilized for the emergency operation. • Encourage Bank and other donors to align reporting requirements with government's cycle.	Detailed budget can be prepared later.
Accounting and reporting	• Use existing reporting frameworks from the government or other projects. • Use manual systems or electronic spreadsheets until computerized systems can be implemented. • Use an off-the-shelf accounting package that is quick to install and easy to use, especially if technical support is available in country. • Outsource accounting functions to private sector or international firms, as needed. • Use UN agencies/programs and/or local and international NGOs with sufficient FM capacity. • Simplify reports, limiting them to a list of expenditures.	Disseminate project reports to the lowest level beneficiary possible to help build in social accountability.
Staffing	• Outsource key operations to provide the needed staff in the short run. The TORs could include training and capacity development of country staff and systems so that over time the country is gradually able to assume full responsibility for the FM aspects of the activities. • Use staff from other parts of the implementing entities of the same project or from other projects.	Train staff, even those with a limited accounting background, on simple cash accounting to provide the minimum records to get things moving quickly.
Internal controls	To compensate for weak controls in low-capacity environments, consider: • Internal audits conducted by the government or outsourced to private firms. • Additional controls exercised by independent persons from different parts of the government, implementing entity, or community, to help ensure that duties are separated, that transactions are budgeted, authorized, executed, and recorded properly, and that services are delivered as specified. • FM agents to review implementing entity transactions and/or process transactions in the short run to help ensure due diligence. The TORs could include training and capacity development of country staff and systems so that over time the country is gradually able to assume full responsibility for the FM aspects of the activities.	Increase reliance on interim audits and/or more frequent (three month or shorter period) external audits, including requesting an opinion on the internal controls and on agreed procedures. Performance audits to track the execution of the project activities and deliverables.
Funds flow and disbursement arrangements	• If country financing parameters allow, finance 100% of project expenditures and limit the number of expenditure categories to one, or at most two. • As much as possible, use retroactive financing and reimbursement of expenditures. • Use output-based disbursements.[6] • Ensure that Designated Account is funded quickly and adequately. • Use simplified report-based disbursements. • Pool financing with other donors/government.	If necessary, the Bank may disburse primarily through direct payments.
External audit	The frequency, scope, and quality of audits are extremely important factors in helping to ensure that funds are used for the intended purposes. • In consultation with other sector and procurement colleagues, expand audit scope as needed to cover technical, institutional, and financial reviews. • When national audit institutions have weak capacity, complement their teams with private sector auditors to help improve the quality of the audit and also build capacity gradually. • In the short run, use international auditors in some projects to substitute for low country capacity. • For Project Preparation Advances, consider the use of annual audits. • Subject to procurement approval, amend contracts of audit engagements for existing projects (either in the same sector or in others) to cover the work of the emergency operation.	Audits should be carried out more frequently than annually, and FMS should follow up closely with the project implementing entity in a shorter timeframe (i.e., from 6 months to 45 days).

5. *Guidelines: Financial Management Aspects of Emergency Operations Processed under OP/BP 8.00.*
6. Global Partnership for Output-based Aid. *Checklist for designing Output-based Aid Schemes*. http://www.gpoba.org/designing/index.asp.

Resources

Brook, Penelope J. and Suzanne M. Smith, editors. 2001. *Contracting for Public Services: Output-Based Aid and its Applications*. Washington DC: World Bank.

Operational Manual, BP 8.00 - Rapid Response to Crises and Emergencies

OP
http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL/0,,print:Y~isCURL:Y~contentMDK:21238942~isCURL:Y~pagePK:64141683~piPK:64141620~theSitePK:502184~isCURL:Y~isCURL:Y,00.html

BP
http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL/0,,print:Y~isCURL:Y~contentMDK:21238957~isCURL:Y~pagePK:64141683~piPK:64141620~theSitePK:502184~isCURL:Y,00.html

Guidelines: Financial Management Aspects of Emergency Operations Processed under OP/BP 8.00.

Processing Projects under OP/BP 8.00, Additional Guidance Note #1, July 2007.

Processing Projects Under OP/BP 8.00: a Review of Early Experience and Lessons Learned, June 18, 2009. Note of Discussion.

Rapid Response To Crises And Emergencies: Application of Bank Safeguard and Disclosure Policies, February 2008. Note.

Rapid Response To Crises And Emergencies: Procedural Guidelines

http://intresources.worldbank.org/INTRAPRES/Resources/RRCrisesEmergencies_ProcessGuideSteps.pdf?&&resourceurlname=RRCrisesEmergencies_ProcessGuideSteps.pdf

ANNEX 1
PROCESSING STEPS FOR EMERGENCY OPERATIONS

A. Emergency Recovery Loan—Identification to Effectiveness

Note: The processing steps in this annex apply not only to emergency operations financed through grants and loans, but also to those financed in part or in full through trust funds. Unless borrower actions are required for completion of transactions, service standards are here provided for final clearance, including resolution of any outstanding issues with the task teams. In the vast majority of cases, these targets should be adhered to and not be subject to Regional variations.

Step	***Guidelines***	***Primary Responsibility***	***Turnaround (working days)***
Identification/ approval of proposal	TL obtains the agreement of the country director (CD) on the project's outline and budget and informs OPCS of the team's intention to launch a new emergency operation. At the same time, the TL alerts Regional designated emergency staff (FM, PR, Legal, LOA and Safeguards).	CD/TL	
PID, ISDS	TL prepares a draft Project Information Document (PID) and a draft Integrated Safeguards Data Sheet (ISDS), both of which are updated throughout the process.	TL	
Combined preparation/ appraisal mission	During a combined preparation-appraisal mission, the task team (TT) assists the borrower in preparing the new project.	TL/TT	
Drafting of Emergency Project Paper (EPP) and Simplified Procurement Plan (SPP)	The TT prepares the EPP[7] with the relevant annexes on procurement (including a SPP), financial management, and safeguards.	TL/TT	
Drafting of Legal Agreement Review by safeguards coordinator	The TL provides the designated Lawyer with a copy of the EPP for drafting the Legal Agreement and the safeguards coordinator with a copy of the draft ISDS for confirming EA category review, comment and clearance authority. Input from the safeguards coordinator may include, for example, key safeguard issues to consider, other safeguard policies triggered (e.g. cultural properties, natural habitats, etc.) and the form of EA document (Framework, Cat A EIA, EMP etc.)	Lawyer Safeguards Coordinator	2
Review of draft Legal Agreement and EPP by PR, FM and LOA.	The TL shares a copy of the EPP and the draft Legal Agreement with assigned staff from PR, FM, and LOA for their inputs and preparation of necessary documentation including the disbursement letter and procurement provisions of Legal Agreement.	PR FM LOA	2

[7]. A format for the EPP is available at: http://intresources.worldbank.org/INTRAPRES/Resources/3511515-1181837193511/EPPtemplate.doc?&resourceurlname=EPPtemplate.doc

Step	***Guidelines***	***Primary Responsibility***	***Turnaround (working days)***
Finalization of review package	The lawyer finalizes the package based on inputs from PR, FM, and LOA.	Lawyer	1
Submission of review package to CD	When TL determines that the information reflected in project documents (draft EPP, draft Legal Agreement, SPP, and draft Disbursement Letter) forms a sufficient basis to enter into negotiations, the TL submits the entire package to the CD for a formal Decision Meeting.	TL	
Decision Meeting	The RVP or his/her designee convenes a decision meeting to review the package. Unless the meeting concludes that the project is not ready for further processing, the decision meeting authorizes the TL to proceed with negotiations with the borrower. Minutes of the meeting record clearances provided by FM, PR and LOA and any conditions for agreement with borrower.	CD	Within 3 days of circulation of documents.
Circulation of minutes of meeting	TL clears with the chair and circulates minutes of meeting on a no objection basis.	TL	Objections submitted within 1day.
Finalization of negotiations package	Based on the Decision Meeting's recommendations, the TL works closely with the lawyer, Finance Officer and fiduciary staff to finalize the negotiations package, including a revised EPP, draft legal documents and the disbursement letter, ISDS, and PID.	TT and lawyer	Within 3 days from meeting, unless additional work with borrower is required.
Submission of PID and ISDS to Infoshop	TL submits PID and finalized ISDS to Infoshop	TL	
Invitation to negotiate	TL sends the negotiations package to the borrower with an invitation to negotiate and informs SECBO in writing of the schedule	TL	
Negotiations	Draft Legal Agreements are agreed and minutes of negotiations are signed. At negotiations, the TL also tries to (i) obtain from the borrower the authorization of signature, (ii) arrange for signature of Statutory Committee Report/Recommendation; and (iii) discuss with the borrower the format of the legal opinion. TL also obtains from borrower information about the Designated Account information.	TL	
Finalize Board package	TL and lawyer finalize the Board package based on minutes of negotiations.	TL/lawyer	2
Board approval	RVP (or CD, where delegated) submits Board package to SECBO for Board approval on a streamlined basis. TL requests ACTTF to generate information on status of borrower's services payments.	RVP's (or CD's) office	Documents are sent to SECBO 10 days before Board.
Notification of approval	TL prepares a notification of approval and sends it to the borrower.	TL	1 day after Board date

Step	*Guidelines*	*Primary Responsibility*	*Turnaround (working days)*
Signing	TL arranges for CD/borrower signature of legal documents, including the legal opinion. If there are no additional conditions of effectiveness, a notice of effectiveness is prepared and signed by the CD.	TL/CD CD's office	1 Same day as signature of legal docs.
Notification of effectiveness	If there are additional conditions for effectiveness, the TL monitors progress toward them and submits to the designated lawyer the effectiveness package including evidence of compliance with conditions. Once the lawyer clears the effectiveness package, the TL prepares for the CD's signature a letter confirming acceptance of the required evidence of compliance and declares the Legal Agreement effective. The notice is copied to the FM.	Lawyer TL/CD	Lawyer Clearance of compliance evidence given within 2 days of submission by TL.

B. Project Restructuring—Identification to Board

Note: These processing steps are based on the revised guidelines for project restructuring and additional financing as outlined in BP 13.05, Project Supervision, and BP 13.20, Additional Financing for Investment Lending, and their accompanying guidance to staff: *(a) Processing Restructuring for Investment Projects: Guidelines for Staff and (b) Processing Additional Financing: Guidance to Staff.*

Step	*Guidelines*	*Primary Responsibility*	*Turnaround (working days)*
Identification	TL prepares a proposal for restructuring/additional financing in a concept memorandum and sends it to the CD.1 [8]	TL	
Approval of proposal The CD obtains the agreement of the Regional management on the level of approval likely to be required for the project's restructuring and on the amount of additional resources necessary for the restructuring work (including for appraisal).	At this point, OPCS is informed of the team's intention to launch a new emergency operation and Regional designated emergency staff (FM, PR, Legal, LOA and Safeguards) are alerted.	CD/TL	2

[8]. The Memo includes an outline of the restructuring, a proposed budget, and a definition for additional staffing for discussion/preparation.

Drafting of PP/APP, ISDS and Procurement Plan.	The task team (TT)[9] completes detailed discussions and field work with the borrower and prepares (a) a Restructured Project Paper (PP) or Additional Financing Project Paper (APP),[10] (b) a revised ISDS, and (c) and a revised Procurement Plan.	TT	
Drafting of Legal Amendment Drafting of Procurement Plan Review by safeguards coordinator	The TL provides the designated lawyer with a copy of the Project Paper for drafting the necessary amendments and the designated procurement specialist with a revised Procurement Plan for clearance. If the ISDS is revised, a copy of it is shared with the Safeguards Coordinator for review and comment and a confirmation of EA category and a decision regarding delegation of authority. Lawyer PAS	Safeguards Coordinator	2[11]
Review of draft amendment by PR, FM and LOA.	The TL shares a copy of the Project Paper and the draft amendments with assigned staff from PR, FM, and LOA for their inputs and preparation of necessary documentation, including the disbursement letter and procurement provisions of legal amendment. PR FM	LOA	1
Finalization of review package	When amendments to the legal documents are required, the lawyer finalizes the amendments to the Legal Agreement.	Lawyer	1
Submission of review package to CD	When TL determines that the information reflected in project documents (draft APP, draft Legal Amendment, revised procurement plan, and revised Disbursement Letter) forms a sufficient basis to enter into negotiations, the TL submits the entire package to the CD for a formal Decision Meeting.	TL	
Decision Review Meeting	The RVP or his/her designee convenes a Decision Meeting to review the package and authorize agreement with the borrower. Minutes of the meeting record clearances provided by FM, PR and LOA and any conditions for agreement with borrower.	CD	Within 3 days of circulation of documents
Circulation of minutes of meeting	TL clears with the chair and circulates minutes of meeting on a no-objection basis.	TL	Objections submitted within 1 day

[9]. Designated emergency staff from FM, PR, Legal, LOA, and Safeguards should be copied on all correspondence related to project documentation.

[10]. For a template and guidelines on documentation used for restructuring and additional financing, staff may refer to (a) *Processing Restructuring for Investment Projects: Guidelines for Staff* and (b) *Processing Additional Financing: Guidance to Staff*.

[11]. If more than one amendment is necessary, additional time may be needed.

Finalization of Negotiations package	The lawyer finalizes the draft agreement, taking into account the minutes of the Decision Meeting	Lawyer	1
Agreement with borrower on PP/APP and legal agreement	Agreement is reached with the borrower on the Legal Amendment/PP and APP.	TL	
Submission of PID and ISDS to Infoshop	As necessary, TL submits the revised PID and ISDS to Infoshop.		
Finalize Board package	TL prepares the PP package, consisting of the cover MOP, Data Sheet and PP.	TL	1
Board approval	RVP (or CD, where delegated) submits Board package to SECBO for Board approval on a streamlined basis.	RVP's (or CD's) office	For additional financing projects, documents sent to SECBO 10 days before Board
Signing	Upon approval, the CD signs Amendment Letter. Signed Amendment Letter sent to borrower for countersigning.	CD CD's office	1
Project Information Document	If necessary, TL revises (and CD clears) the PID, and TL sends revised PID to Infoshop.	TL	2

Chapter 22
Safeguard Policies for Post-Disaster Operations

This chapter is intended to provide guidance on the application of World Bank safeguards in post-disaster projects. It contains (1) a review of the normal environmental and social safeguards procedures, (2) an overview of environmental and social safeguards review and observations about implementation in a post-disaster operation, and (3) [some case studies related to specific operations]. It also includes links to the formats needed to prepare various documents required in the post-disaster environmental and social review process.

ENVIRONMENTAL SAFEGUARD REQUIREMENTS FOR NORMAL OPERATIONS

The World Bank's environmental and social safeguard policies are a cornerstone of its support to sustainable poverty reduction. The objective of these policies is to prevent and mitigate undue harm to people and their environment in the development process. These policies provide guidelines for Bank and borrower staffs in the identification, preparation, and implementation of programs and projects.

The Bank believes that the effectiveness and development impact of projects and programs it supports has substantially increased as a result of attention to these policies. Safeguard policies also provide a platform for the participation of stakeholders in project design, and have been an important instrument for building ownership among local populations.

In essence, the safeguards ensure that environmental and social issues are evaluated in decision making; help reduce and manage the risks associated with the project or program; and provide a mechanism for consultation and disclosure of information.

The Environmental and Social Review Process

The normal World Bank Policy for Environmental Assessment is guided by OP/BP/GP 4.01 and consists of seven basic elements:

1. Screening,
2. EA documentation requirements,
3. Consultation,
4. Review and approval of EA documentation,
5. Disclosure,
6. Conditionality in loan agreements, and
7. Arrangements for supervision, monitoring and reporting.

The Table below outlines the requirements for each of these elements.

Table 1. Elements of World Bank Environmental Assessment

EA Policy Element	Policy Requirement	Comment
1. Screening	Category A (high risk), B (modest risk), C (small or no risk) or FI	Project assessed *a priori* depending on estimated environmental risk. FI if specific investments are not known at time of project approval
2. Documentation	Category A, Detailed EIA Category B, Environmental Management Plan (EMP) Category C, No requirement Category FI, Environmental Framework	Format presented in OP 4.01 (Annex B) Format presented in OP 4.01 (Annex C) Specific investments unknown before project implementation (Environmental Framework describes the EA *process*)
3. Consultation	Category A At least two consultations Category B At least one consultation	Consultations are conducted to receive input from local affected groups on *their* views of important environmental issues
4. Disclosure	Category A At the World Bank Infoshop (English) In-country, accessible to local affected groups (Local language) Category B In-country, accessible to local affected groups (Local language) Category FI Framework disclosed at the World Bank Infoshop and appropriate in-country Web site (e.g. Ministry of Environment). Individual subproject disclosure requirements defined in Framework	

EA Policy Element	Policy Requirement	Comment
5. Review and Approval	Category A Regional Safeguard Coordinator Category B Sector Leader or Regional Safeguard Coordinator Category FI, Framework reviewed/approved by Regional Safeguard Coordinator. Individual subproject review and approval arrangements defined in environmental framework	Depends on whether project is "delegated"
6. Conditionality	Borrower is obligated to implement EMP (Category A or B)	
7. Supervision, Monitoring and Reporting	Category A, B or FI Institutional arrangements defined in EA documentation (EIA, EMP, or Framework)	

The safeguard policies shown by their operational policies (OP) and Bank procedures (BP) numbers, along with their policy objectives include:[1]

OP/BP	Safeguard	Policy objectives
4.01	Environmental Assessment (EA)*	Help ensure the environmental and social soundness and sustainability of investment projects. Support integration of environmental and social aspects of projects into the decision making process. (items in bold letters should be removed--environmental assessment is just that: *environmental* assessment, not social assessment)
4.04	Natural Habitats*	Promote environmentally sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats and their functions.
4.09	Pest Management	Minimize and manage the environmental and health risks associated with pesticide use and promote and support safe, effective, and environmentally sound pest management.
4.11	Physical Cultural Resources*	Assist in preserving physical cultural resources and avoiding their destruction or damage. PCR includes resources of archaeological, paleontological, historical, architectural, religious (including graveyards and burial sites), aesthetic, or other cultural significance.

[1]. Additional information related to these policies is provided in the *Environmental Assessment Sourcebook* (Washington, D.C.: World Bank, 1991) and subsequent updates available from the Environment Sector Board, and in the *Pollution Prevention and Abatement Handbook*. Other Bank statements that relate to the environment include OP/BP 4.02, *Environmental Action Plans*; OP/BP 4.04 and OP/BP 10.04, *Economic Evaluation of Investment Operations.* http://go.worldbank.org/4D2JSWFIW0.

OP/BP	Safeguard	Policy objectives
4.12	Involuntary Resettlement*	Avoid or minimize involuntary resettlement and, where this is not feasible, to assist displaced persons in improving or at least restoring their livelihoods and standards of living in real terms relative to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.
4.20	Indigenous Peoples*	Design and implement projects in a way that fosters full respect for Indigenous Peoples' dignity, human rights, and cultural uniqueness and so that they: (a) receive culturally compatible social and economic benefits; and (b) do not suffer adverse effects during the development process.
4.36	Forests*	Realize the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development, and protect the vital local and global environmental services and values of forests.
4.37	Safety of Dams	Assure quality and safety in the design and construction of new dams and the rehabilitation of existing dams, and in carrying out activities that may be affected by an existing dam.
7.50	Projects on International Waterways	Ensure that the international aspects of a project on an international waterway are dealt with at the earliest possible opportunity that other riparians are notified of the proposed project and its project details.
7.60	Projects in Disputed Areas	Assure that other claimants to the disputed area have no objection to the project; or that the special circumstances of the case warrant the Bank's support of the project notwithstanding any objection or lack of approval by the other claimants.

* Safeguards most likely to apply in post-disaster situations.

ENVIRONMENTAL SAFEGUARD POLICY REQUIREMENTS FOR EMERGENCY LOANS

As described in the previous section, World Bank emergency response is guided by **OP/BP 8.00**, "Rapid Response to Crises and Emergencies" and the "Rapid Response to Crises and Emergencies: Procedural Guidelines." (See the prior chapter. Chapter 25, "Rapid Response to Crises and Emergencies.")

Generally speaking, Emergency Recovery Projects are *not* exempt from the World Bank EA Policy (see **OP 4.01** paragraph 13). Under unusual circumstances a project may be exempt, but this is a formal process and the justification must be recorded in the loan documents. If any waivers or exemptions from OP/BP 8.00 are required, the TTL should seek approvals prior to negotiations.

The EA policy requires that the World Bank operation determine:

1. The extent to which the emergency was precipitated or exacerbated by inappropriate environmental practices prior to the emergency, and
2. Any measures to correct these practices must be incorporated into the project or a future lending operation. Examples where this may be relevant include:
    - Mudslides destroying residences, villages and infrastructure because of excessive rainfall, but made worse by deforestation

- Flooding caused by hurricanes, typhoons etc. made worse by poor coastal management practices (destruction of wetlands, removal of mangrove swamps etc.)

Prior to departure of the combined preparation-appraisal mission the Task Team (ideally the Task Team Safeguard Specialist) should perform the following:

1. *New Loan*
   Prepare a draft Integrated Safeguard Data Sheet (ISDS) for the project. The ISDS will be revised and updated during project preparation

   Project Restructuring
   Revise the ISDS from the original project design, as appropriate

2. Meet with the Regional Safeguard Coordinator:
   New loan/Project Restructuring
   a) discuss the project scope,
   b) review the draft ISDS,
   c) agree upon a preliminary EA Category rating for the overall project (A, B, C or FI),
   d) define EA documentation requirements,
   e) establish requirements for consultation, disclosure, review and approval of EA documents. **OP 4.01** has detailed procedures for consultation, disclosure, review and approval of EA documentation during normal project preparation. However, when OP 8.00 applies, these procedures are subject to be streamlined, consolidated and simplified (OP 8.00, para. 7 (a)). Therefore, agreement should be reached with the Regional Safeguard Coordinator as to how these procedures are to be modified, and
   f) determination if the project is/is not delegated

3. Meet with LEGEN to determine country-specific policies and regulations for environmental safeguards (primarily EA) in emergency/disaster situations. If such information is not available, LEGEN should provide the Task Team with the primary government contacts who have this information

During the combined preparation-appraisal mission the Task Team Safeguard Specialist will:

1. Meet with government environmental officials to determine country-specific policies and regulations for environmental safeguards (primarily EA) in emergency/disaster situations
2. Conduct consultations with locally affected groups
3. Revise and update ISDS as necessary
4. Begin preparation of EA Documents

Upon mission completion the Task Team Safeguard Specialist will:

1. Meet with the Regional Safeguard Coordinator and finalize the ISDS and EA Category and receive clearance of the ISDS from the Regional Safeguard Coordinator
2. Finalize EA documents (see below) as agreed upon with Regional Safeguard Coordinator
3. Disclose EA documents as agreed upon with Regional Safeguard Coordinator. However, the ESSAF (see paragraph 7 below) must be disclosed as a condition of loan approval.

Legal agreements must include obligations of the Borrower to implement the requirements specified in the EA documents.

EA Documentation Requirements
Normally, an emergency operation will require two procedural approaches: one for known subprojects to be implemented immediately, and another for projects that would be identified in the future in different time horizons (immediate, transitional and long term).

1. **For subprojects known at the time of loan approval.** Either a detailed environmental impact assessment (EIA) report (OP 4.01 Annex B-subprojects considered Category A) or an Environmental Management Plan (EMP) (OP 4.01 Annex C-subprojects considered Category B) would be required for each subproject. The decision is related to degree of environmental risk associated with the individual subproject. Agreement should be reached with the Regional Safeguards Coordinator on the environmental risk of each subproject and thus which EA document is appropriate. Since information requirements of an EIA report are considerably greater than an EMP, the effort required to prepare an EIA is usually greater and requires more time. Therefore, unless there is an urgent need, it is strongly recommended that subprojects requiring an EIA be financed during either the medium or long term phases of the project.

2. **For subprojects not known at the time of loan approval.** An Environmental and Social Screening and Assessment Framework (ESSAF) is required (see "Rapid Response to Crises and Emergencies: Procedural Guidelines).

   The environmental portion of the ESSAF describes EA safeguard review procedures to be followed as subprojects are identified and are considered for financing. This framework should have the following characteristics:
   a) Be consistent with both the host country and the World Bank environmental safeguard requirements.
   b) Adopts a sequenced approach, describing different procedures for subprojects to be supported:
      i. immediately (2-4 month time-frame),
      ii. transitional (one year time-frame), and
      iii. long term (beyond one year)
   c) Describe procedures and responsible organizations for each of the following actions:
      i. subproject screening,
      ii. EA documentation,
      iii. public consultation,
      iv. disclosure,
      v. review and approval,
      vi. conditionality, and
      vii. supervision (monitoring and reporting)

CHALLENGES IN DEVELOPING ESSAF DOCUMENTS

The following observations are based on discussions with Task Managers in post-disaster operations.

ESSAF Preparation

The ESSAF document is a unique World Bank safeguard requirement. Unless the host country already has had a World Bank disaster operation, host country institutions involved with disaster operations (Ministry of Housing, Ministry of Finance etc.) are normally not familiar with World Bank safeguard requirements and would likely take a very long time to produce the ESSAF document by themselves, likely involving several iterations. In a time of need, forcing this could be extremely frustrating to all parties concerned and stress relationships between the host government and the World Bank. Therefore, the Bank team should either prepare the draft ESSAF for the host country review and approval or work very closely with the host countries in preparing the ESSAF document.

Furthermore, host countries do not usually place a high priority on environmental and social safeguard issues during disaster situations and the ESSAF document is often viewed as an obstacle to receiving the immediate assistance they need.
At least one public consultation with affected groups should be conducted as part of ESSAF preparation to ascertain priority issues. This will help to identify the need for safeguard policies other than environmental assessment and resettlement being triggered (e.g. natural habitats, cultural properties etc.).

ESSAF Capacity Assessment

As part of the ESSAF preparation, the World Bank team should conduct a capacity assessment of the institutions that will be responsible for ESSAF implementation to determine if there is sufficient staff/expertise/authority to implement ESSAF requirements.

It is strongly recommended that such an assessment be done ex ante in countries prone to natural disasters (in this way valuable time in a disaster operation will not be spent on preparing a capacity assessment evaluations)

ESSAF Implementation

Although the ESSAF requirement is relatively new, implementation experience in practice has been poor. It is a critical aspect of World Bank safeguards to insure proper supervision and follow-up of ESSAF implementation.

Under disaster situations, host governments will generally agree initially to anything in order to get the resources they need. But without guidance on ESSAF implementation and any indication of leverage by the World Bank, ESSAF requirements are soon forgotten during project implementation

If there is a PIU, the project team should require an environmental and/or a social safeguard specialist be included on the PIU staff either as a direct hire or arrangements made with competent consultants. The PIU should issue regular, frequent reports to affected groups and implementing institutions on any environmental or social issues that arise, measures taken to address these issues, parties responsible for addressing the issues, and a schedule for their resolution The PIU should also issue regular and frequent information to affected groups regarding vital services, such as safety of water supply, and interim arrangements for wastewater management and solid waste disposal

USE OF COUNTRY ENVIRONMENTAL AND SOCIAL SAFEGUARDS SYSTEMS

The World Bank is required by its Articles of Agreement and operational policies to ensure the appropriate use of the resources it provides. To do so, like most other development institutions, it has often specified its own operational requirements, in effect isolating the projects it funds from government systems (a practice widely known as "ring-fencing") and creating special project implementation units (PIUs) to support its requirements.

The development community now understands that it can enhance country ownership and project sustainability if it works more directly with the institutions and mechanisms the borrower already has in place, including supporting efforts to strengthen them.

A pilot program is approved to use a country's own environmental and social safeguard systems where they are assessed as being equivalent to the Bank's systems, in Bank-supported operations. This approach, which covers the country's national, subnational, or sectoral implementing institutions and applicable laws, regulations, rules and procedures, facilitates a move away from the model in which safeguard and fiduciary policies are applied to only Bank-financed activities toward supporting the development and application of effective policies for all government expenditures. The approach requires an increased emphasis by the Bank on capacity-building and human resource development.

The application of this policy may not be relevant in post-disaster projects unless country systems are already being used. If they are not, the team will need to evaluate whether the post-disaster situation is the appropriate time to apply country safeguards.

New Policy. The pilot program is governed by the new **OP / BP 4.00**, *Piloting the Use of Borrower Systems to Address Environmental and Social Safeguard Issues in Bank-Supported Projects* (**OP/BP 4.00)**. The policy document explains the approach, enumerates the criteria for assessing country systems, and specifies the respective roles of the borrower and the Bank, including responsibility for proposing the use of country systems. It also specifies requirements for the documentation and disclosure of the basis for using country systems.

Environmental Assessment. Use of borrower safeguard systems has helped to achieve Bank policy objectives in two areas in particular, Environmental Assessment (EA) and Physical Cultural Resources (PCR), by increasing borrower ownership of environmental and social safeguard systems and improving Bank-borrower working relationships. With respect to EA, moreover, there are signs that project-level UCS can have a strong demonstration effect on national policy. The pilot experience was encouraging with respect to prospects of using country systems, with appropriate gap-filling measures, for Natural Habitats, Forests, Pest Management and Safety of Dams.

Social Safeguards. For specialized social safeguards, the experience is more complicated. Experience to date indicates that for Involuntary Resettlement (IR) in particular, the gaps between the requirements of Bank policy per **OP/BP 4.00**, Table A1 and corresponding borrower systems may be too substantial in most cases to be filled by measures that are feasible to implement at the project level. The pilot projects attempted to pilot the safeguard requirements pertaining to Indigenous Peoples; however, a number of countries have updated their legal and policy frameworks covering this issue. Moreover, some borrowers participating in the pilot program indicated a preference for addressing these social issues at the institutional level, with the support of the Bank and other parties, rather than at the project-specific level, so as to maintain consistency within their national systems.

Safeguard Diagnostic Reviews. The SDR is a tool for analyzing the strengths and weaknesses of borrower safeguard systems and identifying targeted measures to strengthen these systems. The analysis to determine the capacity and performance of borrowers' systems must be more in-depth than is necessary when the Bank relies primarily or exclusively on its own safeguard policies. Field-based due diligence is also needed. Costs for preparation of SDRs, which are borne by the Bank, are expected to decline in subsequent projects in the same country or sector. The costs of conducting SDRs should not be borne by individual projects but rather covered under separate dedicated budgetary support as part of the Bank's Country Assistance Strategy and should be undertaken in such a way that the results can be applied to a wider spectrum of projects.

SAFEGUARDS POLICY SUMMARIES

Natural Habitats (OP/BP 4.04). This policy prohibits Bank support for projects that would lead to the significant loss or degradation of any Critical Natural Habitats, whose definition includes those natural habitats that are either:

- legally protected,
- officially proposed for protection, or
- unprotected but of known high conservation value

The policy is "triggered" if a subproject could result in any one or more of the following four criteria:

- a loss of natural habitats;
- construction of "linear features" (e.g. roads, transmission lines, pipelines etc.) that might cut through natural habitats;
- affect water supply to or drainage from natural habitats; and

- directly or indirectly result in resettlement or migration of people in a way that would adversely impact natural habitats

If, as part of the environmental assessment process described above, and/or discussions with the Regional Safeguard Coordinator indicate the potential for significant conversion or degradation of critical or other natural habitats (in accordance with one or more of the indicated criteria), the subproject is classified as Category A; projects otherwise involving natural habitats are classified as Category A or B, depending on the degree of their ecological impacts

During the combined preparation-appraisal mission the Task Team Safeguard Specialist should meet with government environmental officials and verify whether or not natural habitats would be affected by the project. If natural habitats are involved, the manner in which the issue would be addressed should be described in the EA Documentation.

Physical Cultural Resources (OP/BP 4.11). This policy addresses physical cultural resources, which are defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. They may be located in urban or rural settings, and may be above or below ground, or under water. Their cultural interest may be at the local, provincial or national level, or within the international community

If, as part of the environmental assessment process described above, and/or discussions with the Regional Safeguard Coordinator indicate a subproject (a) will involve significant excavations, demolition, movement of earth, flooding or other environmental changes; or (b) will be located in, or in the vicinity of, a physical cultural resources site recognized by competent authorities of the Borrower, the policy would be tentatively considered "triggered".

During the combined preparation-appraisal mission the Task Team Safeguard Specialist should meet with government competent authorities and verify whether or not physical cultural resources would be affected by the project If it is verified that the project has any of the characteristics set out in (a), or (b) the policy is triggered and assigned to either Category A or B. The manner in which the issue would be addressed should be described in the EA Documentation.

Forests (OP 4.36). This policy applies to the following types of Bank-financed investment projects:

- projects that have or may have impacts on the health and `quality of forests;
- projects that affect the rights and welfare of people and their level of dependence upon or interaction with forests; and
- projects that aim to bring about changes in the management, protection, or utilization of natural forests or plantations, whether they are publicly, privately, or communally owned.

The Bank does not finance projects that, in its opinion, would involve significant conversion or degradation of critical forest areas or related critical natural habitats. If a project involves the significant conversion or degradation of natural forests or related natural habitats that the Bank determines are not critical, and the Bank determines that there are no feasible alternatives to the project and its siting, and comprehensive analysis demonstrates that overall benefits from the project substantially outweigh the environmental costs, the Bank may finance the project provided that it incorporates appropriate mitigation measures.

The policy is considered "triggered" if any one of the following criteria are applicable:

a) the project could result in direct or indirect loss of forests of high ecological value (e.g. through improving access for logging)
b) the project would finance commercial logging operations or purchase of logging equipment, and
c) the host country is committed to sustainable management of forests
d) early in project processing, the Task Team consults with the Regional Safeguard coordinator and, as necessary, with ESSD and other Networks to determine if any forest issues likely to arise during the project.

For each project covered under the scope of the policy World Bank staff ensure that an EA category is assigned in accordance with the requirements of OP/BP 4.01 (Environmental Assessment). A project with potential for conversion or degradation of natural forests or other natural habitats that is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented is classified as Category A; projects otherwise involving forests or other natural habitats are classified as Category B, C, or FI, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its environmental impacts.

Indigenous People (OP/BP 4.10). This policy contributes to the Bank's mission of poverty reduction and sustainable development by ensuring that the development process fully respects the dignity, human rights, economies, and cultures of Indigenous Peoples. For all projects that are proposed for Bank financing and affect Indigenous Peoples, the Bank requires the borrower to engage in a process of free, prior, and informed consultation.

A project proposed for Bank financing that affects Indigenous Peoples requires:

- Screening by the Bank to identify whether Indigenous Peoples are present in, or have collective attachment to, the project area (see paragraph 8);
- A social assessment by the borrower (see paragraph 9 and Annex A);
- A process of free, prior, and informed consultation with the affected Indigenous Peoples' communities at each stage of the project, and particularly during project preparation, to fully identify their views and ascertain their broad community support for the project (see paragraphs 10 and 11);
- The preparation of an Indigenous Peoples or an Indigenous Peoples Planning Framework; and
- Disclosure of the draft Indigenous Peoples Plan or draft Indigenous Peoples Planning.

Resettlement (OP/BP 4.12). This policy covers direct economic and social impacts that both result from Bank-assisted investment projects, and are caused by

a) the involuntary taking of land resulting in
   i) relocation or loss of shelter;
   ii) loss of assets or access to assets; or
   iii) loss of income sources or means of livelihood, whether or not the affected persons must move to another location; or
b) the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.

This policy applies to all components of the project that result in involuntary resettlement, regardless of the source of financing. It also applies to other activities resulting in involuntary resettlement that in the judgment of the Bank, are

1) directly and significantly related to the Bank-assisted project,
2) necessary to achieve its objectives as set forth in the project documents; and
3) carried out, or planned to be carried out, contemporaneously with the project.

To address the impacts above, the borrower ordinarily prepares a resettlement plan or a resettlement policy framework (see paras. 25-30) that covers the following:

a) measures to ensure that the displaced persons are informed about their options and rights; consulted on, offered choices among, and provided with technically and economically feasible resettlement alternatives; and provided prompt and effective compensation at full replacement cost for losses of assets.
b) (if the impacts include physical relocation) measures to ensure that the displaced persons are provided assistance (such as moving allowances) during relocation; and provided with residential housing, or housing sites, or, as required, agricultural sites for which a combination of productive potential, locational advantages, and other factors is at least equivalent to the advantages of the old site, and
c) (where necessary to achieve the objectives of the policy) measures to ensure that displaced persons are offered support after displacement, for a transition period, based on a reasonable estimate of the time likely to be needed to restore their livelihood and standards of living; and provided with development assistance in addition to compensation measures; such as land preparation, credit facilities, training, or job opportunities.

Requests for guidance on the application and scope of this policy should be addressed to the Resettlement Committee (see BP 4.12, para. 7).

Available on Project Website

ISDS Format
Environmental Management Plan (EMP) Format
ESSAF Format (Environment)

Chapter 23
Financial Management in WB Housing Reconstruction Projects

[This Chapter is a summary of World Bank financial management procedures and special approaches to be considered in post-disaster reconstruction projects.]

Chapter 24
Procurement Procedures in WB Housing Reconstruction Projects

[This Chapter is a summary of World Bank procurement procedures and special approaches to be considered in post-disaster reconstruction projects.]

PART 4
TECHNICAL REFERENCES

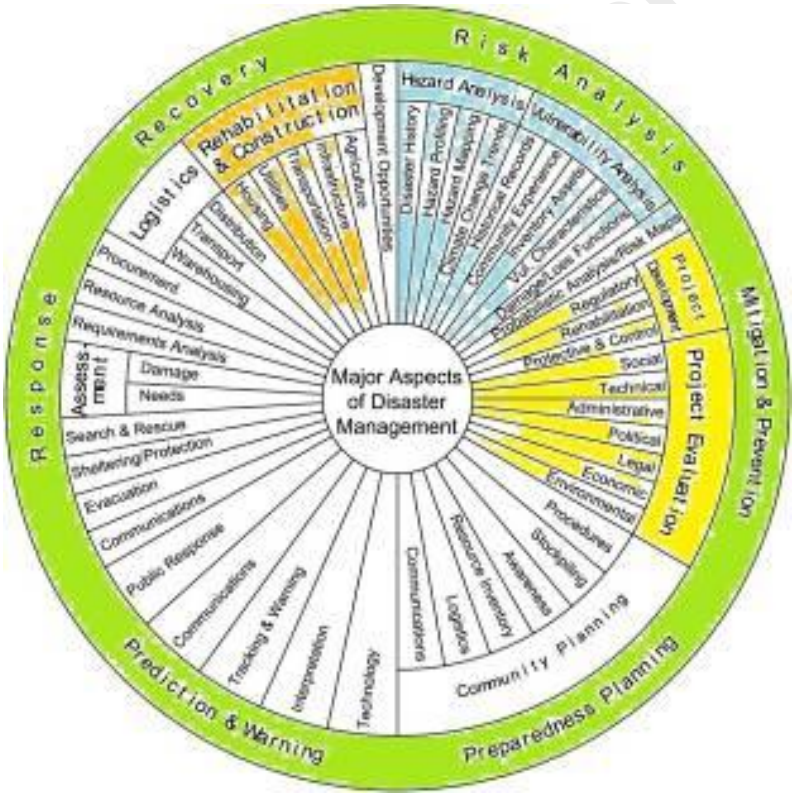
Principles of Disaster Risk Management

Disaster risk management (DRM) is a comprehensive set of policies, procedures, strategies, and tools that, when properly implemented, reduces the negative impacts that natural disasters have on people, structures, and land. Proper application of DRM principles during both pre- and post-disaster construction efforts will increase the likelihood that disasters are less deadly or destructive. DRM principles are discussed throughout this handbook; this chapter focuses on the basic principles, policies, and instruments of DRM, and on their application during construction and reconstruction.

DRM is of particular importance in developing countries: 90 percent of disaster-related injuries and deaths are sustained in countries with per capita income levels below $760 per year.[1] In addition, losses from natural disasters are 20 times greater (as a percentage of GDP) in developing countries than in industrialized countries.[2]

Basic DRM Principles

The disaster management cycle is always depicted with several phases—at a minimum, preparedness response, recovery, and mitigation—with each phase leading to the next. The figure below depicts six phases, and shows the major activities of DRM in detail, grouping them together by phase.



Source: Office of Foreign Disaster Assistance (OFDA), United States Agency for International Development (USAID) (modified for this handbook).

How DRM Principles are Applied in Reconstruction

All depictions of the disaster cycle have a drawback, which is that they show the phases, including prevention and mitigation, as sequential, when in reality they should be taking place simultaneously. One of the best examples of this is the fact that prevention and mitigation must take place during the rehabilitation and reconstruction of housing and infrastructure, if these new investments are expected to be more resilient than what was damaged or destroyed by the disaster. This chapter provides information on how DRM tools for risk analysis, and for prevention and mitigation can be used to reduce risk in the reconstruction process.

Risk Analysis

The purpose of a construction/reconstruction risk analysis is to determine where there are vulnerabilities in a particular location and to quantify the potential impact of a disaster on a community—its people, buildings, and land. It's crucial to know this when deciding on whether to relocate a community or when selecting among various mitigation options. Two of the components of a risk analysis are a **hazard analysis** and a **vulnerability analysis**. The following sections describe how these analyses contribute to a risk analysis.

Hazard Analysis. A hazard analysis involves reviewing a region's disaster history, profiling hazards of particular interest, and identifying hazard areas using maps. To help predict the magnitude and duration of a potential hazard, a record of the characteristics of previous similar hazards is developed. Hazard-specific data are available from multiple sources. Some general sources of hazard data include the following.

Newspapers and Other Historical Records. To identify the dates, magnitude, and damage from previous events, consult local newspaper offices, ministries of information, historical societies, and libraries.

Existing Plans and Reports. Consult ministries of transportation, environment, emergency management, and public works, who may have plans and documents that contain relevant information, such as risk atlases, risk assessment reports, hazard plans, and hazard identification reports. Local comprehensive, land use, and capital improvement plans, as well as building codes, land use regulations, and flood ordinances, will also indicate the presence of potential hazards.

Local, Regional, or National Experts. Consult with experts from government, emergency response and management agencies, academia, and private firms that provide hazard-related services. These sources may all have information on past hazard events. They may also have hazard maps, research studies, and other data. The table in the Annex to this chapter gives much more detailed information about potential sources of data on hazards.

Climate change and historical data. Over the last several years, the world has experienced more frequent and more hazardous weather phenomena attributed to climate change. These trends should be factored into a risk analysis. Climate science measures changes in temperature and rainfall with respect to a baseline (generally, 1961–1990) to predict weather and hazards. To estimate how climate change may affect regions and countries, three types of climatic models are

used: global circulation models (GCMs),[1] regional circulation models (RCMs),[2] and high-resolution models.[3] There are other models currently being developed. Climate science suggests that the influence of climate change should be measured with respect to the baseline and should be expressed in the form of change in temperature and rainfall. These changes lead to weather and climate hazards in the form of accentuated drought and floods events in the region.

Vulnerability Analysis. The vulnerability analysis involves reviewing historic records and documenting community experience, developing an inventory of assets to determine what is at risk, developing vulnerability characteristics for the built environment, and utilizing damage and loss functions (described below).

Historic Records and Community Experience. Historic information (casualties, damage values, and affected locations) helps predict the effect of a disaster on a community. (See the Hazard Analysis section for some sources of data about hazards.) Locations in the affected area that were undamaged, hazard durations, and cascading hazards should be identified. Community experience from past events can be incorporated in the vulnerability analysis by interviewing those who were involved in the response and recovery, among others.

Asset Inventory. Data are needed to determine which buildings within a community are at risk. These data include what the structure is used for; what materials were used to build the structure; and the building's age, dimensions, and valuation. Make sure to collect the data at a geographic level relevant to the analysis (e.g., city block, census unit, town, city). Sources of data include government censuses, community-level surveys, and remote sensing software using high-resolution satellite images. (Remote sensing data used in any process should be validated using a second method, such as a site survey.)

Valuation data (replacement cost, not market value) are available from local governments and should be benchmarked against such data as gross capital stock estimates or insurance industry data, such as the Axco Insurance Information Services database. If valuation data are not available, ratios based on Gross Domestic Product (GDP) and comparative country-level data can be used as proxies.

Vulnerability Characteristics. Some structures withstand specific types of disasters better than others. The factors that contribute to a building's vulnerability, including roof type, roof-wall connection, construction type, window protection, height, foundation type, and elevation, must be understood in order to build disaster-resistant structures or to retrofit existing ones.

Damage and Loss Functions. Physical vulnerability is described as the degree to which an asset may sustain damage when exposed to a hazard. A vulnerability analysis quantifies the susceptibility of an asset type to damage for each magnitude of hazard. Potential for damage is measured using a mean damage ratio (MDR)—the ratio of an asset's repair cost to its

1. Global circulation models consider the whole earth circulation at a resolution level of about 350-km grid cells. Twenty-one of these models have been recognized as robust and their results summarized under the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC). One of these global models is the HadCM3 developed by the United Kingdom's Hadley Center.
2. Regional circulation models consider a region at a higher level of resolution and use results of the GCMs to model the boundary conditions of the region of interest. PRECIS, also called HadRM3, is such a model. with a horizontal resolution of 50 km. It is driven by the atmospheric winds, temperature, and humidity output of HadCM3.
3. High-resolution models operate at even higher resolution. The Meteorological Research Institute (MRI) model generates data at 20-km horizontal resolution.

replacement cost. The curve that relates the MDR to the magnitude of hazard is called the vulnerability or damage function. The figure above is an example of this function for the flood hazard. The curve that relates the repair cost to the hazard is called a loss function. For buildings, the vulnerability is assessed separately for the structure and the contents. In general, vulnerability functions are developed for buildings, content, and infrastructure based on local damage data, existing vulnerability curves developed for similar structures, and expert or heuristic judgments based on experience in other locations.

Post-disaster data. Post-disaster data can help minimize future disasters. In the effort to rebuild quickly, however, data are either not collected or existing data are destroyed, or both. Collect the following data immediately after a disaster: disaster extents, severity, duration, and impacts; building structure/building content damages and losses; transportation and utility damages and losses; regional construction material, occupancies, and quality of construction; and other infrastructure vulnerability characteristics.

Risk analysis outputs. At the end of the risk analysis process, the people of an at-risk community should be able to better understand what could happen in their region should disaster strike and how to best prepare for it. Several outputs to aid in this decision making can be produced during a risk analysis; three are discussed below.

Risk Atlas. A risk atlas shows maps of community damages and losses as well as hazard areas for a series of probable events (return periods). A separate map is generated for each return period event. (The "return period" is an estimate of the likelihood of a disaster reoccurring in an area.) For example, a flood risk atlas would show the 100-year flood event overlaid on the community assets. Estimate the return period of a disaster in a specific area by tracking long periods of time (historic hazard research). Recent trends, such as those produced by climate change, may not be included in historic data but should be taken into consideration. (Note: A disaster with a 1 percent chance of affecting an area in any given year is called a "100-year event." This term is often misunderstood, as many people believe that a disaster labeled a "100-year event" will occur only once every 100 years, where in reality it may occur two years in a row.)

Average Annual Loss. The Average Annual Loss (AAL) value—the sum of all monetary losses over all return periods multiplied by the probability of a disaster occurring—is used to produce a cost-benefit analysis that helps a community rank its hazards and prioritize its mitigation funding. For example, floods may be more frequent but may not produce significant loss, whereas earthquakes may be very infrequent but cause catastrophic damage. Expressed mathematically, AAL = ($ loss) x Σ (probability of occurrence).

Loss Exceedance Curve. The Loss Exceedance Curve (LEC)—developed by plotting the average recurrence interval and the losses derived during the loss estimation—is used to predict losses at other return periods by interpolation. Plotting the losses on a graph for each return period produces the hazard's LEC.

Mitigation in Reconstruction

Mitigation measures can be viewed from many different perspectives. One way is to consider options such as locational mitigation, in which damage or loss is reduced by avoiding the physical impacts of an event; structural mitigation, in which damage is resisted through bracing

of buildings or construction of a levee; operational mitigation, in which damage or loss is minimized by interventions, such as emergency planning, tsunami warning, or other temporary measures; and risk sharing, in which the cost of the damage is shared.[4] In this handbook, the emphasis is on interventions that minimize the destructive and disruptive effects of disasters on the built environment. This section discusses the three broad categories of mitigation options: regulatory measures, protective and control measures, and rehabilitation.

Regulatory Measures. In most cases, regulatory measures should be considered before other measures because they provide the framework for decision making, organization, and financing of mitigation actions. Regulatory measures are the legal and other regulatory instruments that governments use to prevent, reduce, or prepare for the losses associated with hazard events. Examples include:

1. Legislation that organizes and distributes responsibilities to protect a community from hazards
2. Insurance regulations that reduce or transfer the financial and social impact of hazards
3. New or updated design and construction codes and land use and zoning regulations
4. Regulations that provide incentives for implementing mitigation measures

In post-disaster situations where regulatory measures do not exist, reconstruction and rehabilitation, at a minimum, should reflect the experience and standards practices and guidelines used internationally for similar disasters. For housing, such standards are readily available and can be adapted to the local conditions and environment in an emergency.

Protective and Control Measures. These measures focus on protecting structures by erecting protective barriers (e.g., dams and reservoirs, levees, discharge canals, floodwalls and sea-walls, retaining walls, safe rooms or shelters, and protective vegetation belts) and by deflecting the destructive forces from vulnerable communities, structures, and people.

Rehabilitation. Rehabilitation deals with structural and non-structural modification of buildings and infrastructure facilities. Since new zoning laws and updated design and construction codes usually can't be applied retroactively, it is important that, to reduce the impact of disasters, the safety and structural integrity of existing buildings and infrastructure facilities is improved during the rehabilitation process.

The location or structure of a building or infrastructure (considered separately or, even more importantly, taken together) can greatly increase its vulnerability. Mitigation measures should address to the specific causes of a building's or infrastructure's vulnerability. For example, it is illogical to invest in expensive reinforcement of a structure resting on unstable soil. Removal, relocation, or elevation of in-place structures in highly hazardous areas, especially those built before building codes were established, is frequently the only option. Where buildings and infrastructure can benefit from in-place structural improvements, engineering solutions most appropriate for the substandard structures should be used. A community must prioritize options based on the importance of the facility and its relative vulnerability. For instance, essential facilities with a high potential loss may take priority over other buildings and infrastructure.

*Siting***.** DRM considerations should be applied in site selection for both temporary and permanent housing. Reconstruction should not occur in areas frequently affected by hazards, although this is

4. Charles Scawthorne, 2009, Disaster Reduction and Recovery: A Primer for Development Managers (Washington, DC: World Bank). [Unpublished] A fourth mitigation method,

admittedly difficult where non-vulnerable areas are scarce, a large population needs housing, or zoning and land use regulations do not exist. For housing, design standards exist internationally and are readily available for various types of construction and disasters. (See Chapter 8, "Housing Design and Construction Technology," for an analysis of these issues.)

Several methodologies can be used to evaluate and select mitigation options that look at different criteria and then rank the potential mitigation projects. One methodology that considers a comprehensive set of criteria is referred to as "STAPLEE." This methodology examines the social, technical, administrative, political, legal, economic, and environmental opportunities and constraints of implementing a particular mitigation measure.

Institutional Strengthening Opportunities in Recovery

Although institutional weaknesses differ from country to country, there are some shared concerns that will affect the ability to promote DRM principles in reconstruction. The table below provides examples of institutional DRM issues and potential solutions. These issues should be viewed as entry points where work with DRM agencies can begin.

Institutional weakness	**Potential solutions**
Building codes have not been established or are not enforced.	Use the expertise gathered for disaster recovery and the global media focus to promote establishing/updating building codes. Work with the Ministry of Public Works and include an enforcement agency in the discussion.
Land-use/zoning regulations have not been established or are not enforced.	Use the expertise gathered for disaster recovery and the global media focus to promote establishing/updating land-use regulations. Work Ministry of Planning and local planning departments.
No clear lines of DRM responsibility among government agencies.	Develop a mitigation or DRM plan, post-disaster, using lessons learned from the disaster to determine needs and division of responsibility.
Disaster response and recovery plans are limited or nonexistent.	Develop a response and recovery plan, post-disaster, using lessons learned from the disaster to determine needs and division of responsibility..
Incentives for disaster-resistant building practices are weak.	Use cost-effective computer models to show mitigation benefits. Perform cost-benefit analysis. Study incentive-based, disaster-resistant programs currently working (insurance programs, government catastrophic pools).

Community-Based Disaster Management. Creating disaster-resistant communities requires community involvement. Stakeholder workshops should be conducted throughout the reconstruction process so that outsiders learn more about the region, community helps develop a customized DRM strategy, and local officials and the public better understand and support DRM practices. Workshops should emphasize minimum construction practices required for housing to provide security for the concerned disaster events. (For more information on the use of community involvement in reconstruction, see Chapter 7, "Environmental Planning" and Chapter 17, "Community Participation.")

Information Resources

Organizations. Many organizations provide best practices for DRM in housing and community reconstruction and information that can be used in carrying out risk analysis, including the following:

The World Bank: Disaster Risk Management, http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTURBANDEVELOPMENT/EXTDISMGMT/0,,menuPK:341021~pagePK:149018~piPK:149093~theSitePK:341015,00.html.

[Others to be added] 

Annex
Sources of Hazard Data

Hazard	Type of Data/Use	Potential Data Sources
Cyclone	**Land cover data/**Wind barriers (trees, buildings); damage (flying objects, fallen trees)	A, E, NR, FS, RSA; PRSF, PL
	Elevation data/Wind acceleration; coastal surge intrusion	A, E, PW, WR, RSA, PSIP
	Bathymetry (shoreline water depth)/Storm-surge hazard modeling	A, E, MA, NR, PW, WR
	Wind-speed maps	PL, PW
	Coastline and still-water elevation maps/Storm-surge hazard modeling	A, E, MA, NR, PW, WR, PL
Drought	**Precipitation and rain gauge data/**Rainfall records and trends	A, ME, WR
	Global humidity index	UNEP/GRID University of East Anglia/ Climatic Research Unit
Earthquake	**Soil maps/**Ground motion patterns	A, E, I, L, NR, SS
	Soil and ground conditions maps/Liquefaction susceptibility	DM, E, SS
	Landslide potential data/Post-earthquake landslide potential	DM, E, SS
	Fault line maps	A, DM, E, I, L, NR, SS
Fire	**Fuel maps, land cover maps**/Fire fuel sources	A, E, F, NR, RSA, PRSF
	Critical weather data (low humidity, wind)	A, ME, WR
	Land elevation/Predict fire speed	A, E, PW, WR, RSA, PSIP
Flood	**Digital Elevation Model (DEM) or Digital Terrain Model (DTM) for bare earth/**Predict water flow	A, E, PW, WR, RSA, PSIP
	Contour data/Complements DEM/DTM data	PW, SW
	Historic precipitation data	A, ME, WR, PL
	Soil data/Areas of water infiltration	A, E, I, L, NR, SS
	Locations of river and hydraulic structures (bridges, dams, levees)	A, E, I, L, NR, PW
Landslide	**Slope data (DEM, DTM)/**Areas of susceptibility	A, E, PW, WR, RSA, PSIP
	Soils maps/Areas of high susceptibility	A, E, I, L, NR, SS
	Land cover	A, E, F, NR, RSA, PRSF, PL
Tsunami	**Bathymetry (shoreline water depths)/**Tsunami hazard modeling	A, E, F, MA, NR, PW, WR
	Coastline still-water elevations/Tsunami hazard modeling	A, E, F, MA, NR, PW, WR
	Elevation data/Tsunami intrusion	A, E, PW, WR, RSA, PSIP

KEY: Public ministry, department, or agency: A=Agriculture and Fisheries, DM=Disaster Management, E=Environment, I=Irrigation, L=Land Management, F=Fisheries, MA=Maritime Affairs, ME=Meteorological, NR=Natural Resources, PL=Local Planning, PW=Public Works, WR=Water Resources, FS=Forestry, RSA=Remote Sensing Agencies (such as IKONOS or NASA's ASTER), SW=Storm Water Management, SS=Soil Survey. Private sources: PRSF=Private Remote Sensing Firm, PSIP=Private Satellite Imagery Provider.

GLOSSARY

Acceptable risk: The level of potential losses that a society or community considers acceptable given existing social, economic, political, cultural, technical and environmental conditions (ISDR, 2008).

Accountability: The means by which individuals and organizations report to a recognized authority or authorities and are held responsible for their actions (Edwards and Hulme, 1995).

Adaptation: The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (ISDR, 2008).

Adaptive capacity: Ability to adjust over a period of time based on learning that takes place either before or after an extreme event. The higher the coping or adaptive capacity, the lower the vulnerability of a system, region, community, or household. (Peltonen, 2006).

Adobe: Compressed earth, normally in the form of bricks or blocks (Oliver, 2003).

A-frame: A pitched roof frame in direct contact with the ground rather than with walls (Oliver 2003).

Aggregate: Stones or other loose but hard material added to a mixture of earth or concrete (Oliver 2003).

Airshaft: A small court which permits air to ventilate rooms on several levels (Oliver 2003).

All-hazards approach: Use of the same management arrangements to deal with all types of emergencies or disasters, including manmade and natural hazards, that may impact on communities and the environment (IDRM, 2003).

Animal control: Emergency protective measures to locate, pick up, shelter, and care for animals that are pets or are a danger to the public health and safety (FEMA, 2008).

Apartment owner-occupier: The transitional reconstruction option in which the occupant owns his or her apartment, formally or informally (OCHA 2008).

Apartment tenant: The transitional reconstruction option in which the occupant rents the apartment, formally or informally (OCHA 2008).

Assessment: The survey of a real or potential disaster to estimate the actual or expected damages and to make recommendations for prevention, preparedness, and response (United Nations, Vulnerability Assessment Techniques and Applications, www.csc.noaa.gov/vata/glossary.html,1992).

Asset management: A process by which an asset is looked after, maintained, changed, or developed.

Audit: An official examination and verification of accounts and records to determine if project financial flows are in accordance with laws, regulations, and accounting rules.

Bandwidth: Capacity of ICT and telecom systems to transmit digital or analog data in a given time period. The slowest connection point can degrade bandwidth to that point referred to as a bandwidth bottleneck.

Base flood: Flood that has a 1 percent probability of being equaled or exceeded in any given year. Also known as the 1 percent annual chance flood or 100-year flood (FEMA 2001).

Base flood elevation: Elevation of the base flood in relation to a specified datum, such as the National Geodetic Vertical Datum of 1929 (FEMA 2001)

Baseline data: The initial information collected during an assessment, including facts, numbers, and descriptions that permit the measurement of the impact of projects implemented and its comparison to the situation that existed before.

Basic needs: The items that people need to survive. This can include safe access to essential goods and services such as food, water, shelter, clothing, health care, sanitation, and education.

Biodiversity: The number, variety, and genetic variation of different organisms found within a specified geographic region (The American Heritage Science Dictionary)

Bribery: Offering an inducement for a person to act dishonestly in relation to a business opportunity.

Build Back Better: Concept that reconstruction should reduce vulnerability and provide the community with improved living conditions.

Building code: A set of ordinances or regulations and associated standards intended to control aspects of the design, construction, materials, alteration, and occupancy of structures necessary to ensure human safety and welfare, including resistance to collapse and damage (ISDR, 2008).

Building inspection: Inspections necessary to establish if a damaged structure poses an immediate threat to life, public health, or safety (FEMA, 2008).

Bunga houses: Structures built with compressed stabilized earth blocks.

Capacity: The combination of all the strengths, attributes, and resources available within a community, society, or organization that can be used to achieve agreed-upon goals (ISDR, 2008). This may include physical, institutional, social, or economic means as well as skilled personal or collective attributes such as leadership and management (ISDR, 2004).

Capacity development or capacity building: The process by which people, organizations, and society systematically stimulate and develop their capacities to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions (ISDR, 2008).

Coping capacity: The manner in which people and organizations use existing resources to achieve various beneficial ends during unusual, abnormal, and adverse conditions of a disaster phenomenon or process (UNDP, 2004).

Cash approach: Unconditional financial assistance without technical support.

Cash transfers: Direct payments or vouchers to provide resources to affected populations to carry out housing reconstruction, to provide pay in exchange for work on infrastructure projects, or for numerous other purposes.

Catastrophe: A situation in which all or most people living in a community are affected along with the basic supply centers, making help from neighbors largely impossible (Quarantelli, 1998).

Cell broadcasting: A mass communications system operating through cell phone infrastructure that uses bandwidth outside of normal calls and text messages.

Civil Defense: The system of measures, usually run by a governmental agency, to protect the civilian population in wartime, to respond to disasters, and to prevent and mitigate the consequences of major emergencies in peacetime (United Nations, Vulnerability Assessment Techniques and Applications, http://www.csc.noaa.gov/vata/glossary.html, 1992).

Civil society organization (CSO): One of a variety of nongovernmental and not-for-profit organizations that express the interests and values of their members or others based on ethical, cultural, political, scientific, religious, or philanthropic considerations. Their mission may be charitable, service-oriented, participatory, or community empowerment.

Climate change: Meteorological changes attributed directly or indirectly to human activity that alter the composition of the global atmosphere or to natural climate variability (United Nations Framework Convention on Climate Change).

Construction standards: A document prepared by a recognized standard-setting organization that prescribes methods and materials for the safe use and consistent performance of specific technologies; usually a procedure that has been developed by consensus of the interested parties **(**McGraw-Hill Dictionary of Architecture and Construction).

Collusion: Cooperation between two or more parties to defraud or deceive a third party, usually with an anti-competitive purpose.

Community: A group of households that identify themselves in some way as having a common interest, bond, values, resources, or needs as well as physical space. (Hague, Wakely, Crespin and Jasco, 2006). A social group of any size whose members reside in a specific locality, share government, and often have a common cultural and historical heritage. (Hart, 1999)

Community-based organizations (CBOs): Organizations whose principal concerns are the welfare and development of a particular community. Frequently do not represent all the households in a particular area. (Hague, Wakely, Crespin and Jasco, 2006).

Community-driven reconstruction (CDR): Approach to reconstruction in which an agency suggests housing designs, technologies, and materials (with or without community involvement) and delivers construction materials, financial assistance, and/or training, using external contractors, community construction committees, or homeowner labor (Duyne, 2006).

Community participation: A process whereby stakeholders can influence development by contributing to project design, influencing public choices, and holding public institutions accountable for the goods and services they provide (World Bank, 1996); the engagement of affected populations in the project cycle (assessment, design, implementation, monitoring, and evaluation); a philosophy that puts affected populations at the heart of humanitarian and development activities as social actors with their own insights, competencies, energy, and ideas (ALNAP, 2003).

Community vulnerability: The conditions determined by physical, social, economic, and environmental factors or processes that increase the susceptibility to the impact of hazards. (Quarantelli, 2006).

Compensation schemes: A method for providing assistance to households after a disaster, allowing them to rebuild and to reestablish their way of life, which may includecash transfers, vouchers, and/or in-kind contributions.

Complaint mechanisms: Mechanisms that allow corruption to be reported by social actors, including public employees, ideally in a confidential manner.

Complex disasters: Multidimensional events of long duration often spawned by human-generated events, such as war and civil strife.

Conditional cash transfer: Cash conditioned on the beneficiary providing a service (such as work); using a service (such as attending a school or health clinic); or spending the transfer on an agreed commodity (such a shelter or restarting a business).

Conservation: Actions taken to secure the survival or preservation of buildings, cultural artifacts, natural resources, energy, or any other thing of acknowledged value to society. The reasons for conserving may be cultural, historical, humanistic, aesthetic, educational, or economic, environmental, global, or local (B.S. 7913, 1998).

Construction technology: The choice of building materials and the technique and means used to erect a house.

Contingency planning: A management process that identifies and analyses specific potential events or situations that might threaten the society or the environment and that establishes arrangements in advance to enable timely, effective, and appropriate responses to and recovery from any such events and situations (ISDR, 2008).

Contractor-driven reconstruction *in situ* (CRIS): An agency-led reconstruction approach in which a construction company replaces damaged houses in pre-disaster locations.

Contractor-driven reconstruction in relocated site (CRRS): An agency-led approach in which an agency contracts the construction of houses on a new site, generally with little or no involvement with the community or homeowners.

Corruption: The misuse of an entrusted position for private gain by employing bribery, extortion, fraud, deception, collusion, and money-laundering, including gains accruing to a person's family members, political party, or institutions in which the person has an interest (Kostyo, 2006).

Critical facilities and infrastructure: The primary physical structures, facilities, and systems that are socially, economically, or operationally essential to the functioning of a society or community, both in routine circumstances and the extreme circumstances of an emergency (ISDR, 2008).

Critical services: Services required to be maintained in the event of a disaster include power, water, sewer and wastewater, communications, education, emergency medical care, and fire protection/emergency services (FEMA 2008).

Cultural asset: Building, structure, landscape, object, or artifact that helps a society recall its history.

Cultural heritage: Monuments, groups of buildings ("ensembles"), and sites. It includes historic buildings, historic areas and towns, archaeological sites, and the contents therein as well as historic and cultural landscapes. It encompasses historic artifacts, art, and culture (World Heritage Convention, 1972). Also, movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance (World Bank, 2006).

Cultural significance: The perceived value of an asset established as a result of its continuity of presence and worth to society.

Damage assessment: The process utilized to determine the magnitude of damage caused by a disaster or emergency event (Vulnerability Assessment Techniques and Applications, http://www.csc.noaa.gov/vata/glossary.html).

Damage description and scope of work: A complete damage description contains descriptions of the pre-disaster facility, cause of damage (for example, wind or floodwaters), and dimensions and description of the damage. The scope of work describes the work necessary to repair the damage or replace the facility; provides the basis for the cost estimate; and needs to be comprehensive enough to support how and why it is being done (FEMA, 2008).

Debris removal: The clearance, removal, and/or disposal of items such as trees, woody debris, sand, mud, silt, gravel, building components and contents, wreckage, vehicles, and personal property (FEMA, 2008).

Debris salvage: Salvage of materials that can be expected to be marketable or reused such as timber debris, mulched woody debris, and scrap metals (FEMA, 2008).

Demolition: Destruction of damaged structures to (1) eliminate an immediate threat to lives, public health, safety, and improved public or private property or (2) ensure the economic recovery of the affected community to the benefit of the overall community (FEMA, 2008).

Digital elevation model (DEM): A data file that contains digital representations of cartographic information in a raster form. DEMs consist of a sampled array of elevations for a number of ground positions at regularly spaced intervals (FEMA, 2004).

Disaster: A serious disruption of the functioning of a community or a society causing widespread human, material, economic, or environmental losses and impacts that exceed the ability of the affected community or society to cope using its own resources (ISDR, 2008).

Disaster cycle (also disaster risk management cycle): The series of five phases—Prevention/Mitigation, Preparedness, Emergency Response, Recovery, and Rehabilitation/Reconstruction—undertaken by different stakeholders to address its various impacts on communities. (See "disaster risk management.")

Disaster response: Supply-driven attempts, usually lasting six months, to address post-disaster situations that threaten the lives, economy, and welfare of a community. (Kessler & Asian Disaster Preparedness Center, [ ]).

Disaster risk: The magnitude of potential disaster losses (in lives, health status, livelihoods, assets and services) in a particular community or group over some time period arising from its exposure to possible hazard events and its vulnerabilities to these hazards (ISDR, 2008).

Disaster risk management: The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies, and coping capacities of society and communities to lessen the adverse impacts of hazards and the possibility of disaster (ISDR, 2008).

Disaster risk reduction: The reduction of disaster risks and adverse impacts of natural hazards through systematic efforts to analyze and manage the causes of disasters, including through avoidance of hazards, reduced social and economic vulnerability to hazards, and improved preparedness for adverse events (ISDR, 2008).

Early recovery: A multi-dimensional process guided by development principles, which seeks to catalyze sustainable development opportunities by generating self-sustaining, nationally owned, and resilient processes for post-crisis recovery. It encompasses livelihoods, shelter, governance, environment, and social dimensions, including the reintegration of displaced populations, and addresses underlying risks that contributed to the crisis (UNDP 2007).

Early-warning system: The set of capacities needed to provide timely and meaningful information to enable individuals, communities, and organizations threatened by hazards to prepare and to act appropriately and in sufficient time to reduce the possibility of loss of life, injury, and other health impacts, loss of livelihoods, damage to property and the environment (ISDR, 2008).

Earthquake: A sudden motion or trembling caused by a release of strain accumulated within or along the edge of earth's tectonic plates (FEMA, 2001).

Economic security: A household or community that is economically secure when conditions allow it to meet its essential economic needs in a sustainable way without resorting to strategies which are damaging to livelihoods, security, and dignity.

Emergency management (See "relief"): The organization and management of resources and responsibilities for addressing all aspects of emergencies, in particular, preparedness, response, and initial recovery steps (ISDR, 2008).

Emergency services: The set of specialized agencies that have specific responsibilities and objectives in serving and protecting people and property in emergency situations (ISDR, 2008).

Empowerment: Authority given to an institution or organization (or individual) to determine policy and make decisions. Seeking inclusion of people who ordinarily outside the decision making process (Hague, Wakely, Crespin, and Jasco, 2006).

Enabling environment: The rules and regulations, both national and local, which provide a supportive environment for a specific activity, such as community participation or DRM, to take place.

Endangered species: A species in danger of extinction throughout all or a significant portion of its range. The World Conservation Union defines a species as endangered if the factors causing their vulnerability or decline continue to operate (IUCN, year). In post-disaster situations, it is sometimes necessary to avoid or modify projects that will jeopardize the continued existence of any threatened or endangered species or that will result in the destruction or adverse modification of the habitat for the species (FEMA 2008).

Environmental degradation: The reduction of the capacity of the environment to meet social and ecological objectives and needs (ISDR, 2008).

Environmental impact assessment: The process by which the environmental consequences of a proposed project or program are evaluated, undertaken as an integral part of planning and decision-making processes with a view to limiting or reducing the adverse impacts of the project or program (ISDR, 2008).

Equity: The quality of being impartial and "fair" in the distribution of development benefits and costs and the provision of access to opportunities for all (Hague, Wakely, Crespin and Jasco, 2006).

Erosion: The washing away of soil and rocks along streams and hillsides on public and private property that may cause an immediate threat to health and safety (FEMA, 2008).

Evaluation: The systematic and objective assessment of an ongoing or completed operation, program or policy—and its design, implementation, and results—to determine the relevance and fulfillment of objectives as well as efficiency, effectiveness, impact, and sustainability.

Exposure: The populations, property, systems, or functions exposed to hazards and thereby at risk of loss (ISDR, 2008).

Extortion: Threatening another with adverse consequences unless demands, usually for payment, are met.

Family: Any group of people defined by shared ancestry, post-disaster needs, spatial location (such as a neighborhood), or occupational community (such as fishermen).

Fault: A fracture in the continuity of a rock formation caused by a shifting or dislodging of the earth's crust in which adjacent surfaces are differentially displaced parallel to the plane of fracture (FEMA, 2001).

Flash flood: A flood event occurring with little or no warning and water levels rise at an extremely fast rate (FEMA, 2001).

Flood: A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal waters, (2) the unusual and rapid accumulation or runoff of surface waters from any source, or (3) mudflows or the sudden collapse of shoreline land (FEMA, 2001).

Floodplain: Any land area, including watercourse, susceptible to partial or complete inundation by water from any source (FEMA, 2001).

Floodplain mapping: Maps showing inundation limits for floods of selected recurrence intervals. Maps may include inundation limits from river and stream flow, hurricanes, and tsunamis and are used for zoning, insurance, and other regulatory purposes regarding heath and safety (FEMA, 2001).

Flood-proofing: Any combination of structural and nonstructural additions, changes, or adjustments to structures that reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, and structures and their contents (44CFR59.1).

Floodway: The channel of a river or other watercourse and the adjacent land areas that must be reserved to carry away dangerous and fast-moving water (44CFR59.1).

Fraud: Deceiving another person in order to gain some financial or other advantage.

Geographic Information System (GIS): ICT-based computer software and MIS systems and tools that relate physical features on the earth to a database for mapping and analysis (FEMA 2001). GIS systems, such as Google Earth, are used to capture, store, view, manage, analyze, edit, and present spatial features and data geographically on maps.

Geological hazard: Geological process or phenomenon that may cause loss of life, injury, and other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental degradation (ISDR, 2008).

Geophysical disasters: Seismic events (such as earthquakes, tsunamis, volcanic eruptions, landslides) related to the motion of the earth's tectonic plates.

Geo-referenced information: Data, photos, or videos referenced geographically (for or by a GIS) relating to earth's physical features and attributes such as latitude, longitude, or locality/jurisdiction. Can be used to assess damage, map hazards, identify natural and materials resources and critical infrastructure at risk, plan restoration, monitor progress, and evaluate results on maps using a GIS.

Geo-spatial information: See above.

GLIDE (GLobal IDEntifier): A system of unique disaster identifying numbers which when referenced in data sets will save time; create a common reference point for relating Bank projects to diverse and scattered sources of data; and eliminate confusion.

Global disaster: A disaster affecting the entire world such precipitous global warming, global economic market collapse, massive planetary collision, nuclear world war, or highly virulent pandemic influenza.

Ground-truthing: A process to verify and calibrate geo-spatial information gathered using remote sensing technology vis-à-vis the actual situation on the ground, which aids in the interpretation and analysis of the information.

Hazard: A natural process or phenomenon, or a substance or human activity, that can cause loss of life, injury, and other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental degradation (ISDR, 2008). The probability of occurrence, within a specific period of time in a given area, of a potentially damaging natural phenomenon (Cardona, 2003).

Hazard identification: The process of identifying hazards that threaten an area (FEMA, 2001).

Hazard mapping: The process of establishing geographically where and to what extent particular hazards are likely to pose a threat to people, property, or the environment (IDRM 2003).

Hazardous materials (HAZMAT): Any substance or material that, when involved in an accident and released in sufficient quantities, poses a risk to people's health, safety, and/or property. These substances and materials include explosives, radioactive materials, flammable liquids or solids, combustible liquids or solids, poisons, oxidizers, toxins, and corrosive materials (FEMA, 2003).

Heritage: The combined creation and products of nature and of man that make up the environment in which we live in time and space. Heritage is a reality, a possession of the community, and a rich inheritance that may be passed on and which invites our recognition, participation, and protection (Deschambault Declaration, 1982).

High hazard areas: Geographic locations that, for planning purposes, have been determined through historical experience and vulnerability analysis to likely experience the effects of a specific hazard (for example, hurricane, earthquake, hazardous materials accident) resulting in vast property damage and loss of life (FEMA, 2003).

High water mark: A reference mark on a structure or natural object, indicating the maximum stage of tide or flood (State of Washington Department of Ecology, 2002).

Historic preservation: Assessment of the impact a restoration project may have on historic resources including structures, objects, landscapes, archaeological sites and traditional cultural properties and/or providing for mitigation or restoration of the resources in the event of their damage (FEMA 2008).

Host families: A transitional settlement option sheltering the displaced population within the households of local families or on land or in properties owned by them (Corsellis and Vitale, 2005).

House owner-occupier: Tenure option where the occupier owns the house and land or is in part-ownership, such as when repaying a mortgage or loan. Ownership may be formal or informal.

House design: The form, dimensions, natural lighting, ventilation, and spatial organization of dwellings.

House tenant: Tenure option where the house and land are rented by the occupant, formally or informally, with or without a lease or other formal contract.

Household: Members of the same family unit sharing common income and expenditure sources. This definition may vary from context to context.

Housing: The immediate physical environment, both within and outside of buildings, in which families and households live and which serves as shelter; a government project to provide shelter to low-income groups (UN-Habitat, 1992).

Housing-sector assessment: An assessment to collect information such as demographic data, housing types, housing tenure situations, settlement patterns before and after the disaster, government interventions in the housing sector, infrastructure access, construction capacity, and market capacity to provide materials and labor for reconstruction.

Housing standard: Level of quality of a dwelling generally linked with the social level of the residents (including size, location, architecture, cost, workmanship quality).

Human-generated disasters: Disastrous conditions that result from war (including terrorism and other types of conflict), environmental degradation, and technological hazards (including nuclear power plant emergencies, hazardous material emergency, heat, and chemical emergencies). They can be classified as non-intentional or intentional.

Human security: In policy terms, human security is an integrated, sustainable, comprehensive security from fear, conflict, ignorance, poverty, social and cultural deprivation, and hunger (Ginkel & Newman, 2000:79). To protect the vital core of all human lives in ways that enhance human freedoms and human fulfillment that are the essence of life; protecting people from critical and pervasive threats and situations; using processes that build on people's strengths and aspirations; creating political, social, environmental, economic, military, and cultural systems that together give people the building blocks of survival, livelihood, and dignity (Commission on Human Security, 2003).

Hurricane (or "tropical cyclone"): A generic term for a cyclonic, low-pressure system over tropical or subtropical waters (FEMA, 2001).

Hydraulics: A branch of science or engineering that addresses fluids (specially water) in motion, water's action in rivers and channels, the works of machinery for raising water, water's use as a prime mover, and the like (FEMA, 2004).

Hydrology: A branch of science of dealing with the waters of the earth. A flood discharge is examined in a hydrologic study (FEMA, 2004).

Hydrometeorological hazard: Process or phenomenon of atmospheric, hydrological or oceanographic nature that may cause loss of life, injury, and other health impacts, property damage, loss of livelihoods, and services, social and economic disruption, or environmental degradation (ISDR, 2008).

Hydrometeorological disasters: The result from weather-related events, such as tropical water-related occurrences (hurricanes, typhoons, cyclones), windstorms, winter storms, tornadoes, and floods.

Hyogo Framework for Action: The agreed framework of actions to reduce disaster risks from 2005–2015 established by more than 190 countries following the World Conference on Disaster Risk Reduction held in Kobe, Hyogo Japan, January 2005.

Indicator: Quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement or to reflect the changes connected to an operation.

Inflation: An increase in prices or the amount of money needed to purchase a specific item.

Infrastructure: Systems and networks by which public services are delivered, including: water supply and sanitation; energy and other utility networks; and

transportation networks for all modes of travel, including roads and other access lines.

Informal owner-occupier: Tenure option in which the occupant owns the house but has no formal land ownership (OCHA, 2008).

Information and communications technologies (ICT): The collective technology used to create, store, exchange, analyze, and process information in all its forms integrated with the procedures and resources to collect, process, and communicate data.

Integrity pact: An agreement between government and bidders for public contracts that neither side will pay, offer, demand, or accept bribes nor collude with competitors in obtaining or carrying out the contract.

Internally displaced persons: Persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence—in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights, or natural or human-made disasters—and who have not crossed an internationally recognized state border (Guiding Principles on Internal Displacement).

Interoperability: The capability of different ICT applications to exchange data via common exchange, file formats, and protocols. In the broadest sense, interoperability takes into account the social, political, language, and organizational factors that impact system performance.

Knowledge management systems: Data systems that ensure the right knowledge is in the right place at the right time. For information (data) to become knowledge it must first be framed within the context of a need and transformed into actionable knowledge for the community at risk.

Landslide: Downward movement of a slope and materials under the force of gravity (FEMA, 2001).

Land use planning: The process undertaken by public authorities to identify, evaluate, and decide on different options for the use of land areas, including consideration of (1) long-term economic, social, and environmental objectives; (2) the implications for different communities and interest groups; and (3) the subsequent formulation and promulgation of plans that describe the permitted or acceptable uses (ISDR, 2008). (See "physical planning.")

Land tenant: Tenure option in which the house is owned but the land is rented (OCHA, 2008).

Lifelines: Public facilities and systems that provide basic life support services such as water, energy, sanitation, communications, and transportation (IDRM, 2003).

Liquefaction: The phenomenon that occurs when ground shaking causes loose soils to lose strength and act like viscous fluid, which, in turn, causes two types of ground failure: lateral spread and loss of bearing strength (FEMA, 2001).

Livelihoods: The ways in which people earn access to the resources they need, individually and communally, such as food, water, clothing, and shelter (Corsellis and Vitale, 2005).

Local infrastructure: The facilities of a local or host population to meet their communal needs, such as schools, hospitals, water-distribution systems, electricity grids, market services, roads, and bridges (Corsellis and Vitale, 2005).

Logical framework (logframe): A conceptual tool used to define project, program, or policy objectives, and expected causal links in the results chain, including inputs, processes, outputs, outcomes, and impact. It identifies potential risks as well as performance indicators at each stage in the chain.

Loss assessment: Analyzes the changes in economic flows that occur after a disaster and over time, valued at current prices.

Management information systems: ICT-base systems used to analyze related past, present, and predictive information in conjunction with operational methods and processes to help post-disaster initiatives run efficiently.

Market analysis: Research undertaken to understand how a market functions, how a crisis has affected it, and the need for and most appropriate form of support. Research can include information on supply and demand of goods and services, price changes, and income/salary data.

Microfinance: A broad range of small-scale financial services (such as deposits, loans, payment services, money transfers, and insurance) to poor and low-income households and their microenterprises.

Mitigation: The lessening or limitation of the adverse impacts of hazards and related disasters (ISDR, 2008).

Mold: Organic growth common in areas exposed to moisture. Some varieties are thought to pose health problems for certain individuals (Barron's Dictionary of Real Estate Terms, 6th edition).

Money-laundering: Moving cash or assets obtained by criminal activity from one location to another in order to conceal the source.

Monitoring: The ongoing task of collecting and reviewing program-related information that pertain to the program's goals, objectives, and activities.

Morphology: The size, form and structure of an object (such as a house).

National platform for disaster risk reduction: A generic term for national mechanisms for coordination and policy guidance on disaster risk reduction that are multisectoral and inter-disciplinary in nature, with public, private and civil society participation involving all concerned entities within a country (ISDR, 2008).

Natural hazard: Natural process or phenomenon that may cause loss of life, injury and other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental degradation (ISDR, 2008).

Needs assessment: A process for estimating (usually based on a damage assessment) the financial, technical, and human resources needed to implement the agreed-upon programs of recovery, reconstruction, and risk management. It evaluates and "nets out" resources available to respond to the disaster.

Nonstructural measures: Any measure not involving physical construction that uses knowledge, practice or agreement, to reduce risks and impacts, in particular through policies and laws, public awareness raising, training and education (ISDR, 2008). (See "structural measures.")

Nongovernmental organization (NGO): A nonprofit, voluntary, service-oriented, and/or development-oriented organization, operated either for the benefit of its members or of other members, such as an agency. (Global Development Research Center, www.gdrc.org). Also, civil society organization (CSO).

Occupancy with no legal status: Occupancy option in which the occupant occupies property without the explicit permission of the owner (OCHA, 2008).

Open source: Nonproprietary software code and applications developed by a community of interested developers and made freely available (no license) for use and further development. For example, Linux and many Google applications.

Operating energy: The energy consumed by a building for heating, cooling, lightening and ventilating .

Owner-driven reconstruction (ODR): A reconstruction approach in which the homeowner undertakes rebuilding with or without external financial, material and technical assistance. ODR does not necessarily mean that owners build the house on their own; rather, within given building codes, they retain full control over the housing reconstruction process (Duyne, 2006)

Pandemic diseases: Newly emerging infectious diseases or uncharacteristically virulent strains of well-known microbes or viruses (for example, influenza).

Participatory initiatives: Activities that reflect the results of community consultations, preferences, culture, and priorities, or are initiated by the community. An approach to program design and implementation intended to avoid decision making exclusively by the funding source (EKessler & Asian Disaster Preparedness Center, year)

Photovoltaic: The technology of the conversion of sunlight into electricity (en.wiktionary.org/wiki/photovoltaic).

Physical planning: A design exercise based on a land use plan used to propose the optimal infrastructure for public services, transport, economic activities, recreation, and environmental protection for a settlement or area. A physical plan can have both rural and urban components, although the latter usually predominates. (See "land use planning.")

Plume: Airborne material spreading from a particular source; the dispersal of particles, gases, vapors, and aerosols into the atmosphere (FEMA, 2003).

Participatory impact assessment: An approach to assessment that combines participatory tools with conventional statistical approaches intended to measure the impact of humanitarian assistance and development projects on people's lives. (Catley, 2008).

Post-Disaster Needs Assessment (PDNA). Post-disaster assessment that measures the impact of disasters on the society, economy, and environment of the disaster-affected area.

Preparedness: The knowledge and capacities developed by governments, professional response and recovery organizations, communities, and individuals to effectively anticipate, respond to, and recover from the impacts of likely, imminent or current hazard events or conditions (ISDR, 2008).

Prevention: Activities to provide outright avoidance of the adverse impact of hazards and means to minimize related environmental, technological and biological disasters; in the context of public awareness and education related to disaster risk reduction, changing attitudes and behavior to promote a "culture of prevention" (OCHA, 2008).

Probability: A statistical measure of the likelihood that a hazard event will occur (FEMA, 2001).

Project: A series of activities that support accomplishing specified objectives within a defined timeframe and with a defined budget.

Project cycle (also "project life cycle"): The sequence of activities that make up a project and how they relate to one other: identification, preparation, appraisal, presentation and financing, implementation, monitoring, and evaluation.

Qualitative data: Information based on observation and discussion that can include perceptions and attitudes.

Quantitative data: Numerical information, such as numbers of intended recipients, payments disbursed, cash transferred, or days worked broken down by gender, age, and other variables.

Rapid assessment: An assessment that provides immediate information on needs, possible intervention types, and resource requirements.

Reconstruction: The restoration and improvement, where possible of facilities, livelihoods, and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors (ISDR, 2008).

Recovery: Decisions and actions taken after a disaster to restore or improve the pre-disaster living conditions of the affected communities while encouraging and facilitating necessary adjustments to reduce disaster risk (ISDR, 2007). The permanent construction or replacement of severely damaged physical structures, the full restoration of all services and local infrastructure, the re-vitalization of the economy, and the restoration of social and cultural life (Aysan and Davis, 1993).

Recurrence interval: The time between hazard events of similar size in a given location based on the probability that the given event will be equaled or exceeded in any given year (FEMA, 2001).

Regulatory measures: Legal and other regulatory instruments established by government to prevent, reduce, or prepare for losses, such as those associated with hazard events, such as land use regulations in high-risk zones.

Relief: The provision of assistance or intervention immediately after a disaster to meet the life preservation and basic subsistence needs of those people affected (ISDR, 2007).

Remittances: Payments sent from migrant workers to family members in the country of origin.

Remote sensing: Information gathered about an object without being in physical contact with it (Sabins 1987). Post-disaster remote sensing includes imagery captured from aircraft and satellites to study changes to a landscape or structure and micro-sensors deployed to sense seismic shifts and record damage.

Repair: Restoration to working order following decay, damage, or partial destruction; making of additions or alterations as required to restore property to conditions in conformity with standards and specifications (UN-Habitat, 1992).

Repair cost: Those repairs associated with the damaged components and the codes and standards that apply to the repair of damaged components. It does not include upgrades of other components triggered by codes and standards, design associated with upgrades, demolition of the entire facility, site work or applicable project management costs (FEMA, 2008).

Replacement cost: Replacement cost includes the cost for all work necessary to provide a new facility of the same size or design capacity and function as the damaged facility in accordance with all current applicable codes and standards (FEMA, 2008).

Resettlement (involuntary resettlement): Actions necessary for the permanent settlement of persons dislocated or otherwise affected by a disaster to an area different from their last place of habitation (UNDHA, 1992).

Residual risk: The risk that remains in unmanaged form, even when effective disaster risk reduction measures are in place, and for which emergency response and recovery capacities must be maintained (ISDR, 2008).

Resilience: The ability of a system, community, or society potentially exposed to hazards to resist, absorb, adapt to, and recover from the stresses of a hazard event, including the preservation and restoration of its essential basic structures and functions (ISDR, 2008).

Response: The provision of emergency services and public assistance during or immediately after a disaster to save lives, reduce health impacts, ensure public safety, and meet the basic subsistence needs of the affected people (ISDR, 2008).

Retrofitting: Reinforcement or upgrading of existing structures to become more resistant and resilient to the forces of hazards (ISDR, 2008).

Return period: The estimated likelihood of a disaster reoccurring in an area; a series of probable events.

Rights-based assessment: Evaluates whether people's basic rights are being met. The basis for this assessment is the United Nations Universal Declaration of Human Rights.

Risk: The probability that a particular level of loss will be sustained by a given series of elements as a result of a given level of hazard. Elements under threat can include populations, communities, the built environment, the natural environment, economic activities, and services (Alexander, 2000).

Risk analysis: A determination of the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that could pose a potential threat or harm to people, property, livelihoods, and the environment on which they depend (UN/ISDR, forthcoming 2008).

Risk assessment: A methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods, and the environment on which they depend (ISDR, 2008).

Risk atlas: A series of maps showing community damages and losses as well as hazard areas for a series of probable events; a separate map is generated for each return period event. (See "return periods.")

Risk management: The systematic approach and practice of managing uncertainty and potential losses through a process of risk assessment and analysis and the development and implementation of strategies and specific actions to control, reduce, and transfer risks (ISDR, 2008).

Risk transfer: The process of formally or informally shifting the financial consequences of particular risks from one party to another whereby one party (a household, community, enterprise, or state authority) will obtain post-disaster resources from another party in exchange for ongoing or compensatory social or financial benefits (ISDR, 2008).

Satellite imagery: Images captured from above the earth using remote sensing technology.

Scour: Removal of soil or fill material by the flow of flood waters; conical erosion around pilings and other foundation supports where the obstruction of flow increases turbulence (FEMA, 2001).

Secondary hazard: A threat whose potential would be realized as the result of a triggering event that of itself would constitute an emergency (for example, dam failure might be a secondary hazard associated with earthquakes) (FEMA 2003).

Storm surge: Rise in the water surface above normal water level on the open coast due to the action of wind stress and atmospheric pressure on the water surface (FEMA 2001).

Structural measures: Any physical construction to reduce or avoid possible impacts of hazards, or application of engineering techniques to achieve hazard-resistance and resilience in structures or systems (ISDR, 2008). (See "nonstructural measures.")

Shelter: A habitable covered living space, providing a secure, healthy living environment with privacy and dignity for the groups, families, and individuals residing within it (Corsellis and Vitale, 2005). Also, a generic term for

Social assistance/protection: A regular, predictable, non-contributory transfer usually provided in cash (and sometimes in kind) to poor or vulnerable households or individuals which aims to allow them to build assets to protect themselves and increase resilience against shocks and vulnerable periods of the life cycle.

Stakeholders (or actors): All those, from agencies to individuals, who have a direct or indirect interest in the humanitarian intervention, or who affect or are affected by the implementation and outcome of it (ALNAP, 2005) Those persons and organizations who have an interest in a policy or area, or who may be affected by the outcomes, or have a part to play, in which case they are often referred to as "actors" (Hague, Wakely, Crespin and Jasco, 2006).

Sustainable development: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (ISDR, 2008).

Squatter: A person occupying an otherwise abandoned housing unit or land without legal title to that unit or land (UN-Habitat and OHCHR, 2003).

Targeting: The criteria, selection, and identification of potential compensation recipients by local communities, government, or external agencies.

Technological hazard: A hazard originating from technological or industrial conditions that may cause loss of life, injury, and other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental degradation (ISDR, 2008).

Tornado: A violently rotating column of air extending from a thunderstorm to the ground (FEMA, 2001).

Transitional reconstruction: The process by which people who have not been displaced by a disaster or are returning from displacement regain longer-term housing.

Transitional settlements: The processes by which populations affected and displaced by conflict or natural disasters achieve settlement and shelter throughout the period of their displacement, prior to beginning transitional reconstruction (Corsellis and Vitale, 2005).

Transitional settlement: The movement of those who have been displaced by a disaster between shelter options starting from the disaster, over the period of their displacement, which may be days or years.

Transitional shelter: Shelter that provides a habitable covered living space and a secure, healthy living environment with privacy and dignity for those within it during the period between a conflict or natural disaster and the achievement of a durable shelter solution (Corsellis and Vitale, 2005).

Tropical cyclone (or hurricane): A generic term for a cyclonic, low-pressure system over tropical or subtropical waters. (FEMA, 2001).

Tropical depression: A tropical cyclone with maximum sustained winds of less than 39 mph (FEMA, 2001).

Tropical storm: A tropical cyclone with maximum sustained winds greater than 39 mph and less than 74 mph (FEMA, 2001).

Tsunami: A great sea wave produced by submarine earth movement or volcanic eruption (FEMA, 2001).

Typhoon: A special category of tropical cyclone peculiar to the North Pacific Basin (FEMA, 2001).

Unconditional cash transfers: Cash transfers from governments or NGOs given without conditions attached to individuals or households, with the objective of alleviating poverty, providing social protection, or reducing economic vulnerability (See "conditional transfers").

User-driven reconstruction: Similar to owner-driven reconstruction, the approach in which the occupant of the property may not be the owner in a formal sense but may still possess sufficient property rights or sense of ownership to be willing to take on the reconstruction responsibility.

Vector control: Emergency protective measures taken when there is a serious health hazard resulting from the incident (FEMA, 2008).

Vernacular architecture: Comprising the dwellings and all other buildings of the people related to their environmental contexts and available resources, customarily owner- or community-built, utilizing traditional technologies. All forms of vernacular architecture are built to meet specific needs, accommodating the values, economies, and ways of life of the culture that produce them. They may be adapted or developed over time as needs and circumstances change (Oliver, 2003).

Vulnerability: The relative lack of capacity of a community or ability of an asset to resist damage and loss from a hazard (ISDR, 2008). The conditions determined by physical, social, economic, political, and environmental factors or processes that increase the susceptibility of a community to the impact of hazards (La Trobe and Davis, 2005).

Vulnerability, urban: The degree to which socioeconomic systems and physical assets in urban areas are either susceptible or resilient to the impact of natural hazards; the adaptive and coping capacities that determine the extent to which a society can tolerate damage from extreme events without significant outside assistance (Mileti, 1999).

Vulnerable groups: They include displaced people, women, the elderly, the disabled, orphans, and any group subject to discrimination.

Warning systems: Mechanisms used to persuade and enable people and organizations to take actions to increase safety and reduce the impacts of a hazard (IDRM, 2003).

Watershed: An area of land that drains water downslope to the lowest point (FEMA, 2004).

Wildfire: Grass, brush, and forest fires that destroy protective ground cover leading to flooding, landslides and mudslides (FEMA, 2008).

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