Extreme weather events have a direct impact on households’ welfare, and in particular, the poorest, most socially excluded populations. Increasing frequency and intensity of disasters, such as earthquakes, hurricanes and flooding, is closely linked to the growing vulnerability of households and communities. Thus, the impacts of extreme events on poverty, income, consumption, health and education present a serious challenge to the well-being of these populations, and also produce negative long-term consequences for economic and social development across the region. In order to reduce the impacts of disasters on existing economic and social disparities, Latin American countries are implementing a range of initiatives that combine Disaster Risk Management (DRM) approaches with poverty reduction measures, social inclusion and the creation of jobs and productive activities. This Brief presents some key experiences from across the region, with a focus on urban governance, public investment systems and innovative insurance mechanisms. The Brief then describes the main contextual factors that explain why Latin American countries have made progress in these areas, as well as on-going challenges and key lessons that may be useful for other regions.

A COMMON CHALLENGE: ENDING THE CYCLE OF DISASTER, VULNERABILITY AND POVERTY

The staggering cost of disasters represents a considerable challenge to achieving the Millennium Development Goals (MDG), and principally Goal 1 related to poverty reduction. Disasters cause substantial damage to human capital, including death and destruction, and produce harmful consequences for nutrition, education, health and income-generating processes. Furthermore, disasters affect the poorest populations first and hardest, creating a vicious cycle between vulnerability and poverty.

KEY LESSONS LEARNED

It is possible to address the underlying causes of risk and reduce poverty using existing tools and strategies. Waiting for higher levels of economic development is unnecessary.

Preventative resettlement programmes can build resilience to risk and improve the quality of life of the poorest and most vulnerable urban populations.

Integrating DRM into public investment systems protects national financial resources from the economic impacts of disasters, thereby helping to maintain macro-economic stability, sustain growth and protect poverty reduction efforts.

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1. Two-thirds of the $6 billion annual funds from the World Bank spent on building schools as part of the Education For All programme are allocated towards replacing precarious or insecure constructions. See: World Bank / GFD, UNISDR, INEE. 2009. Guidance Notes on Safer School Construction. INEE Secretariat, Washington, DC.
To cite just a few examples from Latin America, as a result of Hurricane Mitch in 1998, the poorest families living in Honduras lost 31% of their productive resources. The Government of Chile estimates that an additional 500,000 Chileans fell into poverty after the 2010 earthquake, mainly due to job loss. In Haiti, the impacts of the 2010 earthquake were felt particularly hard in the country’s poorest regions where chronic food insecurity intensified, health infrastructure and social services collapsed and some 1.3 million people were left homeless.

The grave impacts of disasters on poverty in African and Asian countries have also been widely reported. For example, in Burkina Faso poverty increased in the Sahel (from 2% to 19%) and the Sudanian area (from 12% to 15%) in the aftermath of the 1984-1985 drought. Between 1998 and 2000, natural disasters in Madagascar reduced financial capacity to access food by 46%. In Ethiopia, in 1999 and 2002 uninsured droughts increased consumption poverty by about 14%. Assessments carried out by the Asian Development Bank found that as many as 2 million additional people could fall.
into poverty as a result of the 2004 tsunami.

**Underlying Causes of Risk**

Disaster risk is augmented by factors such as rapid urban growth and occupation of new areas of land, which in turn lead to increases in the quantity of people and assets exposed to risk. At the same time, weak institutional capacities amongst local government authorities for facilitating access to land and services by poor people has resulted in a model of urban growth characterised by the expansion of informal settlements into non-regulated areas prone to hazards. Today, at least 900 million people live in informal settlements in cities in developing countries, and many of these are located in high risk zones. As it is, the livelihoods of poor urban populations barely cover basic necessities in terms of shelter, transport, education and health; a lack of safe housing, infrastructure and adequate public services – that could offer protection in the event of earthquakes, cyclones and heavy floods – only serves to further increase mortality risk.

The degradation of ecosystems is another important factor that increases disaster risk and poverty in urban areas. As well as causing a higher frequency and intensity of disasters, environmental damage produces direct losses for poor populations that depend on ecosystem services for their livelihoods. Weak or non-existent social protection mechanisms and scarce availability of insurance schemes also heighten the impact of disasters on poorer urban populations. Losses resulting from disasters often exceed their response capacity and the high frequency of extreme events erodes resilience over time. Progressive climate change acts as a powerful propeller in the cyclical relationship between disaster risk and poverty, drastically increasing the impact of disasters on poor people and on poverty reduction efforts.

In the case of large-scale disasters, international aid only provides for 10% of actual recovery and reconstruction costs. Disasters therefore require developing countries to divert significant resources that could otherwise be used to address the underlying causes of risk via poverty reduction and socio-economic development objectives. In this context, developing countries across Asia, Latin America and Africa have been developing Disaster Risk Management (DRM) strategies aimed at increasing the resilience of communities as well as stimulating growth and protecting poverty reduction and development investments. This Brief focuses on the Latin American experience in implementing DRM strategies that combine with a poverty reduction approach.

**REDUCING BOTH DISASTER RISK AND POVERTY: KEY LATIN AMERICAN EXPERIENCES**

Across the region, Latin American actors have implemented a range of strategies for reducing the underlying factors of risk, while at the same time breaking the disaster risk-poverty cycle. Some of the main strategies include: strengthening livelihoods (natural resource management; provision of basic services; and infrastructure development); good urban governance (regulatory frameworks; planning for growth); financial tools (credits and insurance); ecosystem management (protected areas; payments for ecosystem services); and community-based risk reduction approaches.

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8. Though this Brief is part of a set of materials focused on DRM in cities, this particular Brief, given the nature of the subject matter, includes examples both from cities as well as from national governments. In researching this Brief, we have given priority to technical studies and reports carried out by UN agencies, as well as international and multilateral institutions such as the World Bank, Economic Commission for Latin America and the Caribbean and the Inter-American Development Bank. The reports of these bodies, undertaken as part of the internal work of the organisation or commissioned to external experts, are high-quality and reliable, and offer applied and comparative research of different countries of Latin America. We also drew on reports of the public institutions working on DRM in individual countries, and in some cases we consulted the research of private institutions, such as NGOs, with DRM expertise. Efforts have been made to ensure that the sources are as current as possible and available online for easy reference.
This Brief focuses on three of the most well-documented of these strategies. First, Latin American countries have made important progress towards incorporating DRM into urban development strategies, in particular around urban resettlements. Second, countries have focused on public investment systems, and third, they have implemented some innovative micro-insurance schemes for risk transfer and social protection. This section highlights examples of Latin American experiences with each of these three strategies.

1. Urban Development: Preventative Resettlement and Settlement Up-grading

In various cities across Latin America, DRM approaches are being integrated into urban development and land planning policies and strategies. In particular, Latin American countries demonstrate some successful experiences in preventive resettlement and settlement up-grading that, along with contributing to DRM, are reducing poverty by creating employment, providing professional training opportunities and improving land rights. 18

Preventative Resettlement

One such initiative was implemented in Argentina by the Ministry for Housing between 1993 and 2004. A total of 11,911 families from 120 communities in flood-prone areas across the country were relocated into affordable houses built with locally available materials and carefully tailored to local cultural preferences. The programme was designed using a methodology for “assisted self-construction and mutual aid” which entailed collective, decentralised and participatory work between the central, provincial and local governments, the beneficiaries and building material providers. An external evaluation of the programme concluded that living conditions had been improved and that 41% of beneficiaries had been able to significantly increase their income, mainly through additional bricklaying work. 19

In Colombia, the Nueva Esperanza resettlement programme in the capital city Bogota provided a range of support measures to assist families with moving to their new houses. These included measures to: strengthen productive activities, such as construction training; provide environmental education to prevent and mitigate disaster risk; improve access to public social programmes, including assistance for young children and the elderly, and school enrolment schemes; and ensure that entire families, rather than just male heads of households, became legal property owners. Although a full evaluation will not be carried out until 2015, the programme is already generating important lessons on integrated resettlement planning that will be useful for cities in other countries and regions. 20

Settlement Up-grading

Brazil has registered a number of successes in the urbanisation of favelas, or informal urban settlements, through projects financed by the IDB and the Brazilian government. These projects demonstrate how integrated and sustainable urban development policy can respond to the challenges of urban poverty via multi-sector and socially inclusive strategies. As well as reducing disaster

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18 The following publication provides a comparative analysis of urban resettlement programmes for disaster risk reduction in four Latin American countries and includes information on the impacts of these programmes on variables such as employment, income and land rights: Correa, E. (ed). 2011. Preventive Resettlement of Populations at Risk of Disaster: Experiences from Latin America. GFDRR, World Bank, Washington, DC.
risk, the projects provided sanitation and housing solutions, strengthened the social capital of beneficiary communities, built infrastructure such as pavements and drainage, improved housing, and created spaces for recreational and sporting activities.\(^21\)

In 2012, the Lima City Council launched a settlement upgrading initiative called the My Neighbourhood Programme (Programa Barrio Mio) which aims to improve the quality of life of Peruvians living in hillside settlements in the capital city. With a $30 million budget, the programme combines risk mitigation and disaster prevention activities, such as reforestation and urban reorganisation, with the construction of civil infrastructure like stairways and defence walls, and social infrastructure such as sports, cultural and community centres. The programme also includes disaster response training for residents.\(^22\) Since the initiative was only launched in 2012, no results have yet been documented, though the planning, funding and operationalisation processes do provide some interesting lessons for other countries.\(^23\)

### 2. Financing and Public Investment Systems

Through financing and integrating DRM into public investment systems, countries actually end up minimising future economic losses and bringing down reconstruction costs, thereby adequately compensating for the original expenditure. The same investments also provide many indirect benefits on health, human development and productivity, thereby protecting poverty reduction efforts and stimulating social and economic development.\(^24\) With support from the Economic Commission for Latin America and the Caribbean, Latin American countries have made some important first steps in modernising their public investment systems to incorporate DRM, thereby simultaneously addressing disaster risk and poverty reduction. This section describes some key examples coming from the region.

The governments of Peru, Costa Rica and Guatemala have pioneered the integration of DRM into national budgets via a range of methods, including: cost-benefit analysis of risk in public investment systems to determine whether the additional expense of incorporating disaster risk reduction measures is justified in terms of the level of risk;\(^25\) creating information platforms bringing together data on hazards and risks to support financial decision making;\(^26\) and improvements in transparency and monitoring.\(^27\)

Governments in Mexico, Nicaragua and El Salvador are using the IDB Disaster Deficit Index, which offers a simple way of measuring a country’s fiscal exposure and potential deficit in case of an extreme disaster. The Index also enables national decision makers to measure the budgetary implications of such an event and highlight the importance of including this type of information in financial and budgetary processes.\(^28\)

These are all new initiatives, so it is too early to determine what long-term impact these systems are having on DRM and poverty reduction efforts. At the same time, an early assessment highlights some critical success factors, such as: mainstreaming disaster risk and assessment methods; coordinating different government actors across levels and sectors; building strategic alliances with training and academic institutions; providing professional training; developing a long-term vision of investment; and aligning investment decisions with strategic development plans.\(^29\)

In addition to integrating DRM into financing systems, various Latin American countries have assigned extra national resources specifically for reducing and correcting risk, such as: mainstreaming disaster risk and assessment methods; creating

\(^{21}\) See: Inter-American Development Bank. 2012. _Slum Upgrading: Lessons Learned from Brazil_. IDB, Washington, DC.

\(^{22}\) To learn more, see the ELLA Case Study: Operationalising and Funding a Plan to Mitigate Risk. The Disaster Risk Management Strategy for Metropolitan Lima. Also see a presentation** in Spanish** by Pedro Ferradas of Practical Action Latin America, presented at the national launch of the UNISDR international campaign “Making Cities Resilient: My City is Getting Ready”, in May 2012. The presentation describes the planning processes and provides details of proposed activities.

\(^{23}\) To learn more, see: ELLA Case Study: Operationalising and Funding a Plan to Mitigate Risk. The Disaster Risk Management Strategy for Metropolitan Lima.


\(^{26}\) Examples include: SINPAD in Peru, the geo-referencing risk system of the Andean Community, GEORiesgo; and CEMADEN in Brazil.


\(^{28}\) To learn more about the Index and its use, see: Cardona, O. 2007. _Indicators of Disaster Risk and Risk Management Program for Latin America and the Caribbean: Summary Report_. IDB, Washington, DC.

ELLA AREA: ENVIRONMENTAL MANAGEMENT | ELLA THEME: DISASTER RISK MANAGEMENT IN CITIES

Spotlight on Mexico: The case of FONDEN

With five tectonic plates below its territory, Mexico is particularly exposed to earthquakes, and also experiences a long hurricane season between June and November. Over recent years, the government has been implementing some innovative financial tools to prevent an economic collapse in the case of a large-scale disaster.

It was disaster itself - the country’s 1985 earthquake - that largely sparked the government’s new DRM focus. Soon after, the Mexican government created the country’s first DRM system [SINAPROC]. In 1996, the government set up a fund to support post-disaster recovery and reconstruction, called FONDEN. FONDEN uses various instruments to support local states and entities in responding to disasters, including reserve funds and risk transfer solutions called Catbonds. FONDEN reserve funds are used to ensure that the most vulnerable populations’ basic needs are met in emergency situations. This includes reconstructing houses, as well as re-building uninsured social and productive infrastructure. FONDEN also supports small-holder farmers affected by natural disasters through direct payments to compensate loss or temporary work programmes for improving public infrastructure or restoring soil and forest resources. FONDEN also funds prevention initiatives such as risk assessments and economic impact studies relating to key infrastructure such as roads and hospitals, vulnerable housing, and natural disaster risk modelling.

Disaster risk financing and other financial tools for managing disaster risk have existed for decades, but have principally benefited middle and high-income families, large companies and rich governments. Poor households, especially those whose members work in the informal sector and earn irregular incomes, tend to lack access to these tools. And where they are available, the majority of poor families cannot afford them. Without access to insurance against disasters, poorer populations run the risk of losing their life savings and, in some cases, assets built up over various generations. At the level of the country, developing country governments face huge budgetary uncertainties due to the unpredictability of international aid and the costs post-disaster recovery, often having to divert large sums away from poverty reduction and development programmes.

Across Latin America, disaster insurance schemes implemented at country and household levels are providing a successful method for strengthening resilience, accelerating recovery processes and supporting broader and longer-term social and economic development goals. At the country level, a noteworthy experience for its breadth of coverage is the Caribbean Catastrophe Risk Insurance Facility, a regional insurance service created and administered by 16 governments. This service insures governments against the impacts of catastrophic hurricanes and earthquakes, and enables them to quickly obtain liquidity based on parametric indices. Initial activities have secured support from the World Bank, the Caribbean Development Bank and the governments of Canada, France and the United Kingdom. By grouping together risk, the Caribbean governments have managed to reduce their individual premiums by 40%.

Many other countries are also taking out insurance schemes specifically designed to be activated in the case of an emergency caused by a natural catastrophe. Colombia, El

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30 See this presentation by the Director of FONDEN, Rubem Hofliger; La Experiencia de México en la Implementación del FONDEN y del FOPREDEN (Mexico’s Experience in Implementing FONDEN and FOPREDEN), presented in Mexico, 28 November 2011.
Salvador, Guatemala, and more recently Costa Rica, have made use of these funds – called CAT DDO – to deal with various natural disasters, including the 2009 earthquake in Costa Rica and the flooding in El Salvador during 2011.\footnote{See: Government of Mexico, World Bank. 2012. \textit{Improving the Assessment of Disaster Risks to Strengthen Financial Resilience}. World Bank, Washington, DC.}

In 2006, Mexico became the first country to issue the so-called \textit{Multi Catbond}, via a programme financed by the World Bank. The Multi Catbond is a flexible financial tool that insures against earthquakes and hurricanes in certain geographic regions of Mexico during the 3-year lifetime of the bond and which provides returns to investors via interest. In the event of a large-scale disaster, money is immediately disbursed to the Mexican government. The Catbond essentially contributes to poverty reduction by covering the public finances of the country from having a large outlay for recovery work after disaster and minimises the need for diverting resources away from poverty reduction and other social development efforts.

At the household level, the region is home to some interesting advances in providing families with disaster insurance. For example, \textit{Agroasemex} is a company owned by the federal government in Mexico that specialises in insurance for agriculture and livestock farming and offers catastrophe insurance to small-scale producers. The insurance is based on a coverage scheme aimed at covering financial deviations in the event of catastrophic climatic events. Insurance sums, premiums and compensation are calculated per region and compensation is paid out based on critical rainfall levels, called triggers, per crop for each of the stages of the growing cycle.\footnote{See also: González, A. 2009. \textit{Insurance Applied to Agriculture: The Mexican Case}. International Food Policy Research Institute (IFPRI), Washington, DC.}

In Manizales, Colombia, an innovative cross-subsidised insurance plan, \textit{Predio Seguro} (Secure Plot),\footnote{See the Colombia case study of: ECLAC. 2007. \textit{Information on Disaster Risk Management: Case Studies of Five Countries}. ECLAC, Santiago de Chile.} supported by the local city government, has enabled poor families to obtain insurance cover against catastrophes. The scheme issues a collective insurance policy to protect the poorest segments of the population. The payment and claim of damage insurance for each plot in the city is managed by the local council and rates are calculated based on official registers.

After the 2010 earthquake in Haiti, the micro-insurance platform \textit{Microinsurance Catastrophe Risk Organization} (MiCRO) was set up to provide micro-insurance packages to the country’s poorest and most vulnerable people. Financed by government donors, such as DFID and SDC, and the private sector, one of the company’s schemes, \textit{Fonkoze}, supports small entrepreneurs to recapitalise their business after an extreme weather event via cash payments and loans.

Peru has set a precedent with the first \textit{indexed insurance scheme covering El Niño events}, a phenomenon that strikes the country’s northern coast in particular with intense rainfall. This preventative insurance scheme is activated when buoys of the United States’ \textit{National Oceanic and Atmospheric Administration} (NOAA) registers sea temperatures of 24°C or higher during November and December - an indicator that intense rainfall can be expected during March and April. Compensation is then sent out to policy-holders during January and February, to be used for investment in preventative actions.

Finally, in Bolivia, the \textit{PROFIN Foundation} has designed a system of indexed insurance that is being piloted in four provinces in the northern and central plateau or \textit{altiplano}. The \textit{Risk Transfer Fund} combines incentives for proactive risk reduction with a flexible index mechanism calculated on an individual loss basis. The index is based on production levels in areas of agricultural land characterised by temperature, rainfall, humidity and soil type. The productivity of these areas of land is used as an indicator of whether production levels have been negatively affected by meteorological events, in which case compensation is paid out, or whether productivity has been affected by other factors that the farmer should be able to control.

**MAIN ACHIEVEMENTS**

What are some of the main achievements coming out of the region?

- Urban and local governments have integrated disaster risk reduction into urban development and land planning strategies, thereby guaranteeing access by poor urban populations to affordable housing on low-risk areas of land with secure tenancy rights, adequate infrastructure and basic services. Professional training schemes have
provided families with opportunities to generate higher income and reduce their vulnerability to future disasters.

- Responsibility for disaster risk reduction has been assumed by the highest levels of political authority and DRM has been explicitly incorporated into development plans and public investment systems. Evidence of this can be found in substantial increases in national budgets designated for DRM. These rises in public spending are being capitalised via financial packages aimed at stimulating the economy through investments in infrastructure for risk reduction and other measures that address the underlying causes of risk and support poverty reduction efforts.

- Important progress has been made in the integration of DRM into public investment systems via a range of methods for risk modelling, assessment and cost-benefit analysis. These systems are helping to ensure that public spending not only prevents and mitigates future risk, but also that direct expenditure on DRM is contributing to longer-term economic and social development goals.

- Significant progress has also been made in developing insurance markets so that governments and a larger proportion of at-risk households are able to access appropriate risk transfer and social protection mechanisms.

**ON-GOING CHALLENGES FOR LATIN AMERICA**

Despite taking some important steps in the institutionalisation of DRM, including progress in national policy and the development of institutional and regulatory frameworks for Disaster Risk Reduction, significant gaps remain with regards to integrating DRR into poverty reduction efforts and long-term social and economic development plans. In many countries across Latin America, this is due to a lack of development per se – it is impossible to integrate DRR into development processes that do not exist.

On the other hand, in some countries, linking political and institutional frameworks for DRR and climate change adaptation to poverty reduction plans and programmes has only really happened on paper, and is yet to be operationalised. Likewise, the integration of DRR into political tools such as Poverty Reduction Strategy Papers (PRSP) is, in many cases, limited to disaster preparation and response. The potential for using tools such as the PRSP to address the underlying factors of risk has not been exploited to its fullest.

The perception that governments and the international development community are responsible for covering losses incurred due to disasters presents a considerable obstacle to the wider application of risk transfer mechanisms including insurance.

Although insurance schemes for disaster losses are gaining ground, they are limited by a lack of reliable data on local and regional meteorological seasons. In various countries, new indexing methods are being developed with the aim of expanding coverage.

However, there is an on-going need to improve collaboration for monitoring multiple risks via the functional integration of and collaboration between scientific and technical organisations working in the fields of meteorology, geology and geophysics, oceanography, and environmental management, amongst others.

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36 The UNDP asserts that every dollar invested in disaster prevention represents a saving of 7 dollars in emergency response and construction costs. However, calculating economic savings at a national scale remains a challenge. See, for example, one of the most comprehensive comparative assessments: World Bank and The United Nations 2010. *Natural Hazards, Unnatural Disasters: The Economics of Effective Prevention*. World Bank, Washington, DC. This report examines government expenditures on prevention and finds that it is generally lower than relief spending, which rises after a disaster and remains high for several subsequent years. But effective prevention depends not just on the amount but on what the funding is used for.

37 For more information, see: ELLA Brief: Advancing the Institutionalisation of Disaster Risk Management in Public Policy in Latin America.
The repeated occurrence of large-scale disasters in Latin America has resulted in the creation of national civil defence systems or the evolution of these into national DRM systems. Examples include the 2009 earthquake in Chile which presented an opportunity for the government to improve strategies for land planning; the strengthening of the CEDEPRENAC (the Coordinating Centre for the Prevention of Natural Disasters in Central America) after Hurricane Mitch; and the Armero volcanic eruption emergency in Colombia which gave birth to a new phase of institutionalisation of DRM within the country.

The availability of tools and methodologies specific to Latin America, such as risk indicators developed by the IDB and economic and social impact evaluations carried out by the Economic Commission for Latin America, have supported Latin American countries to improve the evaluation and quantification of risks faced by their populations. Likewise, these tools have been used to design interventions to limit financial and economic losses caused by earthquakes, flooding and other natural phenomena, thereby preventing important funding for poverty reduction being diverted in the face of disaster.

The incorporation of disaster risk reduction criteria into public investment systems has been promoted and facilitated by a range of agencies seeking to improve the efficiency and efficacy of government-managed DRM. One such example is the Disaster Risk Assessment and Risk Financing Model developed by the G20, the Organisation for Economic Cooperation and Development (OECD) and the World Bank and promoted amongst developing country governments.

Similarly, one of the key success factors in Latin America has been incorporating DRM criteria in public investment processes, which itself has been promoted in part due to the region’s focus on improving the effectiveness and efficiency of state management, in particular the New Public Management paradigm promoted by the OECD and the World Bank in developing countries. One particularly emblematic example is Budgeting for Results, which in Peru for instance, has included measurable DRM outcomes as part of the methodology.