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Queensland

Recovery and Reconstruction in the Aftermath of the 2010/2011 Flood Events and Cyclone Yasi

A report prepared by the World Bank in collaboration with the Queensland Reconstruction Authority

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The International Bank for Reconstruction and Development

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Cover photos:

Top: Aerial Story Bridge post flood. Photo courtesy Brisbane Marketing.

Bottom left: Southbank flooding/©Lyle Radford; center: Ipswich flooding, January 2011/Photo Courtesy of The Queensland Times; right: Port Hinchinbrook/Photo Courtesy of The Townsville Bulletin.

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Flood damage reconstruction work undertaken by QBuild at Milperra. © The State of Queensland.

Port Hinchinbrook. Photo Courtesy of the Townsville Bulletin.

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Foreword

Towards the end of 2010 and in the early months of 2011, the State of Queensland suffered from devastating floods. Resulting from a series of heavy rains, followed by a category 5 Cyclone Yasi, the floods caused dozens of casualties, the evacuation of over 70 towns, and an excess of US$15 billion of damages and losses. The events washed away roads and railways, destroyed crops and brought Queensland's $20 billion coal export industry to a near halt, making the flooding one of Australia's most expensive natural disasters.

The Federal government and Queensland's State authorities responded swiftly with the help of Australia's Emergency Management system as well as the Australian Defence Force, effectively coordinating the evacuation, and providing relief and recovery support. In February 2011, the Queensland Reconstruction Authority was established to oversee and coordinate the recovery and reconstruction efforts. Major-General Michael Slater, appointed Chair of the Queensland Reconstruction Authority, has been leading the efforts to rebuild communities across the state affected by the floods and cyclone. Only four months after the floods, Queensland is well on the path to recovery. With the long-term goal of rebuilding a safer state, Queensland now faces the long-term issue of building resilience through risk reduction and integrated watershed management.

Australia and the World Bank are close partners in the efforts to aid developing countries on their path to sustainable growth, with Australia playing a significant role in the Bank's initiatives in the field of disaster risk management and climate change adaption, particularly through its dedicated support of the Global Facility for Disaster Reduction and Recovery (GFDRR). Following World Bank President Robert Zoellick's offer of assistance, the government of Australia accepted the World Bank's support for the reconstruction. The undertaking, based on the concept of a knowledge exchange where the World Bank contributes global good practice and at the same time learns from Australia's experiences in recovery, reconstruction and risk mitigation, took place in three phases. During the first phase in March 2011, a team of World Bank experts visited Queensland's affected areas, focusing on the overall reconstruction approaches and strategies. In the second phase in May 2011, Bank staff supported training courses for local government authorities on developing local reconstruction plans. In mid-June, a Memorandum of Understanding is to be signed between the Queensland Reconstruction Authority and the World Bank, which will further encourage knowledge-exchange initiatives, particularly in disaster risk management.

This report prepared by the World Bank, in collaboration with the Queensland Reconstruction Authority documents the achievements and progress made in Queensland and includes examples of global practice that the World Bank has collected in the field of reconstruction and risk reduction from across the world.

James Adams
World Bank Regional Vice President

Major-General Michael Slater
Queensland Reconstruction Authority Chair

Executive summary

South East Queensland flood disaster. Photo Courtesy of The Toowoomba Chronicle.

Executive summary

The Queensland flooding of early 2011 was Australia's largest natural disaster in recent memory. With a "ballpark" estimate of US$ 15.9 billion[1] in total damages and economic losses (with a public reconstruction cost of approximately US$7.2 billion), this is also one of the major international disasters of the last decade. The combined impact of the Indian Ocean Tsunami has been US$ 11.5 billion, and it is similar to major disasters in developed countries, such as the 1994 Los Angeles Earthquake (US$ 24 billion) or the 2002 flooding of the Elbe River in Germany (US$ 14 billion). As of March 2011, the government and private sector have mobilized an estimated US$ 11.8 billion (including insurance payments), representing 75 percent of the estimated damage and losses which is already above the 45 percent average of disaster coverage in developed economies.

The Queensland reconstruction effort meets international good practice standards in many ways. Building on a wealth of experience, the Australian authorities have responded rapidly to save lives, provide emergency funding to individuals and communities, and to set-up the institutions charged with the management of the recovery and reconstruction. Four months after the floods, Queensland is well on the path of recovery: local reconstruction plans have been prepared, most coal mines are back in operation and many families have received financial assistance to cope with the impact of the floods.

The government has made three key choices in the immediate aftermath of the disaster enabling speedy recovery. First, the army and volunteers assisted those in need immediately and subsequently managed the clean-up operation. Second, the government established a dedicated institution – the Queensland Reconstruction Authority (QldRA) – and charged it with the overall coordination of the relief and recovery effort. Third, financial support was provided immediately to the beneficiaries. The financial packages have the right balance between size, terms and eligibility criteria.

The state of Queensland focuses on "building back better" in order to reduce the impact of future disasters and create resilient communities. The QldRA declared building resilience as an overarching goal and seeks to integrate disaster risk reduction into the main lines of reconstruction. A framework of measuring results in this area is provided by Australia's National Strategy for Resilience of 2011. Flood risk management poses particular challenges in the areas of land use planning and river basin management that will need to be addressed.

In the months to come, it will be important for the QldRA to "connect the dots" and prepare for the transition to full-fledged reconstruction. Building on a comprehensive damage and loss assessment and a strong monitoring and evaluation system, there will be demand for strategic planning, and an assessment of sectoral and geographic gaps.

1 Figures based on compilation of damage and losses data from various sources including IBIS World, PriceWaterhouseCooper, and Prime Minister's Office. Exchange Rate AUD$ 1= US$ 1 (February 2011).

Introduction

South East Queensland flood disaster. Photo Courtesy of The Toowoomba Chronicle.

Introduction

Floods in Queensland

The 2010/2011 floods occurred after a prolonged period of drought, in quick succession, compounded intermittently by three major storm events and cyclones. Queensland, also called "the Sunshine State", traditionally experiences heavy rainfall in the months from December to March. However, in 2010, already by the end of November, much of eastern Australia, including Brisbane, saw crops soaking and water catchments fill, making them more likely to overflow in case of heavy rains. 2010 ended being in fact the third wettest year on record, according to the Australian Bureau of Meteorology. This is a stark contrast to the previous years when Queensland suffered severe droughts.

This season, a particularly strong La Niña weather pattern appeared, leading to warmer waters near the northeastern coast of Australia, making Queensland particularly susceptible to tropical storms. On 25th December, Cyclone Tasha made landfall south of Cairns with 150-250 mm of rainfall. This was preceded by three heavy rain events all taking place within three weeks of December. In addition, on February 3rd, Category 5 Cyclone Yasi crossed Queensland coast at Mission beach and Tully south of Cairns, becoming the worst cyclone to hit Australia since 1918, with 290 km/h winds, destroying homes, businesses, along with infrastructure and agricultural crops in the already suffering area.

Floods are not unknown to Queenslanders. The Commonwealth, States and Councils can rely on decades of experience, institutional memory and well-established financial and physical delivery mechanisms for effective and efficient disaster response. The La Niña years of 1916, 1917, 1950, 1954 through 1956, and 1973 through 1975, were accompanied by some of the worst and most widespread flooding this century. In January 1974, a cyclone brought heavy rainfall to Brisbane and many parts of southeastern Queensland and northern New South Wales with a third of Brisbane's city centre and 17 suburbs severely flooded leaving 14 people dead, over 300 injured, 56 homes washed away and 1,600 submerged. Since the catastrophic floods of 1974, there have been major flood events in various parts of the State. In April 2010, over one million square kilometers of Queensland and New South Wales were flooded during which some 2,000 homes were inundated. However, the 2010/2011 floods have been historically unique due to their causes and wide-ranging impact.

Australia's climate, punctuated by cycles of drought and intense rain events, make the county susceptible to flooding. Cyclones take place seasonally between October and May. La Niña, weather pattern that affects the Pacific Ocean region, is known as the wet counterpart of the El Niño weather pattern generally associated with drier conditions. During La Niña, the cold water that pools near the coast of South America surges across the Pacific and there is a greater build up of warmer water along the eastern coast of Australia. As a result, there is a greater contrast in the sea surface temperatures between the east and west Pacific, and a greater contrast in air pressure. The easterly trade winds become stronger due to this contrast, dragging warm, moist air along the Australian coastline, creating larger rain clouds and producing more rainfall.

Table 1. Queensland Floods Timeline

September-November	Large parts of eastern Australia, including Queensland, experience the wettest spring season, soaking crops and filling water catchments.
December 3	First series of heavy rain hits central Queensland, causing much damage in the town of Emerald.
December 10-13	Central Queensland hit again with torrential rains, causing localized flooding, and strengthening floodwaters.
December 19-20	Strong rains for the third time recorded in Queensland, causing flooding.
December 24	Many river catchments are soaked.
December 25	Tropical Cyclone Tasha makes landfall near Gordonvale south of Cairns, bringing rainfall of 150-250 mm.
December 28	After six more days of contact rain, disaster is declared for the towns of Chinchilla, Theodore and Dalby in southern Queensland, prompting mass evacuation.
December 30	Bundaberg north of Brisbane experiences heavy flooding.
January 1	Airport at Rockhampton is cut off by a deluge from soaked inland areas.
January 3-4	Rockhampton is cut off by rising floodwaters. Other cities brace for record flooding, and it is expected that floods will last for weeks.
January 5	Violent storms overnight cause flash flooding in Brisbane.
January 12	Brisbane flood levels reach peak, causing widespread flooding with dozens of suburbs and thousands of properties are inundated.
January 17-18	Floods menace Victoria State. Residents of Kerang evacuate.
February 2 2011	Category 5 Cyclone Yasi hits south of Cairns.

Source: Telegraph.co.uk, 4th Jan 2011; Australian Geographic February 3 2011

Impact

73 out its 73 Local Government Areas (LGAs) or Councils in Queensland declared the State of Emergency due to the flooding events. Queensland experienced both slow-onset and deep inundation events as well as flash floods in various low-lying parts and valleys of Queensland. The floods inflicted significant damages and losses to private properties and businesses, and a vast number of public infrastructures.

"Ballpark" estimates indicate cumulative damages and losses from the floods and cyclones in the 2010/2011 period reached at least AUD$ 15.7 billion resulting in a consequent lowering of Queensland growth estimates from 3 percent to 1.25 percent. These damages include:

- damages to more than 9,100 km of state road network and approximately 4,700 km of the rail network;
- power disruptions to approximately 480,000 homes and businesses;
- 97,000 insurance claims in respect of damages to private assets, of which 50-60 percent are for privately owned residential properties;
- damages or disruptions to 54 coal mines, 11 ports, 139 national parks and 411 schools;
- estimated losses of $ 875 million to primary industries, primarily the sugar, fruit and vegetable sub-sectors;

Table 2 below provides the initial sectoral damage and losses estimates compiled from various sources in March 2011.

Table 2. Estimate of Damage and Losses, Queensland Flood & Yasi Cyclone (In AUD$ bn)

Sector	Estimated Damage and Losses	Data Sources
Mining	2.5	PriceWaterhouseCooper
Agriculture	1.6	IBIS World (Market Research Company)
Housing	4	IBIS World (based on construction value of damage homes)
Infrastructure	5	Prime Minister's Office
Commercial Properties	2	IBIS World
Tourism	0.6	IBIS World
Total	**15.7**	

Response and early recovery

Australia's disaster response has benefited tremendously from prior disaster management arrangements and preparedness. Disaster response has been largely indigenous, public-sector led and private-sector supported, without any significant reliance on the international community. The Commonwealth Government of Australia has indicated that it will invest AUD $ 5.6 billion in rebuilding flood-affected regions, including around AUD $ 3.9 billion to be allocated as the Australian Government's share of Natural Disaster Relief and Recovery Arrangements (NDRRA)'s expenditures (75 percent). Likewise Queensland government has pledged about AUD $ 2.1 billion funding for financing recovery and reconstruction. However final recovery and reconstruction costs, particularly including premiums for building-back-better and longer term disaster risk reduction, are likely to be even higher. As of mid March 2011, the following had been achieved:

- **Human and Social protection**: More than 630,000 Australian Government Disaster Recovery Payments have been made totaling $725m of which 60 percent were flood-related and the rest were related to the recent cyclones; more than 57,000 Disaster Income Recovery Subsidies have been granted, totaling $60m, of which 92 percent were flood-related; more than 60,000 claims have been made under NDRRA provisions; and 409 of the 411 affected schools made operational from their original locations.
- **Economic**: Of the 54 affected coal mines, 49 have returned to full or partial production; more than 1600 grant payments have been made to primary industry/producers worth more than $8m; and more than 2100 grant payments to small businesses worth nearly $11m have been processed.
- **Environment:** Across Queensland 83 sewage schemes were affected. As at 6 April 2011, 76 of those affected schemes were operating within approved regulatory standards. 103 water supply schemes were affected and all are now operating within approved regulatory standards. Of the 389 stream flow gauges across the state, 36 were structurally affected by the extreme weather events. Preliminary or temporary repairs had been performed on 34 of the 36 gauge sites as at 1 April 2011; and 175 out of the 279 national parks closed due to extreme weather events have re-opened.
- **Private Recovery**: Power was restored to 99 percent of 480,000 affected homes and businesses; $310m

paid in insurance claims, while another $2.5 billion estimated claims are yet to be paid for which public sector facilitation has begun; a quick GIS-based housing damage database and 'interactive map' has been developed and made accessible to the public – which is the most-frequented site on the QldRA website, with more than 22,000 unique visits, out of the total of 23,500 visits made at the QldRA website in less than a month since its inception. The latter marks the rapid commencement a participatory and inclusive process for damage verification and grant eligibility determination which can be considered as a good practice example, with potential for international replication.

- **Roads and Transport**: More than 40 percent of the 9,170 km of affected state roads have been re-operationalized; 3,807 km of the affected 4,748 km of rail network have been restored to service; and 10 out of the 11 affected ports restored to full operations.

- **Community Engagement and Communications**: A community assistance and outreach campaign - the "Join Forces Program"- was launched in February 2011 to foster, facilitate and catalyze partnerships and synergy-building across community organizations, clubs, local governments, businesses and individuals. Up to 54 community organizations have signed up for the program with 5 successful matches or purpose-specific partnerships. A two-way communications system with the communities was established by the QldRA. The QldRA has also received early community feedback - by March 2011, it received a total of 258 calls and letters. In addition, the QldRA website, launched in mid-February 2011, recorded over 23,000 unique visits in the space of less than a month of its existence.

Repair works on a section of the Warrego highway. © The State of Queensland.

Box 1. Good Practice: Post Flooding and Cyclone Cleanup

The town of Grantham in the Lockyer Valley Regional Council of Queensland was one of the hardest hit communities in the recent flash flood. On 10 January 2011, this town of around 300 people was swept by an inland tsunami with the depth of more than 6 meters in some areas.

- Following an extensive search and rescue operation, the community with the support of the army and police personnel and volunteers started a cleanup operation on 18 January 2011. The Local Council and the community coordinated the cleanup of the debris, and within three weeks, the flood impacted areas have been cleared from the debris and collapsed buildings. In other towns also inundated by the January 2011 flood, similar cleanup operations were also carried out with more than 15,000 volunteers working alongside emergency response personnel.
- Post disaster cleanup was among the standard early recovery schemes in Australia's disaster management framework. Following Cyclone Yasi which struck the northern part of Queensland, the Commonwealth and State governments established a $20 million Rural Resilience Fund. The Operation Cleanup – Employment component of this initiative provides an opportunity for unemployed local farm and tourism workforce in the cyclone affected areas to be employed in the cleanup operation. This scheme enables affected residents to remain in their communities and to take an active role in the re-building effort, where they can also receive training and other assistance to increase their job prospects.

Provision of early recovery assistance to the disaster impacted communities to clean up the debris from destruction left by a catastrophic event has been a common approach in recent post disaster recovery practices around the world. Experiences from the Indian Ocean Tsunami, Haiti Earthquake to Pakistan Flood suggest that such a program is well suited for community context where rural livelihood or labor intensive employment was impacted by the disaster. In the context of Queensland reconstruction, which covers a geographically vast area, such a scheme could be expanded to include a longer-term reconstruction effort such as rebuilding community infrastructure important for the community's long-term social as well as economic recovery.

Box 2. Good Practice: Cairns Local Disaster Coordination Centre

Opened in December 2010, the dedicated centre was funded through the Australian Government's Regional and Local Community Infrastructure Program, the Queensland Government and Cairns Regional Council.

The building is designed to withstand Category 5 cyclones and has independent emergency power and water sources. The centre is enabled for the synchronized delivery of information and relief to the community during a crisis situation. It is connected directly to Cairns Regional Council's data systems at the administration building via optic fibre link. Council's team also uses the center for disaster management training, education and planning activities including external community groups such as SES, Red Cross, schools, and volunteer groups.

Source: Cairns Regional Council (http://www.cairns.qld.gov.au/about-council/media-and-public-notices/media-releases/releases/cairns-local-disaster-coordination-centre)

Aerial Story Bridge post flood. Photo courtesy Brisbane Marketing.

PART A: Achievements in Queensland

1 Institutional, Implementation and Coordination Arrangements

1.1 Institutional framework for disaster response and preparedness

Australia now benefits from a robust and efficient disaster preparedness regime. Australia's disaster risk management system recognizes that not all types of natural hazards and hazard intensities throughout the vast expanse of the continent can be mitigated. This serves as the *raison d'être* for a robust multi-sectoral disaster response mechanism which addresses the multi-dimensional recovery needs of public sector infrastructure and services, as well as privately-owned assets. Over the years, the country has built a comprehensive ex-ante disaster response strategy and a preparedness regime into its normal public service delivery systems. This includes the necessary legislation, institutionalization, financial instruments and coordination mechanisms for effective disaster response.

Multi-tier institutional arrangements, legislation and formal coordination forums for disaster management are in place. The State of Queensland's Disaster Management Act-2003 (dated 21 February 2011) provides the legislative basis for the State's elaborate and well-functioning disaster management arrangements. The Act requires the establishment of disaster management groups and committees at the State level, as well as within local government in disaster-prone districts. For disaster recovery, each disaster management group is served by Community Recovery Committees (CRC) and Plans at the State, District and Local levels. The CRCs are tasked with specific functions and deliverables, such as inter-agency coordination; development and review of annual recovery plans; monitoring the multi-agency MOU for the provision of community recovery services in disaster events; monitoring preparedness levels and activities; support and advice on disaster recovery operations, and liaison with Emergency Management Queensland (EMQ) and downstream recovery organizations and committees. The fusion and interplay of State and lower-tier departments helps ensure both central-level monitoring and coordination, and standard-setting in advice and recovery, as well as decentralized decision making, and fostering of strong regional and local capacities for the implementation of disaster management and recovery plans.

There is a clear distribution and delineation of disaster management functions across departments, facilitating coordinated reaction processes. The responsibilities of the various departments for disaster management are clearly and carefully determined and delineated, including those of EMQ, and the Departments of Communities, Health, Primary Industries and Fisheries, Tourism, Regional Development and Industry, Public Works (for damage assessment of impacted built infrastructure); education and the arts, housing, families, community services and indigenous affairs. Likewise, there are formal roles and specific responsibilities for other institutions, such as peak bodies[2] and civil society groups, , including the Australian Red Cross, Local Government Association of Queensland (LGAQ), Lifeline Community Care, St Vincent de Paul, Salvation Army and Centrelink.

The Australian Disaster Management Regime is further reinforced by innovative disaster management mechanisms. Some examples of these include the cross-cutting Value for Money (VFM), and Regime and Prior Contracting Arrangements for rapid reconstruction in the transport and roads sector, both of which have a potential for international replication.

2 Peak bodies are associations of industries or groups, generally established for the purposes of developing standards and processes or to act on behalf of its members in lobbying the Government."

Box 3. Good Practice: Pre-Disaster Contracting Arrangements in the Transport Sector

Traditionally, the vast expanse of Queensland and the sprawling network of roads have posed a daunting challenge in post disaster recovery and reconstruction. In the case of the present reconstruction program, transport sector is the most significant program in terms of investment. To deal with this recurring challenge, the transport department has adopted a system of pre-disaster contracting (on basis of retainership) under which work contracts have been pre-commissioned and pre-negotiated with major contractors, enabling them to mobilize reconstruction resources and start rebuilding and re-operationalising the road network rapidly. This is a good lesson for other countries which are prone to recurrent disasters, particularly floods. However the scale and impact of the recent spate of disasters in Queensland is such that it is overwhelming existing capacities, both in the contracting industry as well as in the supply of basic construction inputs including plant, machinery, tools and materials.

The Department of Transport and Main Roads has entered into dialogue with industry suppliers to facilitate the procurement of these materials from other external sources, such as other states in Australia. This is also a good practice that has parallels in global contemporary post-disaster reconstruction, such as in Pakistan Earthquake 2005 and the Tsunami Reconstruction in Sri Lanka, where innovative supply-side solutions were developed to deal with both shortfalls and to control material 'price-spikes' –such as the establishment of building material supply hubs in Pakistan and mechanisms for bulk community procurement of housing reconstruction materials in Sri Lanka.

1.2 The Queensland Reconstruction Authority

The Australian Government has proved quick and flexible in the institutional and financial response to the floods. In the aftermath of the quick succession of the floods and cyclones, the Government has rapidly established additional institutional and financing arrangements for efficient and effective early recovery. These include:

- **A Premier's Disaster Relief Appeal** that has attracted more than A$257 million as of May 2011;
- Immediate availability of early recovery **financing** through at least 3 pre-existing financial assistance windows for grant payments to flood-affected individuals;
- **The establishment of the Queensland Reconstruction Authority** (QldRA) by an Act of Parliament, effective February 21 2011, for 2 years.

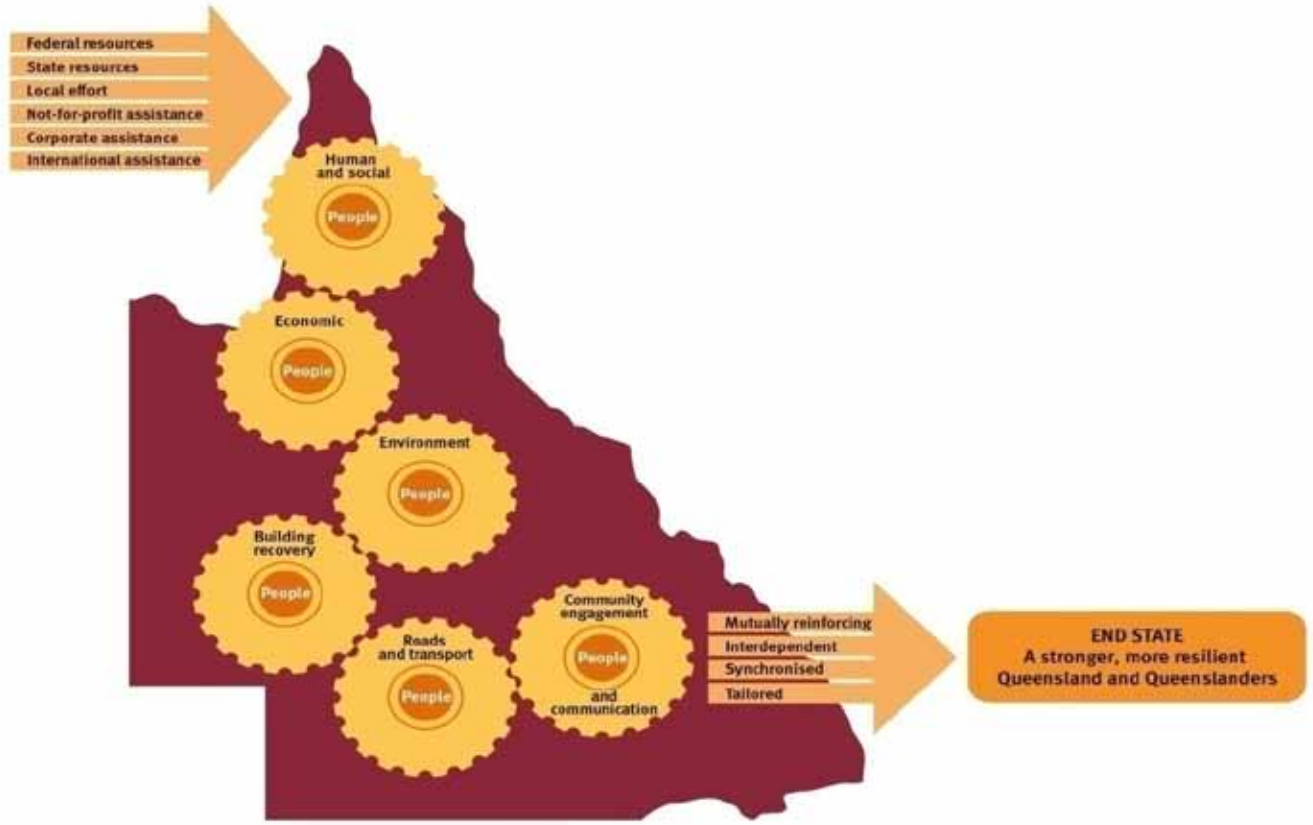
The QldRA's mission is to reconnect, rebuild and improve Queensland communities and its economy. The Authority has been vested with the power and authority to take charge of the reconstruction process and facilitate effective interaction between the concerned line departments at the State and local levels, in coordination with the concerned local councils. Its key strategic objectives are to:

- Maintain the self-confidence of Queensland
- Build a resilient Queensland and support resilient Queenslanders
- Enhance preparedness and disaster mitigation

- Continue implementation of Toward Q2: Tomorrow's Queensland[3].

The Government of Queensland established six lines of reconstruction to facilitate the recovery and reconstruction process. These include: (a) Human and Social, (b) Economic, (c) Environment, (d) Building Recovery, (e) Roads and Transport, and (f) Community Engagement and Communication comprehensively cover the key areas that require attention in the post disaster reconstruction process. Figure 1 indicates the resources and the six lines of reconstruction established for a stronger and more resilient Queensland.

Figure 1. Resources and Lines of Reconstruction in Queensland



Source: QldRA briefing presentation for the World Bank in March 2011

This approach incorporates a number of good practices:

- The use of an integrated approach to Disaster Risk Management and Reduction between each of the reconstruction focal lines seeks to achieve a mutually reinforcing, interdependent, synchronized and tailored approach to the end goal of *Achieving a Stronger, More Resilient Queensland and Queenslanders.*

3 Towards Q2: Tomorrow's Queensland is a long term plan prepared by the Government of Queensland in September 2008 with targets in different dimensions of development expected to be achieved by the year 2020.

- A Land Use Planning team, consisting of the Land Use Planner and the Local Government Planning representative for Grantham Local Council in Lockyer Region, has demonstrated how to effectively integrate technical dimensions of land use planning with a consultative approach that focuses on local councils and local community representatives.
- The efforts of Arts Queensland, looking at the Human and Social, Economic, Environment, Building Recovery and Community Engagement and Communication dimensions of art and culture preservation across Queensland, is an excellent example of what is possible by focusing on key objectives while using an interdisciplinary approach.
- The Human and Social Line of Reconstruction sub-group is focusing attention on the psychosocial and counseling support requirements of the affected communities, with collaboration of a range of Non-Governmental Organizations and peak bodies.

Successfully creating a link to Normal Government Business: Disaster response and recovery has increasingly become part of normal business of several line departments. The Queensland Department of Transport and Main Roads, for example, has an established Emergency Management unit dedicated to respond to emergency in the transport sector. The transport sector also has a cooperative mechanism where commonwealth, state and local road agencies have agreed on annual cost sharing arrangement for road repair that serves as a 'pool' of resources able to carry out immediate repairs to damaged roads caused by a disaster. Similar practice of collaborative arrangement between line departments at the commonwealth, state and local levels also exist in other major sectors such as primary industry and employment (under the Department of Employment, Economic Development and Innovation) which generally manages the various financing schemes under NDRRA. The Department of Public Works also has the mandate of restoring public buildings and providing support through building administration to reconstruction of privately owned buildings, as part of their normal business.

For other examples of global good practice in institutional, implementation and coordination arrangements, Part B/Chapter 1 includes three case studies, from Bangladesh, Thailand and Philippines, showing how institutional arrangements for disaster response, recovery, reconstruction and disaster risk management have evolved in these country contexts.

Box 4. Good Practice: A Designated Authority for Reconstruction

Although the QldRA was established as a statutory authority with a strong mandate to intervene in particular sectors or local government jurisdiction to respond to disaster events, its approach has been consultative, providing policy options to the Cabinet to take decisions on the respective sectoral domains. This approach ensures that reconstruction will continue to be a part of normal government businesses for the line department concerned.

In working with local governments, the QldRA also takes the approach of supporting local Councils in pushing forward their local recovery and development agenda under the framework of broader reconstruction policy, especially with regards to disaster mitigation and reconnecting the community, and rebuilding the local economy. This approach does not only build the ownership of the local Councils and their constituents, but it will also empower them to undertake future planning and investment decisions that incorporate resilience.

2 Measuring Needs and Results Progress in Recovery and Reconstruction

2.1 Framework for measuring needs and results progress

A Needs Assessment is a way of scoping recovery and reconstruction plans. In the post-disaster context, the extent of damages, losses, and reconstruction needs can be measured using a globally-recognized methodology known as the Damage and Loss Assessment (DaLA). DaLA was created by the United Nations Economic Commission for Latin America and the Caribbean (UN-ECLAC) and later refined by the World Bank and the Global Facility for Disaster Reduction and Recovery (GFDRR). This methodology is one of the instruments utilized by the Post Disaster Needs Assessment (PDNA), which is a coordinated and consolidated global practice tool utilized by affected governments in collaboration with the World Bank, UN, the European Commission and other development partners to assess damages and needs in a standardized and comparable format across regions and disaster events.

The Human Recovery Needs Assessment (HRNA) is a useful and complementary qualitative assessment. HNRA is a process used by UN Agencies to conduct an assessment of the human recovery and needs of affected populations, bringing in the community perspective in the overall aggregation of disaster damages and losses and the corresponding crystallization of recovery needs. There is a growing realization among practitioners of the importance of HNRA as a complementary qualitative tool which, alongside the quantitative assessment of damages, losses and needs provided by the DaLA, gives a more holistic and bottom-up picture of the overall recovery needs, incorporating community-based perceptions. When producing these qualitative assessments, UN Agencies typically employ methods such as group discussions and surveys conducted within sample populations.

The impact assessment of disasters on various sectors of the economy includes direct damage, indirect losses and reconstruction costs. The impact of disasters is measured in terms of the value of destroyed assets (damages) and of the changes (or losses) in the flows of the economy at the level of each sector of the economy as outlined in the country's system of national accounts. An aggregation of the damages and losses, ensuring that no double accounting or gaps occurred, provides an estimate for the overall effects of the disaster on the society and the economy. This subsequently enables the estimation of disaster impacts at different levels, including the possible consequences for the growth of the national economy, external sector and fiscal balances, as well as the impact due to the reduction of income and livelihoods of households or individuals. Furthermore, the estimate facilitates an analysis of the disaster impact on micro to large-sized enterprises, and that of poverty aggravation or expansion in given areas. Throughout the process, there is close coordination between the agencies conducting the HRNA in order to avoid overlaps or duplication in the final calculations.

The development of a recovery and reconstruction framework is based on a comprehensive estimation of the overall financial needs for all post-disaster activities. Looking at the short to long-term needs, this takes into account the existing domestic capacities and the possibility of integrating disaster risk reduction measures which would increase resilience against future disasters. The recovery, reconstruction and risk management program includes a calendar of activities, with a definition of geographical and sectoral priorities, population targets, respective financial requirement conditions and source identification.

With the increasing frequency of disasters worldwide, the effort to create a robust regime for measuring progress and the impact of reconstruction programs has recently received much attention. The framework for creating a process which can report, monitor and evaluate activities and outcomes in post-disaster programs is conceptually similar to the frameworks used for development projects which exist in non-disaster settings. However, as post-disaster reconstruction programs face unique challenges due to their expedited nature, the process of reporting, monitoring and evaluation (M&E) is inevitable more complex than in a non-disaster context.

Robust monitoring and evaluation frameworks for post-disaster programs allow development institutions and partner governments to react in real-time to fast-changing situations on the ground. They enable the involved institutions to make mid-course corrections in the program design and implementation plans, allowing them to re-assess development outcomes and the underlying processes. This improves the likelihood of achieving the development objectives outlined in the reconstruction programs, and helps the reconstruction partners to understand, effectively respond and shape the dynamic situation on the ground.

Central to having a straightforward yet results-focused M&E regime is the development and operationalization of an overarching Results Framework. The Results Framework harmonizes and integrates all the strategic pillars and areas of a given reconstruction program. It establishes a streamlined results chain by focusing on key results, and measuring intermediate outcomes rather than outputs. Intermediate outcomes are carefully designed to capture and track intended changes as they begin to unfold. In this way, the Results Framework approach helps to develop clearer and more streamlined "results chains" which systematically link: a) program and intermediate outcomes; b) intermediate outcomes and outputs; and c) outputs and inputs. Monitoring and evaluation systems for recovery and reconstruction programs can exist on many levels. These levels include: a) the overarching national reconstruction program level, which is by definition multi-sectoral and thus broad-based; b) the sector level, which encompassed all projects by all agencies covering one particular sector; and finally c) the project level, focusing on individual projects.

The Results Framework needs to be operationalized through the development of a Results Measurement Model. This model enables comparable and relative measurement of the intermediate and final outcomes, and output indicators of both quantitative and qualitative nature. Accordingly, a systematic Results Monitoring Systems (RMS) is set up which lays out the monitoring and evaluation plans, data collection instruments, and indicator value-determination methodologies for all program level and intermediate outcomes.

A comprehensive Results Framework delivers a significant added value to a reconstruction program. With its ability to track funds and associate them to specific activities, a comprehensive Results Framework ensures transparency of activities. Likewise, it provides information about a government's ability to use financial resources efficiently and helps with effective allocate reflecting existing needs.

2.2 Rapid needs assessment and Value for Money approach

The Australian government has a framework for evaluating project and program outcomes and results called the Value for Money (VFM) approach. The VFM approach makes project approvals subject to standard and context-specific criteria. The QldRA utilized this existing framework and very quickly developed a specific and customized VFM strategy for the reconstruction program. The government has also been able to do a rapid early recovery needs assessment to act as a feeder into its recovery and reconstruction plan, which was created as early as February/March 2011 on the state level.

The Australian Government and the QldRA were able to conduct a Rapid Early Recovery and Bottom-up Long Term Needs Assessment using a multi-pronged approach. This helped the QldRA and national authorities create a robust and holistic recovery and reconstruction plan. The needs assessment had a number of key features which made the exercise reliable and effective. This included a rapid and elaborate assessment of early recovery needs which enabled a quick activation of institutional arrangements and financial instruments for early recovery. It was complemented by the creation of a GIS-based housing damage database and an 'interactive map' which was swiftly developed and made accessible to the public through the QldRA website. Swiftly, the interactive map became the most-accessed page on the QldRA website, demonstrating that this resource has been widely accepted for its utility.

The rapid early recovery assessment was followed by a medium to longer term recovery needs assessment. It was commenced in a bottom-up manner with the receipt and approval of more than 20 community recovery plans. The assessment helped to prioritize local reconstruction needs, while ensuring that there is space for efforts to be balanced within state-wide considerations. Finally, this needs assessment exercise resulted in the creation of central state agency implementation plan, known as "Operation Queenslander".

The QldRA has made early headway towards measuring progress and performance of the collective early and longer term disaster recovery operations which are being carried out by a variety of actors. The QldRA has developed and operationalized an elaborate reporting mechanism and a comprehensive reporting template on early recovery which cuts across six lines of reconstruction and reports both on public and private sector recovery. It is complemented by real-time monitoring of the timeline of proposed activities. Most importantly, the QldRA has implemented the Value for Money (VFM) concept as a guiding principle for performance management of the recovery and reconstruction efforts.

The Value for Money strategy was utilized in the creation of a bottom-up recovery plan balancing local priorities with state-level considerations. The VFM-based reconstruction strategy is based on four guiding principles that align with the six lines of reconstruction. These include: a) People - rebuilding lives and ensuring health, safety and quality of life; b) Economy – restoring economic activity and protection from future events; c) Responsiveness – delivering benefits in the shortest practicable timeframe; and d) Ensuring value for money in the cost sense. These principles help guide program and project selection, activities and outcomes.

The Value for Money strategy incorporates a risk-based approach for mitigating challenges and planning. This includes a two stage process for the identification of risks at the project planning and appraisal stage, and designing and implementing corresponding mitigation measures for identified risks to achieving VFM. This involves in the first instance an assessment of the capacity of the agency delivering individual reconstruction project to deliver VFM. This recognizes that the capacity of the agencies delivering reconstruction projects will range from large and experienced agencies such as the Department of Transport and Main Roads and the Brisbane City Council, to small local authorities in rural and remote areas of Queensland. The second stage of the VFM risk assessment involved a detailed assessment of the risks of the individual project to achieving VFM. This approach is similar to those used by various development agencies and international organizations in planning and preparing for their projects, and thus builds on global best practice. This strategy ties project assessments with strategic objectives. It conducts an appraisal and assessment of projects based on the contributions that projects are likely to make in terms of specific strategic objectives of the QldRA. In this regard, the actual definition of VFM in the strategy is linked directly to the advancement of government priorities. The appraisal is built into project evaluation, whereby it provides a framework for VFM evaluation, monitoring and progress reporting based on the contribution to objectives, cost, scale and complexity, etc. Due to its strengths, the Value for Money strategy has the potential for international replication in other post-disaster reconstruction programs.

Australia's National Strategy for Resilience provides a Framework for Medium to Long term DRM Results Measurement. The strategic pillars and expected outcomes from the implementation of the National Strategy for Disaster Resilience can provide the measurement yardsticks and performance targets for monitoring and evaluating the medium to long term reconstruction objective of resilience building which is part of the QldRA's reconstruction program. The framework of action included in the national strategy provides clear and measurable results, key outcomes and targets for national actions within seven key fronts in the pursuit of building a more disaster-resilient Australia.

Part B/Chapter 2 provides further discussion about measuring needs and results progress in recovery and reconstruction. An overview of the post disaster needs assessment and recovery framework used by World Bank in partnership with disaster hit countries is included along with global good practices observed in the management of disasters in Indonesia, Pakistan and the Philippines.

Lockyer Valley Flood Damage. © The State of Queensland.

3 Financing the relief, recovery and reconstruction

3.1 Australia's disaster assistance framework

Successful recovery is closely associated with speedy mobilization of funds. Both the Commonwealth and the Queensland State Government have embraced one of the key lessons of global reconstruction, which suggests that speed is of the utmost essence in the early phase of post-disaster efforts. Australia has a well-developed framework: the Natural Disaster Relief and Recovery Arrangement (NDRRA) which provides funding to States and Territories to help pay for natural disaster relief and costs when recovery expenditures for a disaster exceed a given threshold, calculated as a percentage of State outputAUD$. This enables regional governments to mobilize financing quickly once a disaster strikes. NDRRA covers most naturally occurring rapid onset disasters, but excludes drought, frost, heat-wave, epidemic, and events where human activity is a significant contributing factor. State Disaster Relief Assistance (SDRA) packages are mainly focused on relief and counter-disaster operations and are less common than NDRRA. The terms and conditions governing the use of NDRRA are stipulated in the 2007 NDRRA determination. NDRRA receives an annual budget allocation. Additional funding requirements, which appear after the budget has been brought down in the beginning of fiscal year (June), are appropriated through additional supplementary estimates.

After the Queensland flooding, the Australian government initiated a "social safety net" emergency program – the Australian Government Disaster Recovery Payment and Income Recovery Subsidy. The authorities used an advance payment mechanism to swiftly transfer fund to local governments which expedited the disbursement of the money. Financial support was provided immediately to the beneficiaries. The financial packages had the right balance between size, terms and eligibility criteria.

Australia's recovery framework includes a number of elements of international good practice. The NDRRA provides transparent and differentiated assistance packages targeting both individual and community support. The cost sharing arrangement between the Commonwealth government and the states reduces moral hazard and wasting of recovery expenditures. Finally, there are now incentives in place to "build back better" and encourage disaster mitigation by means of the following measures:

a. **Pre-agreed relief and recovery measures.** NDRRA has a standard assistance packages comprised of Category A, B, C, and D. This provides transparency to the affected people on the types of support that they can expect. Yet, under category C, it also provides space for package of assistance which can be flexible in programming (see figure 2).

b. **A clearly defined threshold and cost sharing formula.** NDRRA has a clearly defined threshold calculated as a percentage of State output, which when exceeded renders states eligible to receive assistanceAUD$. The Commonwealth Government and State Governments share most of the financial burden. The amount of assistance given by the Australian government depends on whether recovery expenditures have exceeded a threshold of 0.225 percent of total state government revenue and grant. If the threshold is exceeded, the state will receive reimbursement of 50 percent of eligible expenditures on category A and C. While in a larger scale disaster, such as discussed flood and cyclone in Queensland, the Australian government provides 75 percent of all eligible expenditures.

Figure 2. National Disaster Relief and Recovery Arrangement (NDRRA) Assistance Scheme

Category A	Category B	Category C	Category D
Emergent Assistance Grant Essential Household Contents Grant (Means Tested) Structural Assistance Grant (Means Tested) Personal Counseling Counter Disaster Operations	Essentials Services & Safety Reconnection Restoration of Essential Public Assets Freight Subsidy (Primary Producer Only) Concessional loans to small business & non profit	Special Grants to Small Business & Primary Producers for clean up & repair Community Recovery Package	Rural resilience Fund (Assistance to Industry & Community in clean up, business council support measures Exceptional concessional loans for primary producers, businesses & charities Local Council Package for Damage local infrastructure

Source: QldRA Financing Chart

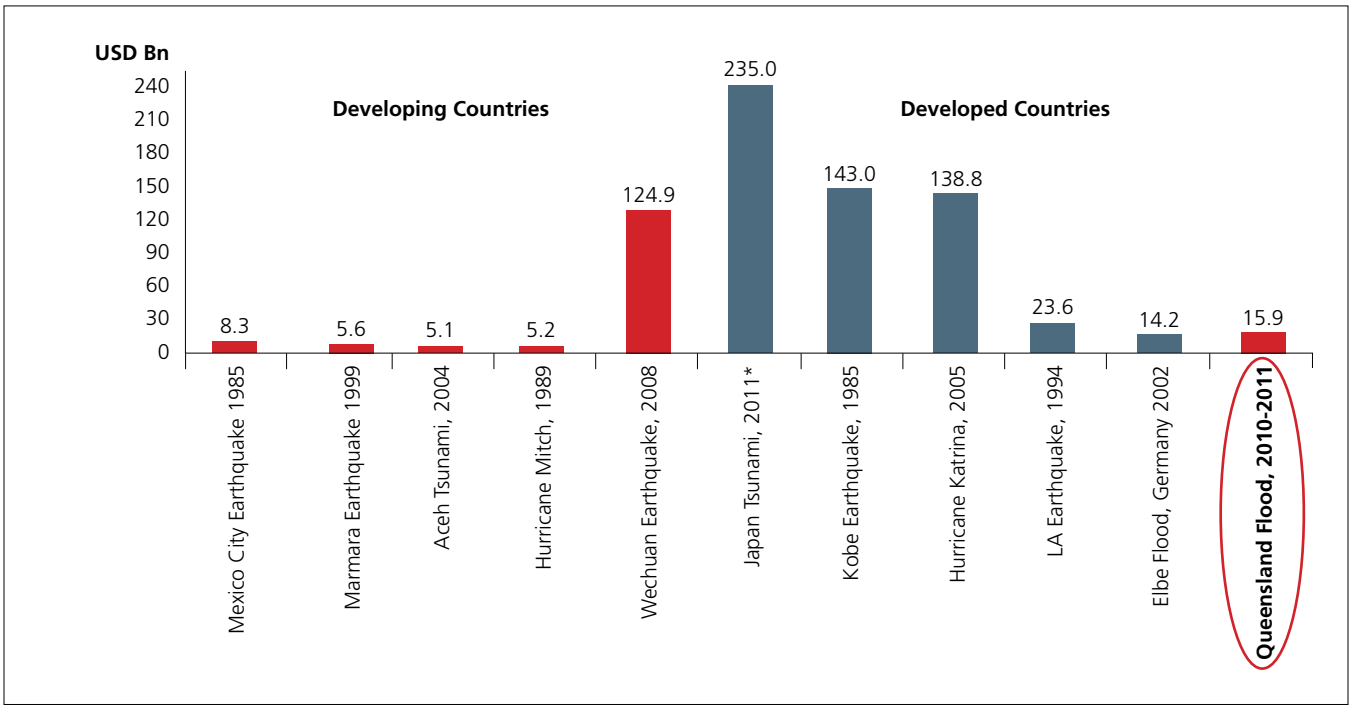
c. **Incentives for mitigation.** The states must implement a disaster mitigation strategy as a precondition to receive assistance for restoration or replacement of an essential public asset. The condition also applies to local government bodies. If the state's assistance has been for the restoration or replacement of an asset of a local government body, and the local government body had not developed and implemented appropriate natural disaster mitigation strategies, the assistance that the state would otherwise have given to the local government body, is reduced by 10 per cent. An evaluation whether the state has implemented appropriate mitigation strategies is done by the Ministry for Local Government, Territories and Roads through the evidence presented when the state submits the claim for reimbursed.

3.2 Estimating and meeting the needs

The Queensland flooding has been a major disaster, not just from the Australian perspective but also internationally. Although a more accurate and comprehensive damage and losses estimates are yet to be prepared, rough estimates indicate that total damage and losses may have reached approximately US$ 15.9 billion. In terms of economic significance, this is larger than the total damage and losses of all Indian Ocean Tsunami affected countries combined (US$ 11 billion) and of similar magnitudes as the Elbe flooding in Germany (2002, US$ 14.2 billion) and close to the Earthquake in Los Angeles (1985, 23.6 billion) as depicted in figure 3.

There is a need for a more in-depth analysis of the impact of the Queensland floods in order to gain a comprehensive overview of the impact and recovery needs. The current estimates for instance do not differentiate between "damage" to existing capital stock (houses, building, coal mines, and infrastructure) and "losses" of economic flow (foregone revenue or production losses). However, using sectoral estimates, approximately 70 percent of the total value represent damages to the housing and infrastructure sectors, while losses in economic flows in mining, agriculture, and tourism sectors amount to approximately 30 percent. Damages typically correspond to the minimum requirement to rebuild damaged facilities, while the capital component of the losses indicate minimum financing needed to induce economic recovery, either through public or private means.

Figure 3. Major natural disasters in the last 30 years



Data Source: EM-DAT, PDNA for Aceh & Mitch, preliminary estimates for Japan Tsunami 2011 from WB EAP. Update; Note: Numbers have been adjusted for inflation. Exchange Rate AUD$ 1= US$ 1 (February 2011).

The available funding for recovery and reconstruction already exceeds international standards. The total amount of funding available has reached as estimated AUD$ 11.8 billion which is equivalent of 75percent of damage and losses (see figure 4). This amount of funding is substantially higher than the international average for developed countries which stands at 45percent[4]. The Commonwealth government provides the lion's share of the recovery financing with AUD$5.6bn (47.5percent)[5]. In addition, the Queensland government has mobilized an estimated budget allocation of about AUD$ 2.1 billion[6]. From this sum, AUD$ 400 million will be paid in advance to the local councils in order to fast track the disbursement process, while the remaining amount will be disbursed later either through reimbursement or a granting mechanism.

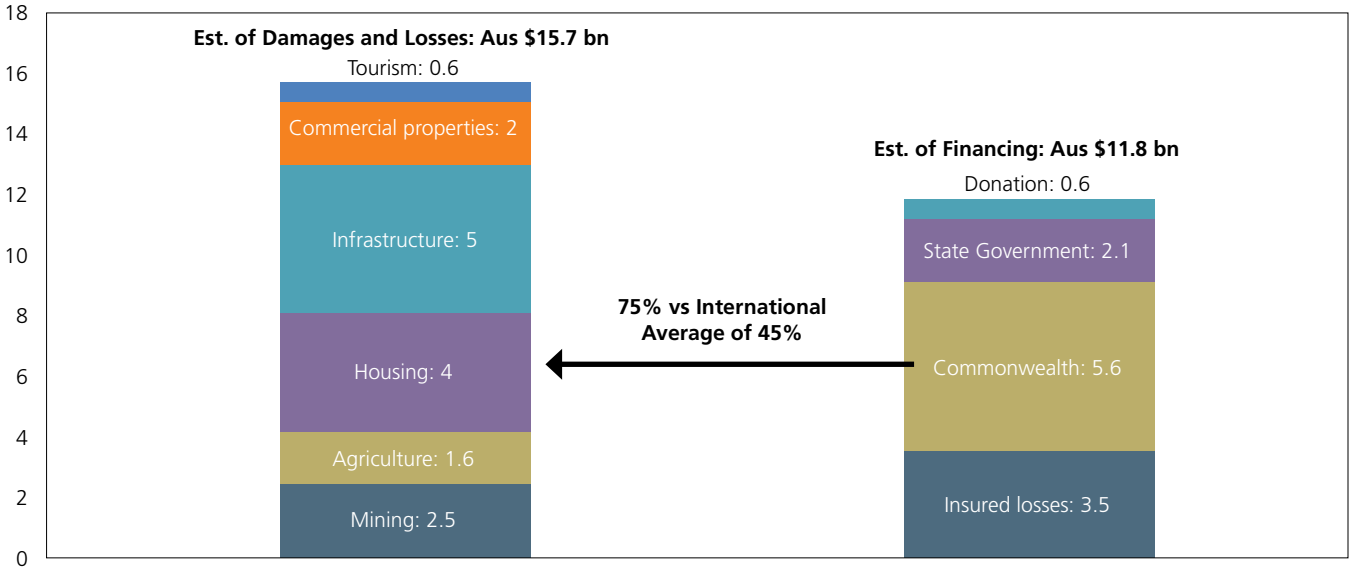
4 Linneroth-Bayer, et.al (2001), "The Uninsured Elements of Natural Catastrophic Losses: Seven Case Studies of Earthquake and Floods". Tsunami Initiative Project.

5 The financing of AUS$ 5.6 billion Australian government's allocation will be coming from the following sources: (i) $2.8 billion in spending cuts, including removing industry assistance and cutting back other green programs by abolishing the Green Car Innovation Fund and the Cleaner Car Rebate Scheme and making other cuts; (ii) $1 billion in delaying some infrastructure projects – which will free up funds and skilled workers at a time of skilled labor shortages around the country; and (iii) $1.8 billion through a progressive levy on people earning over AUS$50,000.

6 The state government intends to finance the reconstruction cost through the following: (i) The proceeds from the long-term lease of the Abbot Point Coal Terminal could exceed $1.5 billion, (ii) The delay of the Brisbane Cross-River Rail Project to commence construction by at least two years; (iii) A new voluntary separation program for non-frontline public servants would generate $175 million in savings by 2012-13. Source: Joint Statement by Premier of Queensland and State Treasurer, January 28, 2011 (http://statements.cabinet.qld.gov.au/MMS/StatementDisplaySingle.aspx?id=73439)

The distribution of funds to local councils is based on the review of local council recovery plans. Private donations are mostly channeled through two main organizing bodies: the Premier's Disaster Relief Appeal, which by March 2011 mobilized about AUD$ 251 million in donations, and the "Join Forces" program, which gives **corporate and business donors a direct link to community groups in need of help to rebuild from the disasters**AUD$. Funding from major non-governmental organizations is expected to be less significant than forprevious events such as the 2009 Victoria Bushfire. Major non-governmental organizations, such as the Australian Red Cross Society and Oxfam Australia, did not launch a major fund mobilization appeal and were aligned with the Premier's Disaster Relief Appeal. Financing from insurance is estimated at AUD$ 3.5 billion, assuming that all insured losses are compensated (see figure 4).

Figure 4. Estimated Damage & Losses and Financing of Recovery and Reconstruction in AUD$ bn



Sources: WB Mission estimates based on various sources: IBIS World, PWC, Government of Australia & Queensland, EIU.

Most of the public financing will be used to rehabilitate and upgrade infrastructure. Preliminary estimates of the costs to repair infrastructure damages under existing arrangements are around $5 billion, of which the Australian Government will provide close to three quarters (around $3.9 billion).[7] AUD$ 2 billion of this amount has been transferred as an advance payment to the government in Queensland.

Further analysis on financing disaster relief, recovery and reconstruction is included as part of Part B/Chapter 3 along with an example of the risk financing strategies developed by the Government of Mexico in collaboration with the World Bank.

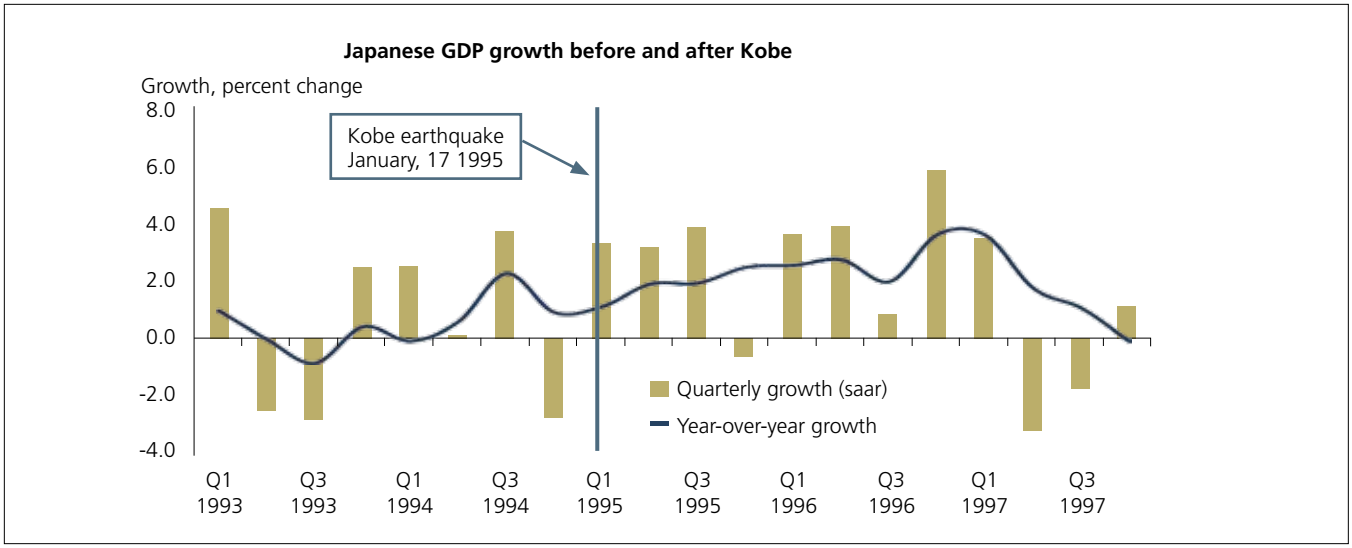
7 Prime Minister's Statement "Rebuilding After the Floods", January 27, 2011. http://www.pm.gov.au/press-office/rebuilding-after-floods

4 Economic recovery

4.1 Economic impact

The economic impact of the Queensland floods will likely be short-lived. The Queensland State Treasury estimated that production losses due to flooding and cyclone will reduce growth from 3percent to 1.3percent in 2010-2011. Such a decline in growth would be high by international standards and is proportional to the estimated economic losses. However, once the recovery program starts to kick-in the economic contraction will be less severe. In many comparable disasters or even more extreme events, such as the 1985 earthquake in Kobe, growth was moderate in the quarter following disaster while it recovered strongly in subsequent quarters with the help of the recovery program (see figure 5).

Figure 5. Even after the Kobe Earthquake, the economic impact has been short-lived



Source: Japanese Statistics Bureau

Out of the total estimated impact estimated of the flood and cyclone of AUD$ 15.7 billion, about AUD$ 4.7 billion create an immediate economic impact due to production losses in mining, agriculture, and tourism sector. These production losses are spread out between years 2010-2011, and 2011-2012 so that the estimated production losses for the two consecutive years would be an equivalent to 1.8percent of Queensland's Gross State Product as of June 2010 or 0.4percent of Australia's GDP in the same period. This estimated reduction in economic activity is comparable with the official estimate of growth reduction for 2010-2011 but does not consider additional economic activity due to large-scale recovery spending which could add up to 1 percent in GDP. The need to replace household items damaged by the disaster will drive growth in the retail sector over the course of 2011 if disaster relief payments from state and federal government are disbursed fast enough.[8]

8 Queensland Treasury "Queensland Economic Review, March 2011"

The disaster will likely have an impact on inflation which has already been on the rise before the flooding. Queensland was already in the tight labor market situation before the disaster. Unemployment fell to 5percent in December 2010, which is generally the point where further falls in unemployment will generate an accelerating wage inflation trend (IBIS World, 2011). The increase in demand, due to reconstruction and production disruption in agriculture, may add risk to the possibility of higher level of inflation.

4.2 Economic recovery measures

The existing relief and recovery measures established through the Disaster Recovery payment and Income Subsidy and the Natural Disaster Relief and Recovery Arrangement (NDRRA) enables the public sector to swiftly provide the much needed stimulus to the economy. As of March 2011, AUD$ 725 million have been paid to 630,000 beneficiaries of the Australian Disaster Recovery Payment and another AUD$ 60 million were paid as Disaster Income Recovery Subsidy to affected individuals. Support to primary producers was provided through 1,618 grants worth AUD$ 8.17 million, while small businesses received 2,151 small grants worth AUD$ 10.77 million. Estimates of financing sources are outlined below in table 3.

Table 3. Sources of financing (in AUD$ bn)

Sector	Estimated Financing	Data Sources
Commonwealth Government	5.6	Prime Minister's Statement "Rebuilding After the Floods", Jan. 27, 2011
State Government	2.1	Joint Statement by Premier of Queensland and State Treasurer, Jan. 28, 2011
Donation	0.6	Interview with Donation Management Team
Insurance	3.5	Economist Intelligence Unit
Total	**11.8**	

Despite the achievement in the early recovery stage, some general challenges remain in the medium-term. They include the need to: i) balance the immediate response to make sure that everyone gets back on their feet with medium-term challenge of avoiding moral-hazard; and (ii) to restore the longer term productive capacity of the economy through public goods reconstruction (especially infrastructure) with targeted support to the private sector.

Small businesses are the backbone of Queensland's economy. They account for 96.5percent of Queensland's private sector and contribute to 39percent of Queensland's economy.[9] Given the massive scale of recent disaster, it is expected that many small business are adversely affected, either through a direct damage to their premises, merchandise, and stock, or indirectly affected through road and rail closures, visitor cancellations, supply limitations and other adverse impacts.

Through NDRRA, the government has well-established relief and recovery measures, which can be quickly activated when disasters occur. The NDRRA financial assistance packages, which are available to business, are outlined in the table 4.

9 Queensland's Office for Economic and Statistical Research.

Table 4. NDRRA pre-agreed assistance packages

Types of Financial Assistance	Eligible Beneficiaries	Eligible Expenditures
Special Grants up to AUD 25,000	Small Businesses (<20 employee) in declared affected area	Cleaning, removal of debris, stock replacement, building repairs, temporary premises
Concessional loans up to AUD 250,000 and defer repayment of existing *QRAA loans	Small Businesses in declared affected area	Repair or replace damage plant, building and equipment, replacement of lost stock
Low interest loan up to AUD 650,000 (incl. grant component up to AUD 50,000)	Businesses that employ >20 people in declared affected area	Repair or replace damage plant, building and equipment, replacement of lost stock

Source: NDRRA
*Formerly the Queensland Rural Adjustment Authority

Private sector also launched assistance packages. Individual banks have announced assistance packages which vary according to individual circumstances but may include: deferring home loan repayments for up to 3 months, restructuring business loans without incurring fees, giving credit card holders an emergency credit limit increase, refinancing personal loans at a discounted fixed rate, waiving interest rate penalties if term deposits are drawn early, and deferring monthly repayments on equipment finance facilities for 3 months.

Box 5. Elements of good practice from Queensland

- **Pre-agreed relief and recovery measures** which can be quickly activated.
- **Ensuring efficiency** through providing financial assistance only to enable resumption of business operation and by establishing an eligibility criteria which only business that cannot survive on their own are eligible for greater amount of assistance (concessional loans).
- **Keeping the incentive of mitigation** by requiring the businesses which apply for concessional loans to take reasonable precautions to avoid and minimize losses.
- **Combine financial assistance package with technical advice** through the provision of guidelines, an interactive website, and mobile offices.

Box 6. Example of Government Non Financial Support to Small Business in Queensland

Apart from providing financial assistance in the form of grant and concessional loans as described in this section (4.1), the government also provides support and advice for small business, as demonstrated by the examples of technical support below:

- **Publishing a series of simple guidelines** on what needs to be done to sort out business operation after the disaster, steps to business recovery, plan for longer term recovery, managing and paying staff, and advice on dealing with insurance, bank, and tax office. These guidelines are available in the Queensland business website for flood and cyclone recovery website http://www.business.qld.gov.au/disaster-recovery/. The website has an interactive section that enables people to chat online with a recovery consultant.
- **Establish mobile offices and seminars equipped with Next G and wireless technology.** These offices offer a range of services, such as grant information and the Australian Government Disaster Recovery Payment.
- **Conduct recovery workshop** involving small businesses in the affected area.

Source: http://www.business.qld.gov.au/disaster-recovery/

Refer to Part B/Chapter 4 for World Bank overview of lessons derived from successful economic recovery programs in developed countries.

5 Strategic communication

5.1 Communication and natural disasters

Natural disasters and calamities disrupt lives, leaving death and destruction in their wake. Survivors face pain, displacement, anger, and above all anxiety, fear of the unknown, and anguish of uncertainty. Hope, confidence, trust, sense of involvement, and coordination begins with strategic communication which should try to answer questions and impart information on the *When, What, Where* and *How* of rebuilding takes place. Information is a form of disaster response functioning on a number of levels. Information is a vital form of aid in itself for disaster-affected people need information as much as water, food, medicine or shelter. Information saves lives, livelihoods and resources; and it might be the only form of preparedness the most vulnerable can afford. However, information only becomes useful when it is efficiently shared with people at risk.

Communication and information dissemination are important to the successful and harmonious implementation of any recovery and reconstruction programs. Communication fulfills three inter-linked and mutually reinforcing key roles in natural disasters events. First, it helps reducing risks of failure. Second, it assists in mobilizing beneficiaries. Third, it aids in building relations and creating public awareness. Strategic communication helps to build consensus among major stakeholders and actors - policy initiatives, financial assistance, and technical knowhow will not be effective without a system to convey their content swiftly and equitably to the public, to hear of and assess their suitability and sustainability within communities, and to make appropriate adjustments to existing plans based on community feedback. In this way, there is an urgent need for authorities to devise a communication strategy to support the recovery program and ensure effective dialogue between the government, the public, stakeholders and partners.

5.2 Information outreach in Queensland

The QldRA has clearly recognised communications as a crucial, cross cutting and overarching component of in its main goal of rebuilding Queensland after the floods and Cyclone Yasi. The State Community, Economic and Environmental Recovery and Reconstruction Plan 2011–2013 views strategic communication as a line of recovery. The Queensland Government saw the need for a coherent and well coordinated communication strategy that can be implemented at central as well as implementation levels. By March 2011, all State departments and organizations connected with the reconstruction had submitted their draft communication plans to the Department of the Premier and Cabinet for the development of an over-arching communications strategy.

Innovative and cutting edge web tools and clear, timely, accurate printed information facilitated a cutting edge and professional communications approach in Queensland

Features of the program include:

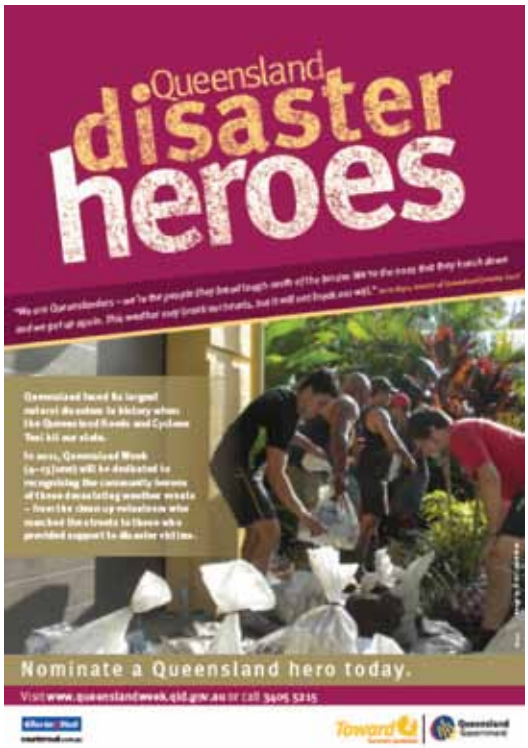
- The online **Join Forces** program, which profiles more than 170 clubs and community groups
- One-stop-shop maps which provide location based information on **NDRRA activations** for all 73 LGAs including funding assistance available for each local government area. This map provides a user-friendly interface for business and individuals to understand relevant disaster entitlements.
- The **Build Back Navigator** provides advice on insurance, getting damage assessments and building quotes,

finding temporary accommodation, accessing disaster relief grants, other financial support avenues and finally what people need to consider when they are ready to start building.

- **Interactive Flood Map** application allows people to type in a street address and view a particular property in relation to the 2010-11 flood line.

The Government has been very successful in using press releases in providing frequent information, taking the media along to manage expectations. Media was briefed very often during this phase and press briefs released as often as possible. The chief spokesperson and the public face of the QldRA - Major General Michael Slater is easily accepted as a figure of authority and respect. His frequent editorials in local newspapers, public appearances and on-air radio and television interviews often plain-speaking and carrying direct, topical messages, are well-received and appreciated by the affected Queenslanders. As part of the announcement of the Premier's Disaster Appeal fund as well as to recognise the heroic and brave communities, press campaigns were released and will continue until June 2011 (see figure 6 below). A further press campaign targeted at providing information and boosting the business of small and local communities was launched in April 2011.

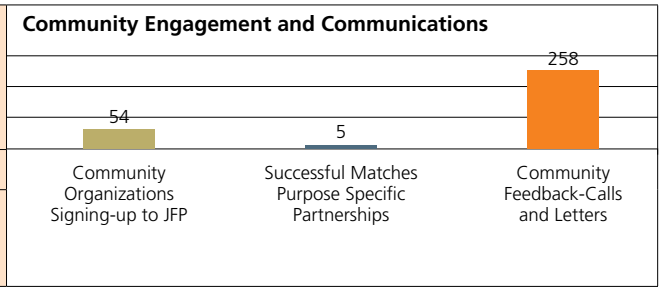
Figure 6. Examples of posters used in Queensland



Targeting wider public, an outreach campaign, called the "Join Forces Program", was launched in February 2011. The program was developed as a means of giving the corporate and business sector a direct line to community groups in need of help. By May 2011, over 170 community organizations from all regions of the State had registered for the program. The two-way communications established by QldRA with communities is currently starting to receive community feedback, having received a total of 258 calls and letters by March 2011.

Figure 7. Basic data for the QldRAwebsite launched in mid-February 2011.

	Community Organizations Signing-up to JFP		Successful Matches/ Purpose Specific Partnerships		Community Feedback-Calls and Letters	
	No.	%	No.	%	No.	%
Community Engagement and Communications	54		5		258	



Source: QldRA website, March 2011

Widespread and timely information dissemination was provided to multiple stakeholders. The widespread and timely dissemination of information on the full range of assistance options and the means of accessing them were recognized as being crucial to the effectiveness recovery and reconstruction. Hence when the QldRA was established in February 2011, it clearly perceived communication as a crucial, cross cutting and overarching component of its mission. This is reflected in its flagship document "Operation Queenslander: The State Community, Economic and Environmental Recovery and Reconstruction Plan 2011–2013".[10] The Plan recognizes six lines of reconstruction which will be accomplished through employing and allocating appropriate capabilities and resources. One of these six Lines of Reconstruction is "the Community Liaison and Communication" line. Like the other lines of reconstruction, this sub-committee also has its well-defined composition,[11] roles and key tasks.

The first phase of an extensive public information campaign was launched in early-January 2011. The response to the campaign was carried out in a rapid-fire way simultaneously through the print media, posters, radio, and television. The "early emergency response and recovery phase" of the public information campaign was coordinated directly via the Premier's Office and concentrated on an appeal for help and contributing to the Premier's Relief and recognizing local heroes and champions.

10 http://www.qldra.org.au/State-Plan

11 The community engagement and communication sub-committee comprises of representatives from: **1.** Department of the Premier and Cabinet, **2.** Queensland Reconstruction Authority, **3.** Department of Transport and Main Roads, **4.** Department of Public Works, **5.** Department of Employment, Economic Development and Innovation, **6.** Department of Environment and Resource Management, **7.** Department of Communities, **8.** Department of Local Government and Planning, **9.** Queensland Health, **10.** Queensland Treasury, **11.** Local Government Association of Queensland.

Box 8. Social media – Use of Social media by Queensland authorities

Social media has in the recent years become a crucial communication tool not solely for smart-phone users. During the Queensland floods, information about road closures, flood warnings, offers of assistance and ways to donate were all delivered through channels of modern social media, particularly though Twitter and Facebook.

Research conducted by the ARC Centre for Excellence for Creative Industries and Innovation found that when the flooding reached its peak in Brisbane, up to 1200 tweets every hour were recorded. Cyber Chatter mentions that at the peak of the flood events, there were almost 100,000 mentions of the floods on social media forums with hashtags #qldfloods, #bnefloods, #prayforaustralia, and #thebigwet being the most established ones.

During the flooding, the Queensland Police established itself as a key information source, largely through its Twitter Account @QPSmedia which provided key pieces of information and actively answered people's queries. On 18th January, QPSMedia had around 11,000 followers with some 164,133 people following ('like') their Facebook page. Along @QPSmedia, Queensland government was also using the Twitter ID @consultqld and @businessqldgov for Queensland Business support.

Sources: http://www.mappingonlinepublics.net/; www.publicrelationssydney.com.au; http://cyberchatter.com.au/tag/queensland-floods/; http://www.streetcorner.com.au.

Part B/Chapter 5 provides a good practice example of strategic communications used in Pakistan following the 2005 earthquake disaster.

6 Building Resilience

6.1 Disaster risk reduction strategies

The Hyogo Framework for Action (HFA) is the internationally accepted framework for building resilience. This 10-year plan was adopted by 168 Member States of the United Nations in 2005 at the World Disaster Reduction Conference in Japan. The HFA provides a systematic approach to reduce vulnerabilities and identifies 5 Priorities for Action to reduce disaster risk:

- Priority 1: Making disaster risk reduction a policy priority, institutional strengthening
- Priority 2: Risk assessment and early warning systems
- Priority 3: Education, information and public awareness
- Priority 4: Reducing the underlying risk factors
- Priority 5: Preparedness for effective response

The reconstruction phase offers a unique one-time opportunity to rebuild differently – better and safer. Disasters can contribute to overcoming pressures for status quo arising from existing patterns of land use and customs. They offer a chance to implement the five HFA priorities, design resilient community master plans, rebuild communities in a disaster-proof manner, and manage land use in a risk-sensitive way. The recovery process offers a chance to make people and assets significantly more resilient to the impact of future disasters. The aim is to create resilient communities which are capable of withstanding and recovering from shocks without severe upheaval or permanent harm after a disaster.

Building resilience in the aftermath floods poses complex challenges in the areas of land use planning and watershed management. In order to reduce flood damage, these elements must be integrated into a new holistic policy and strategy.

Spatial planning with respect to settlements, agriculture, forestry, and the protection of natural areas play an important role in the process of flood risk management. Some of the most controversial issues concern, for example, whether settlements and infrastructure should be rebuild at the same place or relocated in case of periodical flooding, or whether further development in areas liable to flooding should be allowed. To build resilience, human interference in the processes of nature, especially in flood plains, would need to be reversed, compensated, and prevented in the future. However, the restriction of development in flood prone areas is a contentious issue worldwide. People's reluctance to move and private sector profits, due to, for example, high property values along coastlines or lucrative agricultural yields in floodplains, make it difficult for governments to issue policies that put a ceiling on development in these areas. Therefore, governments often increasingly rely on emergency management, which can provide short-term solutions but is not compatible with sustainability. Nevertheless, experience demonstrates that a combination of education, outreach, and mutually supporting policies, which are linked to state-designated natural hazard zones, can form an effective framework for enhancing the role of land use planning in reducing future losses from natural disasters.

Ipswich flooding, January 2011. Photo Courtesy of The Queensland Times.

The incorporation of watershed management objectives in reconstruction planning reduces flood risks. In order to improve flood management in the framework of an integrated river basin management, water policies and risk-sensitive land-use practices, as well as environmental protection and nature conservation need to be promoted. Integrated flood risk management strategies should cover the entire river basin area and promote the coordinated development and management of actions regarding water, land and related resources. While structural measures are important for the protection of human safety and property, they are costly and have the potential of only providing short-term protection at the cost of long-term problems. Risk management will need to define the right balance between structural and non-structural methods. Dykes and dams can be overtopped or breached and channel capacities exceeded. Structural measures often inspire a false sense of security, encouraging further development in flood-prone areas and thereby increasing the potential value of flood losses. Moreover, this approach together with disaster assistance payments creates problems for the fair use of public funds, as public resources are used for the benefit of the few who choose to live in known flood risk areas.

6.2 Policies and actions for building resilience

Queensland relies on an ex-ante disaster risk management strategy and a comprehensive preparedness regime. This includes the necessary legislation, institutions, financial instruments and coordination mechanisms for effective disaster response.

Instruments have been designed at both state and federal levels to reduce flood risks. In February 2011, the Council of Australian Governments (COAG) adopted the National Strategy for Disaster Resilience[12]. The Strategy focuses on the shared responsibility of governments, business and communities in preparing for, and responding to, disasters. It sets out concrete steps that governments at all levels can take to reduce risks posed by natural disasters and better support communities in their recovery from disasters. Other actions will include steps to support improved risk-based planning decisions, the take-up of insurance and the provision and construction of resilient infrastructure.

In 2003, Queensland State Planning Policy 1/03 'Mitigating the Adverse Impacts of Flood, Bushfire, and Landslide' was introduced. The policy entails three main points: i) natural hazards have to be identified in land use planning; ii) if possible, incompatible development should be avoided; and iii) proposed infrastructure should be designated to function. A review[13] of the policy, however, found shortcomings in the implementation that will need to be addressed in the future. Some local government councils have considered the policy merely as a guideline and others found creative solutions to continue building in flood-prone areas.

In April 2011, the Queensland Government approved the creation of the Queensland Coastal Plan under the Coastal Act and the Sustainable Planning Act from 2009. The Queensland Coastal Plan is expected to take effect in mid-2011. The Coastal Plans are based on a Queensland-wide risk assessment, which maps areas at risk of inundation from storm surges, taking into account historical hazards along with the anticipated climate change effects, such as sea level rise and higher storm surges. The plan restricts developments in high risk areas and requires Queensland's Councils in high risk areas to develop adaptation action plans.

12 National Emergency Management Committee Australia (2011): National Disaster Resilience Strategy (http://www.coag.gov.au/coag_meeting_outcomes/2011-02-13/docs/national_strategy_disaster_resilience.pdf).

13 Thomas, Melanie and King, David and Keogh, Diane U. and Apan, Armando and Mushtaq, Shahbaz (2011) Resilience to climate change impacts: a review of flood mitigation policy in Queensland, Australia. The Australian Journal of Emergency Management, 26 (1). pp. 8-17 (http://www.ema.gov.au/www/emaweb/rwpattach.nsf/VAP/(FC77CAE5F7A38CF2EBC5832A6FD3AC0C)~Thomas.PDF/$file/Thomas.PDF).

Integrated Watershed Management is promoted in Queensland. The State of Queensland has a number of natural resource management groups, which work on water and environment related issues. These raise awareness on the importance of catchment protection to improve water quality, health of ecosystems, reduce losses of topsoil and sedimentation, decrease water treatment costs and increase resiliency against droughts and floods. Fourteen of these groups have been established at the river basin level to help monitor benchmarks and build partnerships for onground management of land, water and vegetation resources. Water Authorities and River Improvement Trusts, involved in the stabilization of riverbanks and reduction of erosion and sedimentation of rivers, have increasingly moved from purely engineering approaches to broader concepts which also include environmental protection.

Case study 1. Risk-sensitive land use planning: The case of Grantham

Problem statement: The small town of Grantham, about 100 kilometers west of Brisbane, experienced devastating flash floods that came down the Lockyer Valley. A large numbers of houses were completely destroyed or require a vast amount of work to restore safe and comfortable living conditions. The destruction in Grantham was limited to certain parts of the town: on the west side of the railway tracks going through the town, houses are on higher ground and were not affected. But just a few hundred meters away, houses were turned inside out.

Strategic approach: A low-lying part of the town of Grantham is at high risk from flash floods. The authorities seek to discourage effected residents to rebuild in the same area. The State held extensive consultations with the residents on the recovery and reconstruction plans. Affected residents of Grantham will now be offered a land swap: the Local Council bought land outside the affected areas and is offering residents plots of this land in exchange for their flooded land parcels. Over 60percent of the affected population expressed interest in the land swap idea.

Case study 2. Effective early warning systems: The case of Emerald

Problem Statement: The town of Emerald is located at the Nogoa River which poses a severe flood threat to the township. Emerald has experienced severe floods historically, with particularly devastating floods occurring in 2008. The town has since implemented an effective early warning system.

Strategic approach: The town started working with a consultant on developing better understanding of flood risks, especially in relation to upstream land use changes and their impacts on runoff and flood incidence. The preliminary results of the studies and actual measurement from automatic rain gauges and hydrological modeling enabled the floods to be forecast. A quite accurate map with the anticipated flood extent was created a couple of days before the disaster of December 31. The information was then distributed to the citizens through flyers and via an SMS system. The town is also investing in better understanding flood characteristics, the impacts of upstream land use changes and how all relevant data can be used for flood responses.

Example of the SMS sent:

------ SMS ------
From: +61429377121
Sent: Dec 28, 2010 12:58 PM
Subject: Flooding likely to reach 2008...
Flooding likely to reach 2008 levels & close Vince Lester Bridge. Commence preps in case of evacuation. Evac notices will be delivered to homes by SES/Council Cr Peter Maguire Mayor CHRC

Case study 3. Studies on risk reduction to inform the recovery and reconstruction

Problem statement: To accurately inform recovery planning, further information is needed on the hazards, exposure and vulnerabilities in Queensland.

Strategic approach: The QldRA is piloting an initial approach to integrated flood management in the Dawson River basin in partnership with the Banana Shire Council. This will include investigating how the recent floods, historic flood information, and the likely impacts of climate change can be used to assess the potential adverse consequences of future floods. The result of this preliminary flood risk assessment will be the common basis for determining a flood line to be used by all local governments in the basin. The flood line will be used to set land use development controls for urban and rural lands at risk throughout the basin. A Standard Planning Scheme Provision (SPSP), under the *Sustainable Planning Act 2009* will be developed and then made available for immediate adoption by Local Governments across Queensland. In the longer term councils may choose to undertake more detailed flood hazard and risk studies to develop more comprehensive flood management plans. This will be an exemplar flood study project and provide useful input to the review of State Planning Policy 01 / 03 Mitigating the Impacts of Floods, Bushfires and Landslips. The opportunity to incorporate riparian and landscape restoration to mitigate the impacts of floods will be a subsequent phase.

Good practice examples of building resilience as identified by the World Bank are provided in Part B/Chapter 6 and include risk reduction measures undertaken post Indonesia's ocean tsunami; the Central American Probabilities Risk Assessment initiative; the Germany Flood Control Act of 2005; and the management of water services in New York State.

7 Community engagement in recovery and reconstruction

7.1 Role of community engagement in recovery and reconstruction

Engagement of communities and diverse stakeholders is crucial for effective and speedy recovery. Disasters are the result of the coincidence in time and space of a natural phenomenon of certain intensity— a hazard—with a population exposed to its impact (Sanahuja, 2011). Therefore, any recovery and reconstruction effort should include strategies to engage affected people and other stakeholders in the recovery efforts. The people affected are victims of the disaster but they also have knowledge and skills that are vitally important to the recovery and reconstruction process. Their participation speeds the recovery and generates ownership in the process. Additionally, given the magnitude, frequency and extent of impact of disasters, governments alone cannot shoulder sole responsibility and broader participation in recovery is essential.

Communities are key stakeholders in disaster risk management and the architects of designs of local resilience. Communities should be understood as active agents of their own recovery rather than passive victims of a natural disaster. Affected communities are not helpless and should not be seen as simply victims or recipients of charity. They are active participants and agents in the reconstruction and recovery process and mindset and attitudinal change is required to match this shift in institutional recognition of people away from recipients of services and towards leadership and responsibility. Communities are major stakeholders in disaster risk management and their active and meaningful participation in risk management - in prevention, emergency preparedness and response and in post-disaster reconstruction - has become a critical component of disaster responses globally as borne out by evidence from numerous evaluations.[14]

Communities affected by a natural disaster are not homogeneous. Recovery plans need to be responsive to the priorities of diverse social groups within local communities. Community heterogeneity requires designs for social inclusion from first response onwards and ensuring that different attributes of segmentation within communities are understood and addressed in participation and planning designs. Key social groups for particular inclusive planning attention include women, children, the elderly, youth, cultural minorities, indigenous groups and the disabled. When gender and social inclusion is not afforded the attention it warrants, local participation suffers, investment choices may not reflect genuine needs and preferences and impacts may be significantly compromised.

Communities know their local conditions and are best placed to identify their own priorities. Local communities are exposed to significant risks by the impacts of natural hazards which have been exacerbated by climate change—direct effects such as adverse weather events and changes in water availability as well as indirect effects such as population migration. The involvement of local-level institutions and community groups is vital to an effective response to climate change as it is as a response to natural disasters, since a key initial step in building stronger resilience against both factors is improved awareness of mitigation and adaptation actions and disaster preparedness.

14 Living with Risk: A global review of disaster reduction initiatives. Geneva: UN/ISDR. http://www.unisdr.org/eng/about_isdr/bd-lwr-2004-eng.htm; International Federation of Red Cross and Red Crescent Societies. 2001. 2001 World Disasters Report: Focus on Recovery. Geneva: IFRC. http://www.ifrc.org/publicat/wdr2001/; Department for International Development. 2004a. Disaster Risk Reduction: A Development Concern. London: DFID; Christoplos, I. , 2006. Links between Relief, Rehabilitation and Development in the Tsunami Response. London: Tsunami Evaluation Coalition).

Engagement of communities helps them to overcome the psychological effects of disasters. The experiences and losses associated with a natural disaster interacting with personality patterns of individuals affected by the disaster can trigger strong psychological responses, including high levels of stress, anxiety, depression and hopelessness. In turn, these responses elicit other affects such as insomnia, psychosomatic illness and lack of motivation. The direct participation of people in the recovery and reconstruction plans is an excellent strategy in supporting them to overcome some of these mental health concerns. Through their participation in the reconstruction process, they feel that they are not alone, that other people also suffered the consequences of the disaster, and that they are valuable resources in helping others - a proven vehicle to reduce depression and find renewed security and reasons for living.

Non-affected people should also be engaged. A disaster affects the entire society, not only those who were impacted by the natural hazard. For that reason, the entire society should be engaged in recovery and reconstruction. Non-affected people should understand the magnitude of the problem and the reconstruction efforts and be familiar with the means of providing support. Similarly to affected people, the non-affected are not a homogenous group and strategies should be developed to engage them effectively according to their characteristics and comparative advantages.

Community engagement creates ownership in the reconstruction efforts and ensures long-term success. The main instrument with which the World Bank engages with local communities in the developing world is generally associated under the rubric of Community-Driven Development (CDD). Community Driven Development designs have moved beyond consultation and participation to focus on direct community empowerment, making untied funds available directly to communities and empowering communities to plan and execute projects according to their own articulated priorities. Empowerment equates to the expansion of assets and capabilities of poor people to participate in, negotiate with and hold accountable institutions that affect their lives. It enhances people's access to voice and information and fosters greater social inclusion and participation, greater accountability and organizational strength. Under the CDD paradigm, government and civil society operate primarily as regulators, facilitators and trainers. Communities are heavily involved in the design and choice of technology for their chosen investments and manage project funds and directly contract for goods and services to implement them. Increasingly, CDD efforts have been directed at supporting the capacity strengthening of community groups in conjunction with efforts to promote an enabling environment through policy and institutional reform (decentralization, better aligned sector policies, etc.) and strengthened local governance relationships, particularly linkages between community-based organizations and local governments. Common across the range of contexts and sectors where CDD approaches have been applied are a series of foundational principles and critical issues. These include sound economic and social analysis; community mobilization and capacity building; fiscal and administrative decentralization, information and communications; monitoring and evaluation; targeting and selection; direct financing and contracting; institutional options, safeguards, and social and gender inclusion.

Ipswich flooding, January 2011. Photo Courtesy of The Queensland Times

Box 9: Community-Driven Development Design Principles

- **Make investments responsive to informed demand** with decisions based on accurate information about costs and benefits of options and communities' own resources invested
- **Build participatory mechanisms for community control and stakeholder involvement** by providing inclusive community groups with knowledge, control, and authority throughout all program phases and with overall programs designed with relevant stakeholders (government, local leaders, civil society, community)
- **Invest in capacity building of community-based organizations** with an emphasis on training and capacity building
- **Facilitate community access to information:** flows of information are often as important as flows of funds (market opportunities, available resources, etc..) and make growing use of information technology
- **Develop simple rules and strong incentives supported by monitoring and evaluation** with clearly defined procedures that are widely disseminated and simple rules that are monitored and transparently enforced
- **Establish an enabling environment through institutional and policy reform** with conducive legal and regulatory frameworks that support community action and clear sector policies with well-defined financing rules and defined roles and responsibilities of key players in each sector
- **Maintain flexibility in design of arrangements -** flexibility in design is essential to allow systems to evolve and direct f feedback loops from community on program performance need to be designed in
- **Ensure social and gender inclusion:** communities are not homogeneous and design needs to be socially inclusive – giving voice and decision making to women, elderly, youth, disabled, minorities, etc.
- **Design for scaling up and Invest in an exit strategy** with recurrent services requiring permanent institutional and financing arrangements at locally affordable cost level

Critical constituents of a "resilient" community. Resilience is defined as the capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure. This is determined by the degree to which the social system is capable of organizing itself to increase its capacity for learning from past disasters for better future protection and to improve risk reduction measures.

Box 10: Community resilience

Box 2: Key indicators of community resilience

Some organisations and researchers are beginning to think about the most important indicators of resilience with a view to setting priorities for DRR interventions. No consensus has been reached on this but recent suggestions include the following:

ADPC: Indicators of a 'minimum level of resilience'

- A community organisation
- A DRR and disaster preparedness pla
- A community early warning system
- Trained manpower risk assessment, search and rescue, medical first aid, relief distribution, masons for safer house construction, fire fighting
- Physical connectivity: roads, electricity, telephone, clinics
- Relational connectivity with local authorities, NGOs, etc.
- Knowledge of risk reduction actions
- A community disaster reduction fund

Plan Interntional: Indicators of community resilience

1. Governance:
- Estent and nature of access/ presence/influence of children and other vulnerable groups (or groups that represent their interests)—to/in/over functions of governance at local, sub-national, national levels:
  - Policy
  - Legislative
  - Planning
  - Budgeting
  - Monitoring
- Awareness of community members of their rights
- Access of community members to legal and other avenues to enforce rights/provide redress (e.g. through linkages to legal rights NGOs, pro-bono lawyers)

2. Risk Assessment:
- Existence and quality of community riks assessment and maps that are 'owned' by both community and government

Practical Action: key characteristics of a resilient community

- A community organisation such as a development/ disaster management group, representing majority of people. Existing groups can be groomed for this role.
- A DRR and Disaster Preparedness plan (supported by local/central government)
- Early warning systems
- Trained persosn—risk assessment, search and rescue, first aid, relief distribution, safer house construction, fire fighting, effective delivery system
- Physical infrastructure—access to roads, electricity, phones, clinics, etc.
- Linkages with local authorities, NGOs, humanitarian agencies, etc.
- Knowledge and awareness of risks and risk reduction strategies
- Safer housing to withstand hazards
- Safer/appropriate/more diverse protection of assets most at risk
- Access to resources for mitigation

Source: "Characteristics of a Disaster-Resilient Community: A Guidance Note"; DFID, London, August 2007.

7.2 Engaging Queenslanders

The Government of Australia and the state of Queensland recognize community engagement as a key principle for local government, community plans and disaster recovery plans. The importance assigned to community engagement is reflected in the different planning instruments for recovery and reconstruction designed by the Queensland Reconstruction Authority, such as the State Community, Economic and Environmental Recovery and Reconstruction Plan 2011-2013 (The State Plan), the Implementation plan and the Guide to Local Community, Economic and Environmental Recovery and Reconstruction Planning (The Local Plan). One of the six lines of reconstruction includes the "community liaison" as a cross cutting issue. In the case of slow-onset or regularly recurring hazard events or shocks, many communities live in a constant state of recovery whereby temporary relief has become a permanent coping strategy.

The Government of Australia and the state of Queensland have developed guidelines and materials on community engagement. Emergency Management Australia –EMA-, a division of the Attorney-General's Department, has developed comprehensive guidelines for community development in the disaster context to assist in developing effective post-disaster community development activities, including indicators of need for employment of community development officers. The Department of Communities of the state of Queensland has developed excellent training material on this topic: "Engaging Queenslanders", and the Department of Local Government and Planning has also published a guide on community engagement in Queensland Local Government.

Complementary planning well underway. QldRA encourages all affected local governments to prepare Local Plans (The Local Community, Economic and Environmental Recovery and Reconstruction Plan), which outlines the local community and environmental recovery and reconstruction. Although the preparation of the Plan is not mandatory, QldRA expects that the plans would help the local governments as well as State Government to align all stakeholders' activities for reconstruction. This plan will complement the local disaster management plans mandated under the Disaster management Act 2003. These Local Plans are also expected to influence the priorities of the QldRA and lines of reconstruction, and will allow QldRA to broker resources for proposed projects under the Plan. These Local Plans are expected to be prepared with a strong involvement of community and are expected to be submitted by June, 2011.

QldRA workshops with State and Local Governments. From May 3-12, 2011 QldRA successfully conducted 18 workshops with State and Local governments (8 with State governments and 10 with Local Governments) to enhance their understanding about the role and mandate of QRA and inform them about the preparation of local recovery plans and the QldRA's assistance to local governments in preparing these plans. The workshops also provided information about the processes of the local Plans and their relation to the State Plan. The workshops were jointly facilitated by the QldRA staff and World Bank resource persons. The participants also benefitted from international experiences on community engagement in post disaster reconstruction and recovery.

Independent Commission of Inquiry public hearings. The Independent Commission of Inquiry to examine the unprecedented flood disaster that impacted the state of Queensland established by the Queensland Premier scheduled public hearings from April 11 to May 27 to give members of the community information about the Inquiry and to explain how people can participate in the Inquiry process. This commission will deliver a report including issues related to flood preparedness in order to increase the resilience for the next wet season (recovered from www.floodcommission.qld.gov.au)

Refer to Part B/Chapter 7 for further discussion about community engagement in recovery and reconstruction and experiences from the Pakistan earthquake in 2005, the Java earthquake in 2006, the 2004 Indonesia Tsunami, and Tropical Storm Stan in Guatemala in 2005.

Ergon Energy workers restore power in Far North Queensland after Cyclone Yasi. © The State of Queensland.

PART B: Other lessons in global good practice

1 Institutional, implementation and coordination arrangements

The following three case studies, from Bangladesh, Thailand and Philippines, provide examples of how institutional arrangements for disaster response, recovery, reconstruction and disaster risk management have evolved in these country contexts. The frequency of the disaster event does substantially influence the extent of refinement these institutions go through based on experiential learning.

Box 1. Good Practice: The Cyclone Preparedness Program in Bangladesh

The Cyclone Preparedness Program (CPP) in Bangladesh is an innovative program to communicate early warning and promote cyclone preparedness through multi-stakeholder partnership and community participation. The program has 43,675 volunteers in 2845 villages covering 11 coastal districts. Following the 1965 cyclone that claimed 20,000 lives the Bangladesh Red Crescent Society (BDRCS) and the Federation of Red Cross and Red Crescent Societies (IFRC) established a cyclone warning system for coastal communities in 1966 with citizens performing the role of 473 team leaders in 299 locations.

The program saw rapid expansion in 1970 when 500,000 people died and millions lost homes, to include pre-disaster preparedness training for 20,310 volunteers in 24 unions of 24 Upazilas (sub districts) and establishment of a telecommunication network connecting 22 coastal stations in 1973. This program secured the support of the country government that lead to the formation of the current CPP. The program is exemplary in its reach to every unit of governance, its ability to inspire citizens to become volunteers, and coordination and collaboration with government agencies. The program has teams at the Zonal level, the Upazilas, the Unions and the Units in villages. Each Unit has five subgroups addressing Warning, Shelter, Rescue, First Aid and Relief.

The CPP transmits cyclone warnings by cooperating with the Bangladesh Meteorological Department (BMD) and sends warnings to villages through a VHF radio system. Volunteers in the villages use a variety of media and flags to inform local people. The CPP trains volunteers on behavior, evacuation, rescue and relief, gender sensitivity, humanitarian values and climate change. Volunteers also conduct public awareness events including cyclone drills and demonstrations. Media tools are used in achieving effective awareness and communication.

Source: World Bank, Asian Preparedness Center (February 2010) Final Report from country exposure visit, India-Emergency Tsunami Reconstruction Project.

Box 2. Good Practice: Department of Disaster Prevention and Mitigation in Thailand

The Department of Disaster Prevention and Mitigation (DDPM) is the apex agency in Thailand that undertakes disaster management coordination between various government agencies. The DDPM coordinates disaster prevention and mitigation at the national level. It also integrates and collaborates between relevant government agencies, local administration representatives and private sector to prepare National Disaster Prevention and Mitigation Plans. It takes action, coordinates the operations, provides assistance to government agencies and also provides immediate relief to disaster-affected persons. The DDPM plays an advisory role and conducts consultations and training for government officials.

The DDPM established the Disaster Prevention and Mitigation Academy (DPMA) to promote education and awareness. One of the flagship programs of DDPM is the Community Based Disaster Risk Management program which involves community members in every phase of disaster management. Another unique and innovative program is called 'Mr. Warning'. This program trains people as early warning communicators and coordinators in emergency situations. It also trains volunteers and helps create one-Tambon-one-search rescue teams so that every Tambon or sub-district has its own search and rescue team. In addition to the above listed activities, DDPM is also involved in production of disaster related tools. DDPM hosts a Disaster Prevention Measures Bureau and Disaster Standard Safety Bureau. DDPM's most significant achievement was its instrumental role in the passage of the Disaster Prevention and Mitigation Act of 2007. Central to all these achievements are its abilities to deal with agencies effectively, promote a collaborative approach and communicate efficiently between organizations.

Source: World Bank, Asian Preparedness Center (February 2010) Final Report from country exposure visit, India-Emergency Tsunami Reconstruction Project.

Box 3. Good Practice: The National Disaster Coordinating Council in the Philippines

The Philippine Disaster Management System is primarily anchored in the Presidential Decree (PD) No. 1566 entitled, 'Strengthening the Philippine Disaster Control Capability and Establishing the National Program on Community Disaster Preparedness'. Taking effect in 1978, this law empowers local leaders and the government to act during emergencies. It requires the national government to extend support to local governments in times of emergencies. This organization is given the maximum power at the national level to lead disaster management. It provides assessment of emergency situations and advises the President on the declaration of a state of calamity. It has set in place 'Disaster Coordinating Councils' at every level of governance in Philippines currently in place in 17 regions, 81 provinces, 113 cities, 1496 Municipalities, and 41,956 Barangays.

The recently enacted Philippine Disaster Risk Reduction and Management Act of 2010 provides for comprehensive multi-sector approach to disaster risk management. It provides for the development, promotion and implementation of the National Disaster Risk Reduction and Management Plan (NDRRMP). It also enforces mainstreaming DRR and climate change adaptation in the development, peace and conflict resolution processes. It has created a National Calamity Fund that can be used for DRR prevention, preparedness activity at every level of administration, as well as established a permanent local DRR Management office in each Local Governance Unit.

Source: World Bank, Asian Preparedness Center (February 2010) Final Report from country exposure visit, India-Emergency Tsunami Reconstruction Project.

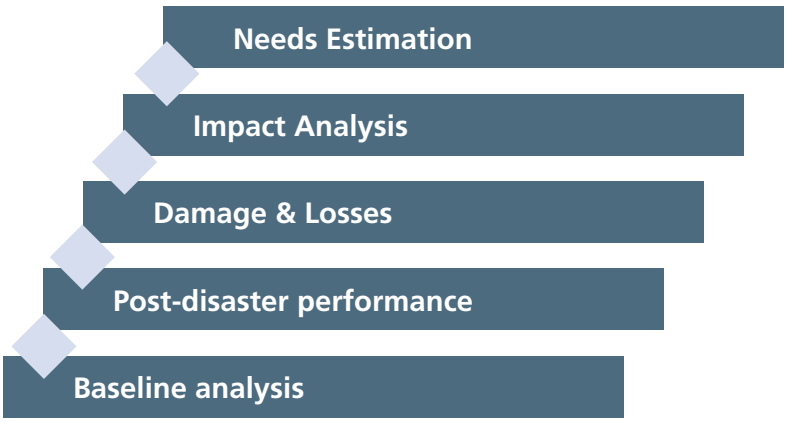
2 Measuring needs and results progress in recovery and reconstruction

2.1 Post disaster needs assessment

A Post Disaster Needs Assessment and Recovery Framework (PDNA/RF) is a government-led exercise that pulls together information into a single, consolidated report. This report provides detailed information on the physical impacts of a disaster, economic value of the damages and losses, human impacts as experienced by affected populations, and related early and long-term recovery needs and priorities. The PDNA/RF is governed by institutional, legalized agreements between the World Bank, the UN system and the European Commission. The PDNA/RF is the primary modality by which these institutions maximize coherence in order to ease the impact of demands placed by international organizations on governments dealing with natural catastrophes.[15]

The PDNA aims to build multi-stakeholder and multi-tier consensus on the strategic underpinnings for medium to long-term reconstruction and recovery planning, prioritization and programming. The overall objective is to undertake a general assessment of needs and to establish a broad baseline and boundary conditions for recovery and reconstruction, so that reconstruction does not become a moving target, and multi-tier stakeholders do not take this as an opportunity to address pre-existing development deficits. PDNAs deliver an integrated picture of needs and recovery frameworks including: state infrastructure and public assets recovery; local infrastructure and assets recovery; private assets recovery; and human recovery and livelihoods restoration. The usual sectoral scope of PDNAs therefore has three parts: social infrastructure; economic or productive infrastructure; and physical infrastructure. Figure 1 below provides a snapshot of the PDNA methodology, starting from the lower rung.

Figure 1. PDNA methodology

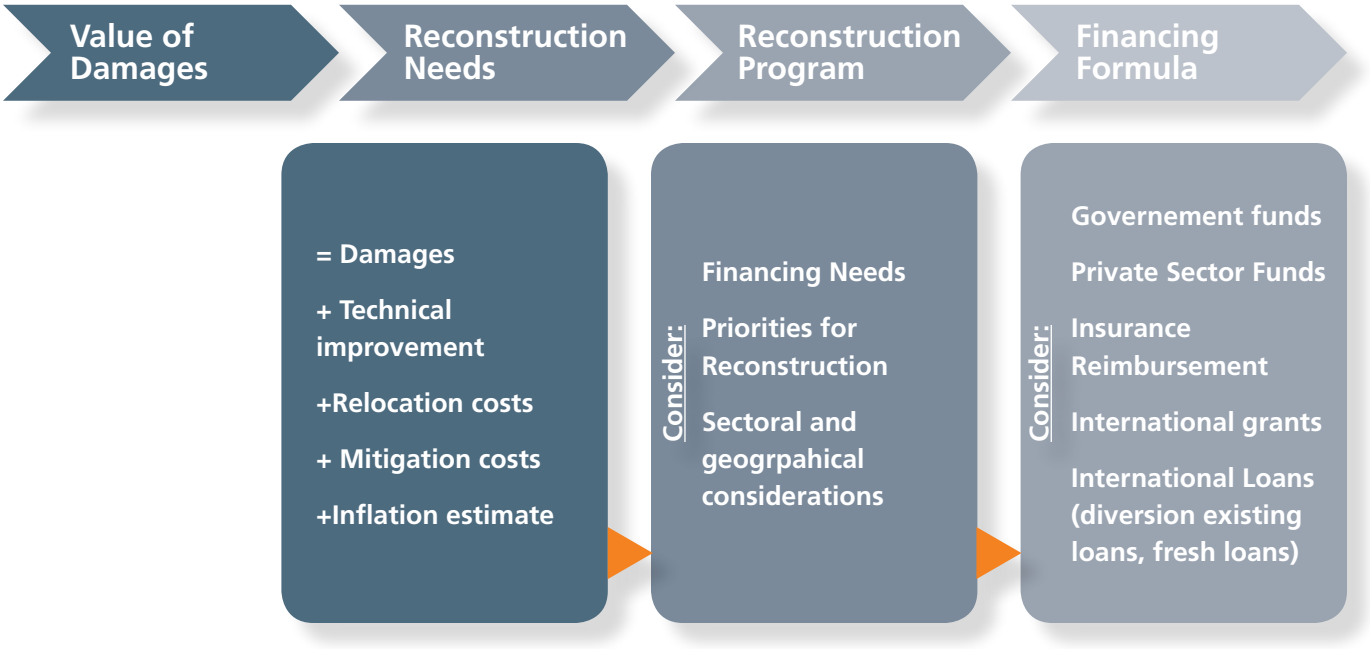


Source: World Bank staff

15 For more information and quick facts on PDNAs, visit: http://oneresponse.info/GlobalClusters/Early%20Recovery/publicdocuments/PDNA-Fast%20facts.doc in the Tsunami Response. London: Tsunami Evaluation Coalition).

The PDNA process entails a number of main steps. These include the quantification and validation of physical damages, followed by development of sector-level recovery and reconstruction strategies in respect of public and private infrastructure, services and livelihoods. Finally, quantification of corresponding needs in respect of the above is done. The PDNA draws a clear distinction between damages and needs and provides a detailed process for needs determination, as shown in figure 2.

Figure 2. PDNA - from damages to needs estimation



Source: World Bank staff

The World Bank has a breadth of experience in conducting PDNAs. With the establishment of GFDRR in 2007 as a partnership amongst donor agencies and partner countries, the World Bank has assisted over 30 disaster-hit countries to assess medium and longer term disaster impacts and recovery needs for sustainable recovery, by using PDNA as a tool to achieve this. The PDNA is a highly effectively instrument for: a) guiding and prioritizing country recovery and reconstruction programs; b) multi-donor funds mobilization, enhanced donor coordination, aid harmonization and leveraging, and; c) mainstreaming disaster risk reduction into country reconstruction and subsequent development strategies.

Another evolving tool for assessing the impact and needs of an affected area is a rapid desk-based assessment. So far, the application of this tool has been limited, but some recent damage and needs assessments in Pakistan have employed these techniques to come up with reasonably accurate estimates for assessing both crisis and disaster damages and needs, particularly in remote or inaccessible areas, such as those where access to the affected areas was not possible either due to security factors or where flood inundation outlasted the period of such assessments. In the case of Queensland, where the reconstruction program has already commenced, a possible quicker route for a PDNA will be a rapid desk-based exercise based on a 'relative to baseline' technique. Based on the usual steps, in the context of the Queensland floods, this could entail:

- **Collection and Desk Review of pre-disaster Asset and Infrastructure Baseline Data** using standard templates circulated to Queensland's Councils and relevant State departments.
- **Collection and Use of Primary Inventory-Based Post-Disaster Damage Data** where available, such as for transport infrastructure, through standard templates.
- **Analytical and Physical Validation of Damage Data** employing various analytical techniques, such as relative-to-baseline or "% damage-based" analyses, disaggregated analysis at various levels, civil society corroboration, remote sensing and aerial data, etc.
- **A quick study of the rates of construction and other inputs** based on rapid state and council level data collection.
- **Broad assumptions on sector-level reconstruction strategies** to develop the necessary boundary conditions, factoring in all expected public and private sector expenditure, and adding possible premiums for building-back-better, safer and smarter.
- **Development of a consolidated damage and needs database** that would serve as a baseline for measuring, monitoring, reporting and evaluating the physical and impact-base progress and performance of the overall reconstruction program – at the QRA, state agency and council levels (or even shire level).

2.2 Measuring progress and performance in recovery and reconstruction

There are a number of cases of international best practice in measuring progress and performance of recovery and reconstruction programs. These include: aid tracking systems for financial flows; funding supply and demand gap analyses; results and outcomes-based reporting; Governance and Accountability Systems; and Social Impact Assessments.

Aid tracking systems for financial flows trace financial flows at the central level. These systems can provide relevant and timely information in the monitoring of reconstruction activities. International experience suggests that a system for managing and tracking information flows, dealing with physical and financial progress in reconstruction or development projects, will likely be more effective in the post-disaster context if it is institutionalized prior to the occurrence of the disaster.

Box 4. Good practice: Tracking Aid Flows in Indonesia post 2004

An encouraging model, called the Reconstruction Expenditure Tracking Analysis Methodology (RETAM), was developed in the aftermath of the 2004 Earthquake and Tsunami in Indonesia to track financial progress. It is a simple accounting tool which tracks sector-wise analysis of the reconstruction needs flowing from the Damage and Needs Assessment conducted immediately after the disaster and refined later with more comprehensive information. This was an alternative to the UN-led Development Assistance Database (DAD) which faced problems in Indonesia.

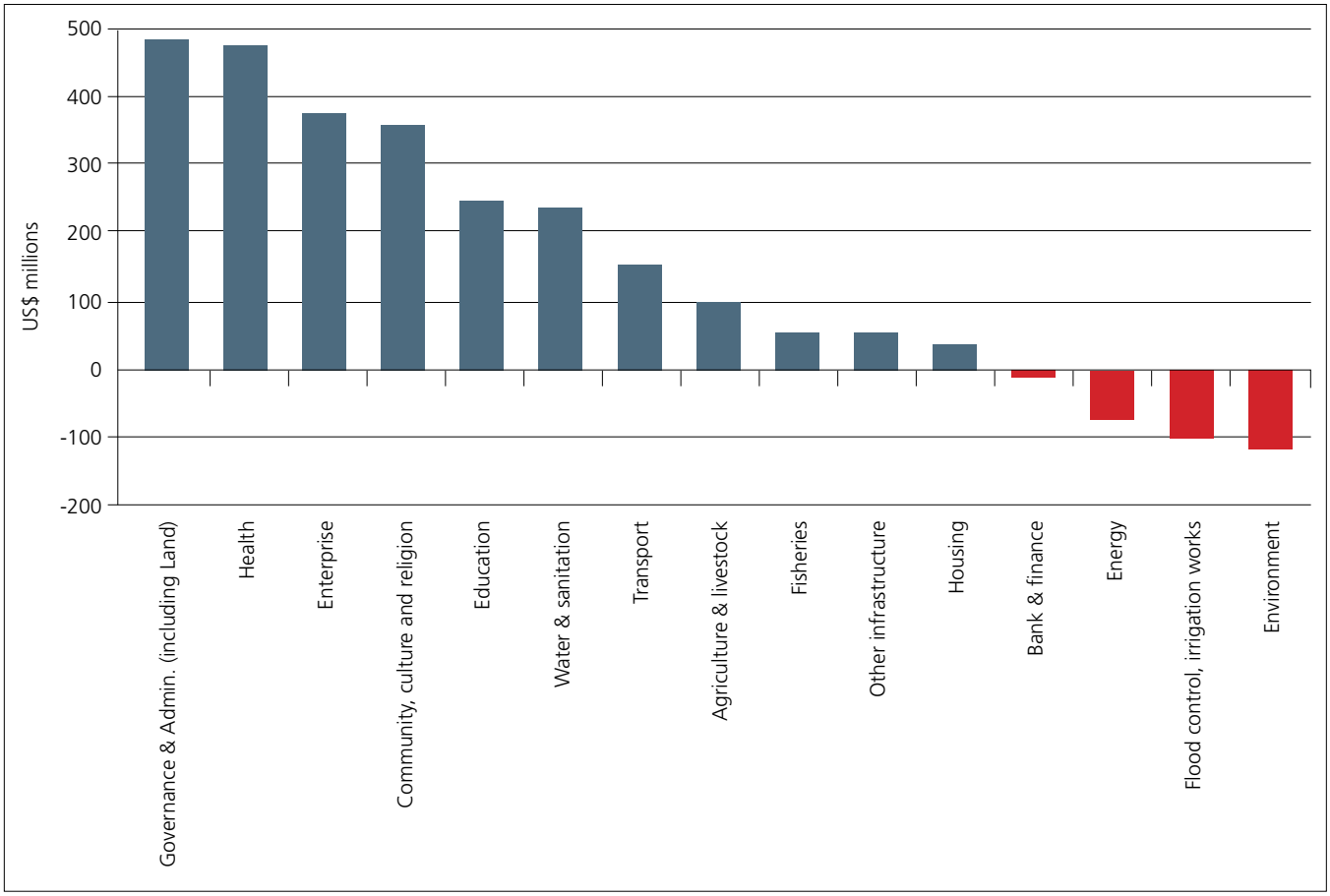
The specific instance of using RETAM as well as general experience from the country provide a set of key lessons in developing an M&E system that helps to track physical and financial progress of reconstruction programs. These lessons can be summed as:

1. Information technology can help but it is important to remember that it is people who need to track the funding. Low-tech, labor intensive data input was superior in Indonesia compared to high-tech information systems such as the DAD.
2. It is important to try to capture every project in the reconstruction program, whether implemented by the government, an NGO or directly by a donor. At the same time, it is also important to pay special attention to the top actors engaged in the bulk of the projects. In Aceh/Nias, for example, the top 20 implementing agencies were responsible for 85 percent of all reconstruction projects in terms of value.
3. Use the Damage and Needs Assessment (DNA) as a starting guide to assess reconstruction portfolio.
4. Match sector-wise expenditure with DNA categories where possible.
5. Commitments and disbursements are more important than pledges. It is essential to avoid double counting by focusing on either the funding or executing agencies. In Aceh, the RETAM focused on executing agencies to track the portfolio of reconstruction projects.
6. Build a master table that has all the projects listed by sector and executing agency. Update it regularly and use it to track project status.

Source: Tracking Financial Flows After Disasters: Reconstruction Expenditure Tracking Analysis Methodology (RETAM)

Funding Supply and Demand gap analyses. A robust system of tracking financial flows which is linked to the identified sector-wide needs, determined either by a PDNA or an equivalent exercise, can help provide information on gaps in funding for sectors at various time intervals during the reconstruction program. This information is extremely useful in re-prioritizing programs in a timely manner in order to divert resources and efforts to under-funded sectors or geographical regions. A graphical example of a similar gap analysis from Aceh/Nias two years after the 2004 Earthquake and Tsunami is presented in the figure 3.

Figure 3. Financing gap in various sectors, Aceh/Nias in Indonesia two years after the 2004 Tsunami



Results and Outcomes-based Reporting, Monitoring and Evaluation (RM&E). Logical and Results Frameworks are two tools for organizing and implementing development projects. The latter approach (RF) simplifies outcome M&E because programs are assessed against outcomes within their designed means, avoiding impracticable or un-attributable higher level achievements. At the operationalization stage, the RF systems are put in place to monitor physical and financial progress for inputs and outputs, combined with periodic measurements of intermediate outcomes. This helps with the problem identification, the design and targeting of solutions, and allows space for timely course corrections.

Cpl Tom Meyer at South Mission Beach after Cyclone Yasi. © The State of Queensland.

Box 5. Good Practice: Results and Intermediate Outcome Monitoring in Pakistan – the 2005 Earthquake Housing Program

The Earthquake Rehabilitation and Reconstruction Authority (ERRA) was the leading government agency responsible for reconstruction programs in Pakistan after the 2005 earthquake. ERRA implemented a multilateral donor-funded rural housing program where a comprehensive system to track physical progress was developed. This system, called Reporting, Monitoring and Evaluation (RME), was used in conjunction with a UN-Habitat-developed Training Management Information System (TRIMS) to monitor the housing program.

ERRA, in partnership with the World Bank and UN-Habitat, developed an approach and software for monitoring the intermediate outcomes (i.e., interim seismic compliance rates) and evaluating the end-program outcomes of the housing program. A simplified by-product of this included a series of color-coded maps that showed sub-district-level houses to be reconstructed and compliance rate at plinth and lintel levels. Compliance was high at plinth but low at lintel levels in most instances. It was a good tool in order to highlight the areas where compliance was low. An investigation of the reasons for low compliance resulted in targeted interventions. The system also noted differences between the physical progress on the ground and the financial progress with data on physical progress punched immediately whereas the actual form, triggering the release of a subsequent tranche, would reach ERRA much later. Every effort was made to minimize the difference in time between the compliance at the field level and release of payment by ERRA. This led to the creation of supplementary non-compliance monitoring and mitigation tools such as the Non-Compliance Referral System (NCRS) and the Compliance Catalogue that suggested retrofitting measures for beneficiaries who had already started reconstruction but were not compliant with the standards set out by ERRA.

However, of crucial importance was the existence of a national-level government database meant for registration of citizens and issuance of national identity cards. Run by the National Database and Registration Authority (NADRA), this pre-existing system and its related technological capacity allowed ERRA to match physical progress with financial grant disbursement data and register eligible beneficiaries electronically.

Source: Information from ERRA.

Governance and Accountability Systems. Participatory and demand-driven grievance redress mechanisms (GRMs) are tools for enhancing good governance and accountability of the reconstruction program, and are therefore critical to the legitimacy and perceived success of reconstruction programs. For this purpose, they are considered as an integral part of reconstruction programs in general, and their M&E component in particular. The nature of a participatory grievance redress mechanism at the project level will be quite different from one at the level of the overall reconstruction program. Designing such a mechanism at the project level should be a priority for any reconstruction effort as it will be used by direct project beneficiaries and become a crucial part in measuring the performance and impact of the project. An example of a system used in Pakistan during the post- 2005 earthquake reconstruction program is cited below in box 6.

Box 6. Example of Grievance Redress Mechanism in Pakistan earthquake 2005

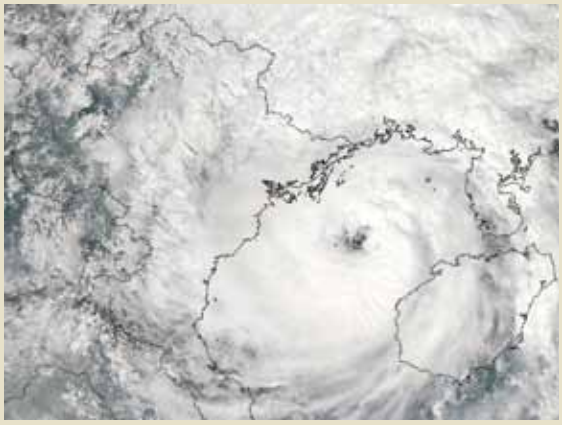
The Earthquake Rehabilitation and Reconstruction Authority (ERRA), set up after the 2005 disaster in Pakistan, included a grievance redress mechanism. The mechanism was fast-track and of an informal nature at the community (village) level, and mostly run by partner organizations which included local and national NGOs. On a formal level, various local government offices at the sub-province (district) level were put in charge to address and resolve complaints. For complaints regarding registration, data errors and payment records, the national-level government authority, dealing with registration of individuals and issuance of identity cards, was given the appropriate authority at sub-provincial (district) level as it already had "data registration offices" in these locations.

However, the system was not without its share of problems. Most local-level records were kept manually which led to significant delays at the time of complaints and staff being overwhelmed by the records. However, the Management Information System was based at headquarters.

Source: Information obtained from ERRA

Social impact assessments complement instruments such as PDNAs. While PDNAs mostly capture the 'what' and 'where', social impact assessments help to illuminate the 'how' of a natural disaster response. They can give insight into local perceptions of need; highlight structural exclusion issues not otherwise reported which need to be factored into designs; provide on-site design and performance feedback; enable more tailored priority setting; and provide information on early warning, especially for sensitive issues such as emerging conflict and corruption. Social analysis can include both initial assessments, conducted as part of the PDNA and which can highlight issues that are likely to emerge and establish a baseline for future monitoring, and ongoing social monitoring to track the impacts of the disaster and aid efforts over time. Domains that can be studied in post-disaster social analysis include: community perceptions of the aid effort; socioeconomic relations; social relations and village institutions. An example below highlights the benefits of conducting social analysis in the aftermath of disaster, identifying also some practical challenges that might emerge.

Box 7. Social Impact Assessment in the Philippines – 2009 Tropical Storms Ondoy, Pepeng



NASA MODIS Rapid Response Team

In September and October 2009, Tropical Storm Ondoy and Typhoon Pepeng hit the Philippines in rapid succession, affecting Metropolitan Manila, neighboring Rizal province and Central and Northern Luzon. Almost 1,000 people died and 9.3 million people were affected. Damages and loss were extensive, estimated at USD 4.38 billion, almost 2.7 per cent of GDP.

In the aftermath of the disaster, a social impacts assessment was conducted as part of the Post-Disaster Needs Assessment. The analysis contained three main focus areas: livelihoods and coping strategies, social relations and cohesion, and local governance and social accountability. The research was carried out in partnership with local research institutions and civil society organizations. In urban areas, the research was conducted through universities with strong experience in qualitative impact evaluations. The researchers paired up with NGO networks to gain access to affected communities. In rural areas, the PDNA team conducted the research directly. The research teams used participant observation, focus group discussions and in-depth interviews to conduct the research.

The analysis highlighted key issues that would not have been captured using the standard methodology alone. These findings centered around governance, social accountability, people's coping strategies and impacts on vulnerable groups. For example, it found that affected communities lacked aid information, faced a need for improved consultation and complaints mechanisms and, because they were uncertain about relocation, had begun to rebuild makeshift houses. In addition, it found that affected communities had experienced severe disruptions to livelihoods, with farmers and small-scale businesses being particularly badly affected, and that disaster survivors had thus begun to take up unskilled work where available. Evidence was also found of negative coping strategies. Finally, the research found that households faced an increased debt burden.

As a result of the assessment, a set of interventions was incorporated into the PDNA report. These included both short and long-term measures, including cash transfers for vulnerable groups, community block grants to establish basic services, trauma counseling for severely affected individuals and systematic consultation for relocation of affected communities.

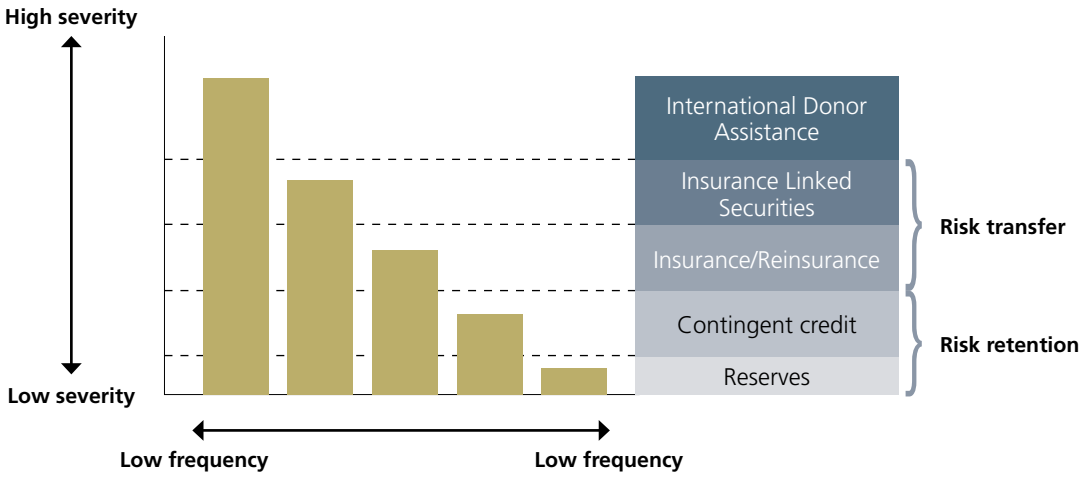
Source: World Bank staff

3 Financing the relief, recovery and reconstruction

3.1 Diversifying sources of risk financing and incentivize resilience

The Queensland reconstruction, like other major natural disasters in the World, will mainly be financed through public expenditures. The Australian government budget will eventually have to rely on spending cuts in other areas, tax increases, or deficit spending. Such an approach typically depends on the political process, which can sometimes stall the securing of the funding. When a disaster strikes, governments need to ensure two key sources of financing for the affected areas: immediate liquidity and reconstruction funding. In the early phase of emergency and recovery, immediate access and ability to disburse money is of vital importance. Ex-ante financing instruments like budget reserves, contingent lines of credit, and transfer mechanisms, such as catastrophe insurance, catastrophe risk pools, weather derivates, catastrophe bonds, and other sovereign risk financing mechanism, can be used. Typically, annual budget reserves are only used to cover the lowest layer of risks, which refers to low severity and high frequency risks such as annually recurring flood or drought. Other financing sources, such as a contingent line of credit, are used to cover medium severity and medium frequency risks, whereas high severity and low frequency risks such as a major earthquake, tsunami or major flash flood are transferred to the risk market. Increasingly, countries which face multiple risks to disasters are using risk layering to diversify their risk financing scheme by using a mixture of sophisticated financial instruments providing risk transfer mechanism to financial markets worldwide (see figure 4). The reconstruction phase is financed by post-disaster financing which includes public funding mobilization through deficit spending, tax increase, spending cuts, and loans.

Figure 4. Types of risk and possible sources of funding



Source: Cummins and Mahul (2009)

Experience from developed countries shows the idiosyncratic nature of the flood insurance market reflected in the wide variability of market penetration rates. These can range from less than 10 percent in Austria and Belgium to more than 95 percent in the UK. The basis of the high penetration rate is a Public-Private Partnership between the government and the Association of British Insurers (ABI). There is a formal agreement for British insurers to continue

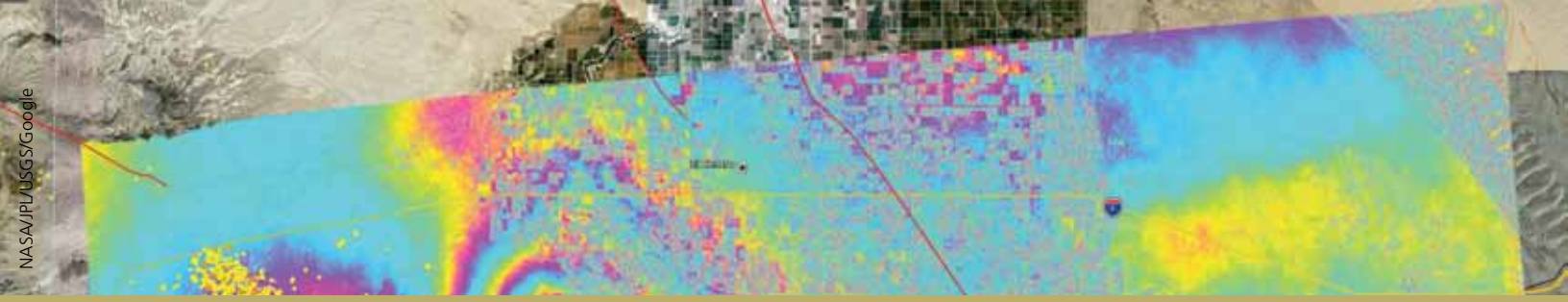
to provide flood insurance in high risk zones, which is conditional on 5-year plan by government to invest in defenses to reduce vulnerability of high risk households. It excludes new buildings. Insurers in low-risk zones share the cost of expected losses in high-risk zones.

The insurance of public assets is a particular challenge in Queensland after this year's flooding. Risk pooling at the Local Council level, perhaps using part of the NDRRA proceeds to obtain reinsurance coverage, could offer significant leverage and cost benefits for insuring public assets similar to the Mexican FONDEN example outlined as a case study in box 8.

Global good practice links reconstruction financing to incentives for building resilience during reconstruction of both public and private assets. Many existing disaster funding schemes, such as the NDRRA, have not explicitly set resilience as criteria for obtaining funding assistance. Private domains, such as housing reconstruction, where compliance to particular standards is enforced through regulations or codes and not through funding incentive, are often beyond the reach of a publicly funded reconstruction program. Improvement or higher construction standard for mitigation can be defined as criteria for obtaining additional funding support on top of the basic cost for asset replacement.

3.2 Using reconstruction spending to accelerate community recovery

Large reconstruction spending following a major disaster has been increasingly used as an opportunity to revitalize regional and local economy. The delivery of large scale infrastructure rehabilitation investment creates jobs and brings significant amount of cash. If designed properly, such investment can accelerate community recovery and transform local economy. Closer links between major recovery programs can be pursued, for example between road and infrastructure reconstruction with local economic recovery through local employment creation and small business opportunities. The role of local governments, local community groups, volunteers and champions in identifying risks and the appropriate resilience actions can be made as a part of a special technical assistance and capacity building (cross-cutting) program. A network of extension workers and reconstruction consultants dispatched to the regions usually provides the necessary know-how to help community build their resilience.



Box 8. FONDEN: Natural Disaster Fund in Mexico

Mexico has a long history of natural disaster exposure. Mexico is a seismically active country located along the world's "fire belt" where 80% of the world's seismic and volcanic activity takes place. Mexico is one of the countries most severely affected by tropical storms. It is one of the few regions of the world that can be affected simultaneously by two independent cyclone regions, the North Atlantic and the North Pacific.

The event in Mexico that resulted in major institutional approaches to natural disasters was the earthquake in Mexico City in 1985. This earthquake killed 6,000 people, injured 30,000 others and left a total of 150,000 victims. After the earthquake, the government of Mexico established the National Civil Protection System (SINAPROC) as the main mechanism for interagency coordination of disaster efforts, and undertook measures to focus on the economic impacts of natural disasters.

In 1994, legislation was passed to require federal, state and municipal assets to be privately insured. In 1996, the government created the Fund for Natural Disasters in the Ministry of Finance, called FONDEN. At inception, FONDEN was a budgetary tool to allocate funds on an annual basis to pay for expected expenditures for disaster losses. FONDEN was subsequently modified in 1999 by the creation of a catastrophe reserve fund within FONDEN that accumulates the unspent disaster budget of each year. However, in practice FONDEN is not able to build up reserve over years.

FONDEN is allowed to develop its own catastrophe risk financing strategy, relying on private risk transfer instruments such as reinsurance and catastrophe bonds. This helps the FONDEN to increase its financial independence and overcome some political economy issues:

- If the financial needs exceed the resources available in the FONDEN, an emergency budget reallocation may take time as it may be approved by the Parliament;
- In years of non disasters and lower fiscal resources, the annual budget allocation tends to be reduced or even canceled by the Federal Government.

In March 2006, the Government of Mexico purchased a US$450 million catastrophe coverage, of which US$160 million was issued as a catastrophe bond, to cover against the risk of earthquakes (with a return period of 100 years or more). The Mexican earthquake bond, which has been sold to institutional investors in the United States and Europe, acts like an insurance policy for the Mexican government. Investors paid US$160 million into a single-purpose reinsurer created for the Government of Mexico. If an earthquake of a specified magnitude occurs in designated areas of the country within the three year period of the contract (2006-2009), the government will be able to draw from these funds. If no disaster occurs during the life of the fund, the money will be returned to the investors. This is the first time a sovereign country has issued a catastrophe bond.

The World Bank is currently assisting the Government of Mexico to issue a new catastrophe bond to replace the first one which arrived at maturity in 2009. After the CatMex matured in 2009, Mexico decided to further diversify its coverage by pooling multiple risks in multiple regions. In October 2009, it issued a multi-peril cat bond using the World Bank's newly established MultiCat Program. The Federal government issued a four-tranche cat bond (totaling US$290 million) with a three-year maturity, called MultiCat Mexico. It provides (binary) parametric insurance to FONDEN against earthquake risk in three regions around Mexico City and hurricanes on the Atlantic and Pacific coasts. The cat bond will repay the principal to investors unless an earthquake or hurricane triggers a transfer of the funds to the Mexican government. The Government of Mexico is also investigating a reinsurance placement using the reported damage to FONDEN as the insurance index.

Source: Olivier Mahul, "FONDEN: National Disaster Fund in Mexico"

4 Economic recovery

Experiences of past disaster show that the effect of disaster to regional macro variables such as gross domestic product, and unemployment can be managed if the ensuing response is strong and fast. Hence, the short to medium term process of economic recovery is contingent upon whether the overall reconstruction program is well implemented. Growth can resume quickly and unemployment may decline if the program went smoothly. However, there are also a number of challenges, especially the transition from the reconstruction program to regular public expenditures. The reconstruction process may also divert workers from their old jobs to new jobs created by reconstruction boom, while leaving the productive economy unattended.

Box 9. Lesson from successful economic recovery program in developed countries

Experience from economic recovery programs in developed countries highlight the following factors:

- **Provide access to finance for business affected by the disaster**. Immediate post-disaster grants and loans can be essential to the survival of local businesses.
- **Establish collaboration between stakeholders early in the recovery process**. In the immediate aftermath of the 2008 Iowa floods, key stakeholders in Cedar Rapids (business owners, local officials, emergency services) met daily to triage important issues and make strategic decisions. Two years later, this has led to a collaborative long-term recovery process and a strengthened regional network.
- **A good pre-disaster plan helps to accelerate rapid recovery.** Developing a hierarchy of recovery program with federal, state and local government prior to disaster can save valuable time afterward.

Source: Summarized from National Association of Development Organization 2010, "Restoring Regional Economies in the wake of Disaster"

5 Strategic communication

Large scale recovery programs need to be inclusive, involving multi-tier stakeholders at all levels down to the community. Their aim is to:

- fill the voids in internal and external communications;
- strengthen media relations which are already strong;
- produce well-researched, cost effective outreach material (electronic/ print) that will strengthen the work of community liaison workers in the councils;
- and ensure timely and well-coordinated efforts to not only disseminate information as well as receive feed-back that can be incorporated into the workplan.

Extending outreach to the individual and family level. The objective of a well-designed media and communication strategy is not just to create awareness about QRAs activities among the various stakeholders including affected people, donors, opinion leaders in the public and private sectors and the wide public but also to ensure that vital information reaches the last family member on the road. This also includes rural and indigenous communities. It is equally important to showcase and project achievements of QRA in order to ensure credibility of QRA among the councils on one hand, and boost the confidence of donors to continue support projects in the affected areas.

Local media play a critical role. Radio transmission is able to cover a large land area and is a particularly accessible medium for lower income groups, including women in their homes. Apart from radio's uses to supply information after sudden onset disasters, skillfully produced radio dramas can be used to help reduce ongoing disaster risks and raise awareness and education efforts. In Afghanistan, for example, a long-running BBC soap opera in local languages has been shown to change listeners' attitudes and behaviors towards risks such as landmines and infectious diseases. Ensuring good communication with local communities is crucial from perspectives of both ethics and efficiency. One lesson from the response to the 1998 Afghanistan earthquakes is that agencies could set up short-wave radio to broadcast relief objectives to survivors, where local capacity to do this exists.

Examples and experience from across the world also show that building information-sharing partnerships between local government and civil society networks go a long way. Public information work should be simply to spread the word that the assistance is available, that it works, and that it's free. Some frequently used methods to accomplish this:

- **Creating and Maintaining Meeting List(s):** creating and maintaining a listing of meeting information should be a high priority. These lists should contain information such as the day, time, and location (a street address is preferred), and whether the meeting is open to the public. Meeting lists need to be updated on a regular basis to serve their purpose.
- **Posters:** These are notices used to inform the public about how and where to contact, as for instance depicted in figure 5. Good judgment is used when creating and posting these notices in the absence of any centralized guidelines. Even how and where these notices are posted should be evaluated carefully. A simple message explaining who is available and how to contact relevant agencies or people fulfills the desired approach.

Figure 5. Institutional advert (ERRA) and poster providing information on accessing funds

Box 10. Good Practice from Pakistan's ERRA and its Public Information Campaign

In October 2005, an earthquake of 7.6 Richter scale hit Pakistan leaving 73,000 people dead and more than 70,000 severely injured, rendering around 3 million persons shelterless and destroying and damaging approx 600,000 houses. By Jan-Mar 2006 a multi-stakeholder consultation, led by the government for developing its rural housing policy, had been concluded and the government announced its flagship "Rural Housing Reconstruction Program" of around 5 billion US$ by the Earthquake Reconstruction and Rehabilitation Authority (ERRA).

The ERRA was set up as an implementing agency after the devastating earthquake in Pakistan in October 2005 by the Governments of Pakistan. In early 2006, it released its first phase of a Public Information Campaign (PIC) coinciding with the launch of the Rural Housing Reconstruction Program. Various Advertisements were released, posters printed, and numerous radio and TV spots and programs relayed. In addition, news and current affairs programs on radio, terrestrial TV, and cable TV were broadcasted independently. The messaging was intense and relentless with numerous feedback channels.

The PIC launched also two fictional characters into the public domain - Chacha Chairman and Manzoor – who developed a loyal fan following. Information reached far and wide, due to the combined efforts of the housing team, partner organizations, assistance and inspection teams, and the HRCs, with further support from the communication team. The dissemination of structural design solutions and construction guidelines was reproduced in a poster, popularly called the 10-point poster, which was followed closely by the communities and was visible all over the affected area. The final step of the campaign was to ensure that ERRA's Program Monitoring Framework would incorporate feedback from beneficiaries to assist ERRA to strengthen the RHRP.

Continues

Box 10. (Continuation)

The public information program, running from April to June 2006, was very intensive and ensured that information regarding specific projects reached a wide audience. In addition, locally trained social mobilizers were trained to carry messages to the parts of the population that were difficult to reach. Frequent press conferences were held (at least every 15 days), updating the media on the progress. A knowledge management specialist was hired within six months of ERRA's establishment who assisted the various teams in collating experiences and updates, and preparing the Annual Reviews. The media team continued to manage the print and electronic media (TV, newspapers, radio) as well as the call center.

The overall public communication was managed in 3 phases. Phase 1 contained general messages on ERRAs Rural Housing Program and ERRAs policy in general. This phase of about 6 weeks was very intense and used various media including print, radio, TV, community fairs/ gatherings and religious places. Social media, such as Facebook and Twitter, was neither prevalent nor popular. Phase 2 covered messages to motivate people to reconstruct and ways to access their housing grant. This was the longest phase running almost 18 months, for which ERRA partnered with other agencies who implemented the PIC while ERRA supervised it. Phase 3 focused on advanced messages to encourage people to get training and reconstruct seismically safe houses as well as direct information on seismic safety aspects for behavioral change, aiming to foster a culture of compliance.

Communication and information dissemination were seen as critical and in April 2006 communication experts from the world Bank and the private sector come together to help ERRA draft a communications strategy that would encompass its eleven key policy areas. A year later, the World Bank assisted ERRA with a Knowledge Management initiative during which the ERRA staff was trained and helped to write their best case studies. Training sessions were held for government and communications staff in media relations, interviews, case studies, presentation, and community participation.

At the end of almost five years of a sustained public information campaign, there were a number of lessons learnt. Many were local in nature, reinforcing the basic premise that communications has to be customized, the audience clearly identified and messages targeted in a culturally sensitive fashion in each case. The most important lessons for purposes of global learning can be summarized as:

- The more delay in sending out immediate messages creates an information void which gives rise to rumors, uncertainty and anxiety.
- It is very difficult to retrieve a message that has gone out and to control the damage caused by an incorrect message, therefore messages need to be well researched, well thought out and clear.
- In such post-disaster scenarios a sustained and continuous information campaign plays a critical role. It is important to be fully resourced to achieve this.
- Radio proved to be the most effective dissemination medium.
- Feedback channels must be established.
- Message do reach people, they pick and choose. Effective communication in a reconstruction project is not about what governments and project managers "say," but what beneficiaries "hear."
- Messages should be such that they give people a chance to think rather than reasons to panic.

6 Building resilience

6.1 Mainstreaming disaster risk reduction into recovery operations

Disaster risk reduction is not a field that can stand by itself. Since the late 1990s, there has been increasing recognition of the need to "mainstream" disaster risk reduction - that is, to consider and address risks emanating from natural hazards in strategic frameworks and institutional structures, in country and sectoral strategies and policies, and in the design of individual projects in hazard-prone countries. If not planned carefully, the reconstruction process can unwittingly create new forms of vulnerability and exacerbate existing ones, for example through rebuilding in hazard prone zones or failing to apply building codes. Solutions are best derived by integrating disaster risk reduction strategies and measures into the different sectors and viewing disaster risk reduction as an integral component of infrastructural and economic growth rather than as an end in its own right. Consequently, there is a need for interdisciplinary co-operation at all government and local levels for a coordination of sectoral policies regarding environmental protection, physical planning, land use planning, agriculture, transport and urban development, and co-ordination throughout all phases of risk management. To mainstream disaster risk reduction into the different lines of reconstruction, three fundamental steps are needed: i) development of sectoral risk assessments (for example, in the transport sector, mapping vulnerable road stretches); ii) specification of technical guidelines to address the identified vulnerabilities (for example, relocation of roads, higher bridges, structural and bio-engineering solutions), and iii) awareness raising and training (for example, communication of results to local governments and training of engineers).

Mainstreaming can be effectively promoted through resilience coordinators within each main line of reconstruction. These coordinators have the tasks of ensuring related activities reduce flooding and damage where possible, lessen communities' exposure and vulnerability to disasters, mitigate the impacts of flooding, and preserve the natural resources of marine and aquatic ecosystems and associated floodplains.

Box 11. Good Practice: Risk reduction measures in Indonesia after the Indian Ocean tsunami

After the Indian Ocean tsunami (2005-2007), particular emphasis was given to include risk reduction measures into all sectors of recovery in Indonesia. In housing, resilient designs for houses were prepared and circulated, including plans for retrofitting undamaged but still potentially vulnerable dwellings. Throughout the reconstruction period, public information and communication strategies were employed to widen the community's understanding of the various hazards they faced. Public infrastructure was built according to hazard resilient design. The recovery of all major bridges, public facilities and dams was designed and built to resist the multiple hazards that could affect the area in the future, including both seismic and tsunami threats. Spatial planning was assigned an important role in reducing the risks of future disasters. Environmentally fragile zones were designated along the coastline in which no new construction was permitted, in order to protect mangrove regeneration. The layout of towns and cities was designed to avoid the fragile coastal belt while avoiding tsunami risks. Similarly, road alignments were planned with obvious evacuation routes indicated while higher ground locations were provided.

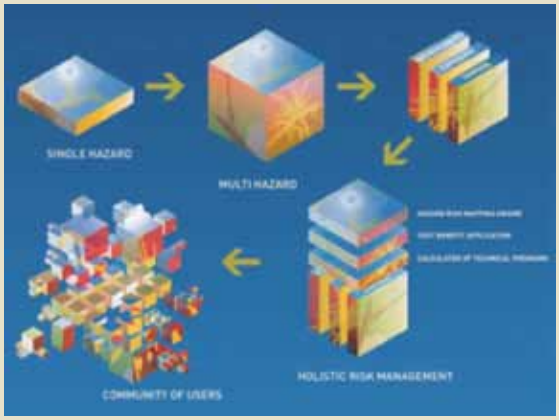
6.2 Understanding risk

Quantifying risk and expected future losses is the first step in a disaster risk reduction program. Impact scenarios, derived from risk assessments, need to be incorporated into sustainable development approaches and reconstruction planning in order to climate- and disaster-proof infrastructure. Risk assessments serve as input, for example, for land use planning, building codes, and catastrophe risk insurance schemes in pre- and post-disaster situations. In short, they support a wide range of decision-making processes for different actors from the public to the private sector. Three factors need to be considered to measure risk:

Risk = Hazards * Exposed Elements * Vulnerability

While the hazard component refers to the severity and probability of hazards in an area, the exposed elements refer to structures, population, and the economy. Vulnerability is defined as the capacity to anticipate, cope with, resist, and recover from the impacts of a natural hazard. It has a physical, social, environmental, and economic dimension. In essence, the risk assessment answers the following questions: i) What is the likelihood of the event?; ii) Who and what is in harm's way?; iii) What are the projected losses due to disaster and climate change impacts?; and iv) What social, economic and physical conditions reduce or amplify the impact?

Box 12. Good Practice in Risk Assessments: Central American Probabilistic Risk Assessment (CAPRA)



The Central American Probabilistic Risk Assessment (CAPRA) initiative aims to strengthen the regional capacity for assessing, understanding and communicating disaster risk. CAPRA is built on a partnership with Central American governments and supported by the Central American Coordination Centre for Disaster Prevention (CEPREDENAC), the Inter-American Development Bank (IDB) and the International Strategy of United Nations for Disaster Reduction (UN-ISDR) and the World Bank.

The main objective is to provide Central American countries with a set of tools to conduct risk assessments which will allow them to better understand the risk of adverse natural events. CAPRA provides a Geographic Information System (GIS)-based platform of information on natural hazard risk, disaster risk analysis and communication. It is a tool that enables decision-makers to manage risks at local, national and regional levels. The ultimate goal of the initiative is to help mainstream disaster risk management into local development to help reduce disaster losses. CAPRA, moving away from the standard single hazard analysis approach, provides a multi-hazard risk assessment based on probabilistic modeling. This risk information can be applied on various levels and in different sectors including health, education, housing, and planning. CAPRA also offers various applications, including a hazard assessment report for territorial planning, a cost-benefit application for analysis of retrofitting projects, and a calculator of technical premiums for insurance. The CAPRA platform also has the potential to assess the impact of climate change by using hazard models derived from climate, rather than historical data. Another advantage of CAPRA is that is functions as a central depository of risk data throughout the covered region.

Source: Central America Probabilistic Risk Assessment (CAPRA) www.ecapra.org

6.3 Building resilience through integrated river basin management

Experience shows that effective measures for flood prevention have to be undertaken on the level of river basins. Experience suggests that local flood protection measures can have negative effects both on downstream and upstream flows, and it is therefore necessary to take into account the interaction of the effects of individual measures implemented along the entire water course. For flood prevention, protection and mitigation, a good combination of structural, preventive and operative measures during flood events are necessary. This includes building codes and legislation to keep infrastructure away from flood-prone areas, appropriate land use planning, designated floodplains and flood-control structures, mitigation, early-warning systems, correct risk communication, and preparedness of the population. In the past, emphasis was given primarily on structural solutions. Lately, it has been recognized that engineering solutions need to be complemented with environmental defense mechanisms. In some cases, structural flood control systems have exacerbated rather than reduced the extent of flooding, for instance when sediment deposit in river channels raised the height of river channels and strained dike systems. Storing water by means of vegetation, soil, ground and wetlands, all of which are capable of retaining water, should have priority over swift water run-off. Every cubic meter of water not drained away immediately to the next body of water is a gain for the water regimen.

Box 13. Germany Flood Control Act of 2005 after the 2002 Elbe floods

In the summer of 2002, Germany, along with other European countries, was severely hit by floods. As the Elbe River reached an all-time high of 9.4 meters, the city of Dresden suffered extensive physical damage forcing more than 300.000 people to evacuate. In the aftermath of the floods, German federal government passed the 2005 Flood Control Act - an integrative piece of legislation - which harmonized regional and state-level flood planning procedures and set up a binding timeline for implementing flood management measures.

Under the new Act, flood protection is defined as an issue of spatial planning and the main underlying principle of the Act is "Give our rivers more space". The new Act obliges German States to: i) conduct risk assessments, ii) draw up plans coordinating flood protection along the rivers, and iii) designate more areas as flood plains by 2009. Under the Act, planning of new housing areas in flood plains has been, for the first time, explicitly prohibited by German federal law. The legislative framework established the Development Plans the key instrument in managing urban growth. Spatial flood protection was defined as an issue of spatial planning, so that according to the German Statutory Code on Construction and Building from 2005, all land use plans have to indentify flood prone areas. The Act made also provisions to reduce damages appealing that in flood zones, computing centers and oil-fired heating systems, should not be located in the building basements.

Sources: Hellmuth Lange, Heiko Garrelts (2007) Risk Management at the Science–Policy Interface: Two Contrasting Cases in the Field of Flood Protection in Germany, Journal of Environmental Policy & Planning 9: 3-4, 263–279; Frank Friesecke (2004) Precautionary and Sustainable Flood Protection in Germany – Strategies and Instruments of Spatial Planning, 3rd FIG Regional Conference Jakarta, Indonesia, October 3-7, 2004.

Box 14. Water services in New York State

In the 1980s, New York City was facing a difficult policy dilemma in solving the imminent threat to water quality from its watersheds in the Catskill Mountains, north of the City, which resulted from changing agricultural practices and growing urbanization in area. As nonpoint source pollution increased substantially, the officials had to decide between building of a very costly new filtration facility or finding an alternative solution. Instead of paying for a clean-up for the degradation of the water producing environment, the City invested in preserving the rural Catskill environment which provides the City with its clean urban water. A range of measures were adopted, including buying particularly important areas out-right and paying farmers to operate their farms in ways which minimized water pollution. Under the 'Whole Farm Planning', the City pays both the operating costs of the program and the capital costs of pollution control investments on each farm, making sure that these measures are well-integrated into the farmer's business plans, thus also bringing them significant ancillary benefits. Within five years of the program's establishment, 93 percent of farmers in the watershed had decided to participate, making the program one of the most successful non-point pollution control programs in the United States. It has played a major role in stabilizing and reducing watershed pollution loads, enabling the City to avoid having to filter its water supply.

Source: World Bank (2004) Assessing the Economic Value of Ecosystem Conservation, Environment Department Paper No.101 by Stefano Pagiola, Konrad von Ritter, Joshua Bishop. In collaboration with the Nature Conservancy and IUCN—The World Conservation Union.

7 Community engagement in recovery and reconstruction

Community engagement requires clear objectives upfront and needs to be carefully planned. It is indispensable to define the objectives of community engagement before practice is mobilized. To invite communities and stakeholders to participate without a clear idea of the role that they can play in the reconstruction and recovery activities can generate fatigue, frustration, and lead to lack of trust towards the government. In order to be able to effectively engage communities affected by a natural disaster and other stakeholders, it is necessary to: (i) define the objectives and purposes pursued through this engagement; (ii) conduct a stakeholder analysis to identify the characteristics of the different groups involved, their interests in the process and their levels of power; (iii) design strategies tailored according to the characteristics and needs of each group; (iv) establish the human, physical and financial resources needed to implement the strategies; (v) set up a network of community development workers (facilitators) to work directly with affected communities; (vi) establish mechanisms for consultation and participation, and; (vii) design participatory monitory and evaluations systems.

Community engagement requires strong inter-institutional coordination. Since any recovery and reconstruction plan involves several components (such as housing, infrastructure, income, health, education, etc.) many governmental institutions are involved. For that reason, it is necessary to have in place strong inter-institutional coordination mechanisms. Communities should be approached with one voice. To designate responsibility for community engagement in recovery to multiple institutions and a plethora of agencies can create confusion and fatigue in the communities. A good strategy is to assign community development workers to specific communities to coordinate the activities of different institutions.

Participation is a central pillar and skilled facilitators are key to the success of participation goals. Participatory approaches give communities means to identify community needs and be partners in implementing action. Communities need to be equipped with information and knowledge for active participation in design and implementation of local initiatives, to ensure broad awareness of rights and entitlements.

Social inclusion is a continuous contract. Communities are not homogeneous and local recovery plans need to be designed to be socially and gender inclusive, ensuring that plans are responsive to the priorities of the community at large and not of a dominant or elite group. In development practice, this entails ensuring voice and decision-making responsibility be equally open to women, the elderly, youth, religious and cultural minorities, indigenous and other ethnic groups and the disabled. Issues of inclusion will require periodic attention throughout the life of any organization that is active at the community level.

South East Queensland flooding. © Lyle Radford.

Box 15: Inclusive community planning

General guidelines for building in social inclusion include:

- identifying subgroups within a community, especially those at risk of exclusion;
- structuring project rules and procedures to promote their participation;
- determining participatory techniques that can help facilitate their involvement (where existing
- systems of social organization are highly inequitable, new groups may need to be created to enable
- excluded groups to participate);
- ensuring that intermediaries (NGOs, local government, etc.) working with communities have expertise in working with these groups and using participatory techniques;
- investigating how local institutions can be made more responsive and inclusive of these groups;
- including specific indicators related to these groups in monitoring and evaluation systems, and
- involving all stakeholders in monitoring and evaluation;

Early engagement facilitates the community ownership of the process and triggers active participation. The assessment of damages of public and private assets, as well as the estimate of damage and losses conducted through a participatory process, strengthens civic engagement and awareness of recovery and reconstructions efforts.

Box 16: Pakistan earthquake, 2005

The October, 2005 South Asian earthquake, measuring 7.6 on the Richter scale, was arguably the most debilitating natural disaster in Pakistan's history. The Pakistan Poverty Alleviation Fund (PPAF), established in 2000 to reduce poverty and empower the rural and urban poor by providing access to microcredit and grants for infrastructure and capacity-building was critical in the response to this natural disaster. PPAF focused on immediate relief through the provision of shelter, food and medicine. Field coordination units were set up in the earthquake affected areas to monitor relief distribution, provide continuous needs assessment, and report and track grievances and grievance redress. Coordination with PPAF partner organizations and international and national relief agencies was a high priority action. PPAF channeled almost $250 million to rebuild community assets, with significant efforts made to rebuild housing, with PPAF deploying social mobilization teams to support and monitor the reconstruction program. The PPAF deployed over 100 social mobilization teams through its partner organizations. Each team consisted of an engineer and a male and female social organizer and had responsibility for 800–1,000 houses. The teams undertook damage assessments and facilitated social mobilization, the training of homeowners and masons, and quality control and were instrumental in the reconstruction process. Training in psychosocial support was provided to help teams identify post-traumatic stress so that they could adapt their approach accordingly.

Key lessons of this experience were the inclusion of earthquake relief, rehabilitation and reconstruction financing as an integral part of PPAF's poverty alleviation program and consistent with its development objective of improving access of poor communities to infrastructure through participatory development and social mobilization. PPAF did not change its basic principle that development has to be driven by the communities. Rehabilitation and reconstruction were used as an opportunity not only to strengthen existing community organizations but also to establish new ones. Having an existing local presence was critical for effective disaster assessment and response.

Box 17: 2006 Java Earthquake, Indonesia - Organizing Community-Based Resettlement and Reconstruction

Somewhat hidden from the world by the ongoing flurry of Aceh tsunami recovery, the 2006 Java earthquake with a magnitude of 6.3 on the Richter scale was nevertheless an enormously destructive event. Over 350,000 residential units were lost and 5,760 persons were killed, most from the collapse of non-engineered masonry structures. Using lessons learned from the tsunami experience and resources from the ongoing community based Urban Poverty Project supported by the World Bank, the Indonesian government was able to respond quickly and efficiently. Facilitators were recruited and villages elected boards of trustees, which later were instrumental in organizing community meetings and supervising implementation. Key activities included: (1) identifying beneficiaries, prioritizing the most vulnerable; (2) establishing housing groups of 10-15 families, who choose their leaders and a treasurer; (3) development of detailed plans to apply and use the construction grants for each group;(4) opening of group bank accounts; and (5) approval of plans, disbursement in tranches, and group procurement, construction, and bookkeeping. Training was provided to community members and local workers to ensure earthquake-resistant construction. Later, the community developed plans to rebuild village infrastructure and facilities, with a particular focus on disaster-resilience. Communities conducted self-surveys, prepared thematic maps, analyzed needs and disaster risks, agreed on priority programs, and established procedures for operations and maintenance. Grants for infrastructure were also disbursed in tranches through the selected bank as work progressed.

Adequate understanding of rules and sense of ownership by the community were essential to ensuring good targeting and plans, accountability, and social control of implementation. Involvement of women increased accountability and enhanced the appropriateness of technical solutions. The role of facilitators is crucial, as they both ensure effective communication and adaptability of the program to local situations as well as compliance with program principles. The Government initiated the process by starting a six-month pilot project to build 6, 000 houses, and based on the learning, scaled up the reconstruction. This approach resulted in 270,000 earthquake-resistant-houses were rebuilt in Java within 18 months only. (Housing handbook, The World Bank)

Needs assessment and classification of affected people according to level of damages, losses and resilience. Detailed information on affected people and their socioeconomic and cultural characteristics (e.g. urban, rural, productive sector, level of income, ethnicity, etc.) should be gathered. This information is important so as to: (i) estimate the magnitude of damages and losses; (ii) classify affected people based on their socioeconomic and cultural characteristics, the type and level of losses they face (e.g housing, source of income, etc.), and their level of resilience (capacity to recover from the damage); (iii) establish a baseline to prepare the reconstruction plan, and; (iv) establish the objectives and goals of the recovery program with measurable indicators.

Recovery and reconstruction plans should extend beyond financial assistance. A disaster's impact reverberates beyond uniquely material assets. Families and communities and their social and economic networks are also impacted. Reconstruction plans need to mirror this natural extension beyond financial assistance to support people in rebuilding their lives.

Design participatory monitoring and evaluation systems. Equipping communities with information and knowledge for active participation in design and implementation of local initiatives and building in simple rules and clear

incentives for entitlements and eligibility with social accountability mechanisms and grievance redress enhances impact and sustainability.

Flexible frameworks are required for communities' active participation. Flexibility in design, often through piloting, is essential to allow systems to evolve and adapt better to local demand and capabilities. Flexible program planning and decentralized decision-making mechanisms, situated as close to the community as possible, facilitate quick response to change. Strong communication circuits on program performance and direct feedback loops built into intervention plans that facilitate responsiveness to community concerns are essential. Most successful programs routinely conduct beneficiary assessments, focus group interviews and other forms of evaluation that provide program managers and policymakers with information on whether investments and services provided reflect community priorities, the level and type of participation they have used, their sustainability and their impacts.

Design for scaling up and investing in exit. A fundamental objective in sustainable community-based disaster recovery is to move from isolated islands of successful practice to scaled up, larger impact with results in many communities simultaneously. Principles for scaling up are for the most part the same principles as outlined in Box 23. Arguably the most critical consideration for scaling up is that of ensuring that approval and disbursement processes, governance and decision-making are as decentralized as possible. This improves the likelihood of program benefits being relatively speedily accessible by local groups and also allows for flexibility and adaptive response to changing local circumstances. Clustering program activities into nodal areas or micro regions can be an effective strategy for focusing inputs in the initial stages, rapidly demonstrating results, establishing advocacy for further action, gaining credibility, spreading information and self-mobilizing demand for recovery activities. As coverage are expands, lateral communication between communities and external support agents (civil society, government, private sector) can become very valuable in order to support horizontal learning, build social capital and branch out into new strategic activities. An exit strategy for external support is a critical component of all community-based interventions. A clear distinction must be made between support services that are recurrent or permanent in nature and those that are temporary. For recurrent services, sustainability requires putting in place permanent institutional and financing arrangements at a cost that can be supported over the medium and long term. Temporary services, such as initial intensive capacity-building support to civic associations may, however, not require sustainable financing or permanent institutional structures. For such temporary services, explicit exit strategies need to be designed and implemented.

Box 18: Indonesia Tsunami

In December 2004, the province of Nanggroe Aceh Darussalam was hit by a tsunami and earthquake that claimed over 230,000 lives and destroyed countless schools, houses, places of worship, roads and livelihoods. For rehabilitation and reconstruction purposes, as well as psychological reasons, there was a distinct need to reorganize and empower communities to begin a process of participating and undertaking this massive task, determining for themselves what their needs and priorities would be, and how they were to reconstruct not just their community infrastructure, but also rebuild their communities. In the Meuraxa area of Banda Aceh, almost 3,000 houses were destroyed, land boundaries disappeared, and only 30% of the population survived. Through extensive efforts of Government-hired facilitators (Community Development Workers) and in partnership with local government, the community was supported in carrying a damage assessment, conducting area mapping, identifying beneficiaries and developing reconstruction plans incorporating disaster risk reduction. In order to build back better, the plan includes land consolidation for safer settlements. The Plan includes budget and task allocations for the community, donors and various levels of government. Through this partnership, within 3 years the area was completely reconstructed and transformed into a significantly safer and better settlement. Similar approaches were successfully applied in many different areas of Aceh.

Box 19: Guatemala – Tropical Storm Stan

As a result of the national disaster wrought by Tropical Storm Stan on October 5, 2005, the total economic impact was estimated at US$983 million, equivalent to 3.4% of 2004 GDP. Most (59%) of the losses were sustained by low-income groups and small-scale producers, with little ability to recover what they lost. Tropical Storm Stan resulted in 17,000 homes that were either totally destroyed or declared unfit for human habitation, resulting in the country's worst natural disaster, which was exacerbated by the existing shortage of 1.2 million homes.

The impact of Tropical Storm Stan posed an enormous national challenge for the reconstruction of economic and social infrastructure, requiring an unprecedented degree of inter-agency coordination. It was necessary to restore trust in the State and institutions, expand community participation, and account for the population's social and cultural characteristics. The State's timely, appropriate, effective and transparent engagement was needed to undo damage of past experiences and the lack of credible institutions.

The government designed the *Reconstruction with Transformation* model, which adopted a more inclusive stance and promised comprehensive measures within a framework of development and sustainability. The main features of this model are: participation by the population in setting priorities; applying the subsidiary-with-solidarity principle; strengthening democratic governance and legitimacy; strengthening civic values through joint work and agreements; involving the private sector through the procurement mechanism; incorporating a cultural and gender perspective; and adopting a new integrated and sustainable rural development strategy.

The adopted model gave rise to the National *Reconstruction with Transformation* Plan, which has three major components and three cross-cutting themes: ***C****omponents:* (1) Physical infrastructure and the management of watersheds; (2) Reactivation of output and family income; and (3) Rehabilitation and strengthening of the social fabric. *Cross-cutting themes:* (1) Risk management and integrated management of watersheds; (2) Transparency and accountability; and (3) Decentralization.

The National Coordinator for Reconstruction's Office was responsible for creating and implementing the Plan. It set up an inter-agency team committed to forming 80 new settlements in 15 departments to resettle approximately 7,400 families (50,000 people) who were either victims of the disaster or at imminent risk. Strengthening the social fabric fostered citizen participation, which improved transparency.[16]

16 Source: Aguirre-Cantero. E. The First Tzútujil City of the XXI Century. In: Correa, E. (Comp.) 2011. *Preventive Resettlement for populations at risk of disaster. Experiences from Latin America.* Washington: The World Bank

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