

# Chapter 7

Investing today  
for a safer tomorrow



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## The challenge

The evidence presented in this Report shows that, globally, disaster risk is disproportionately concentrated in developing countries. Given similar levels of hazard exposure, developing countries suffer far higher levels of mortality and relative economic loss than developed countries. In general, poorer countries and those with weak governance are more at risk than wealthier, better governed countries. Disaster impacts have more serious outcomes in countries with small and vulnerable economies, including many small island developing states (SIDS) and land-locked developing countries (LLDCs), than in larger countries with more diversified economies. Even assuming constant hazard levels, global disaster risk is growing; economic loss risk is growing faster than mortality risk. In general, economic development increases a country's exposure at the same time as it decreases its vulnerability. However, in low- and middle-income countries with rapidly growing economies, exposure increases at a far faster rate than vulnerability decreases, leading to increased risk overall.

Within many developing countries, disaster risk is also spreading extensively, manifested as a very large number of low-intensity impacts, affecting significant areas of a country's territory. Almost all these impacts are associated with weather-related hazards. Such risk patterns are expanding rapidly, driven by factors such as fast – but poorly planned and managed – urban growth and territorial occupation, which increase both the number of people and assets exposed. Increased hazard exposure is aggravated by environmental mismanagement and the decline in the regulating services provided by ecosystems. Empirical evidence at the local level shows that poorer households and communities suffer disproportionately higher levels of loss and that disaster impacts lead to poverty outcomes. The poor are less able to absorb loss and recover, and are more likely to experience both short- and long-term deteriorations in income, consumption and welfare.

Climate change will magnify these interactions between disaster risk and poverty at all scales. On the one hand it magnifies the severity, frequency, distribution and unpredictability of weather-related and climatic hazards. At the same time, it erodes the resilience of poorer countries and communities through decreased agricultural production, increased water and energy stress, greater prevalence of disease vectors, and other effects. Even small increases in weather-related hazard due to climate change can have a large magnifying effect on risk. Critically, climate change magnifies the unevenness of risk distribution, meaning potentially drastic increases in the disaster impacts and poverty outcomes experienced by poorer, less resilient countries and communities.

### 7.1 The imperative for urgent action

In principle, international frameworks such as the Hyogo Framework for Action (HFA), the Millennium Development Goals (MDGs) and the United Nations Framework Convention on Climate Change (UNFCCC) recognize the links between disaster risk, poverty and climate change. In practice, however, current progress under these frameworks is not leading to a sustainable reduction in disaster risk.

Under the HFA many low- and middle-income countries have made major strides towards developing national policies, institutional systems and legislation for disaster risk reduction. However, far less progress has been

made in reducing disaster risk in the principal development sectors. In many countries, this is a consequence of insufficient development per se. It is impossible to mainstream disaster risk reduction into development that is not there. However, progress is also challenged by weaknesses in risk reduction governance, including difficulties in compiling comprehensive information on disaster risks, insufficient engagement by the development sectors, and major difficulties in ensuring implementation, enforcement and accountability.

Progress in implementing climate change adaptation is slow, and adaptation policy and

institutional frameworks are largely disconnected from those created to reduce disaster risk, at both the national and international levels. Adaptation faces similar challenges to disaster risk reduction, in particular a governance framework that can allow risk in the development sectors to be addressed.

In principle, poverty reduction efforts in both rural and urban areas have considerable potential to address the underlying disaster risk drivers if they are clearly focused. In most countries, however, poverty reduction has only weak functional linkages to policy and institutional frameworks for disaster risk reduction and climate change adaptation. At the same time, the inclusion of disaster risk reduction in instruments such as poverty reduction strategy papers (PRSPs) is often limited to disaster preparedness and response aspects, meaning that their potential to address the underlying risk drivers is often not fully exploited.

The world will experience significant climate change, even if rapid progress is achieved

in moving towards a low-carbon economy. Risk prone developing countries will only be able to avoid further increases in disaster impacts and poverty outcomes by taking decisive action to address the underlying drivers that are responsible for the concentration and expansion of risk. A failure to address these drivers will result in dramatic increases in disaster risk and the associated poverty outcomes.

In contrast, if priority is given to addressing these drivers, disaster risk can be reduced and the HFA achieved. Given that disaster impacts and outcomes are so disproportionately concentrated in poorer countries and communities, this is also critical to the achievement of poverty reduction and sustainable development objectives, such as the MDGs, and also offers the best opportunity to adapt to climate change. Rather than a cost, this should be seen as an investment in building a more secure, stable and equitable future.

Box 7.1 outlines the main recommendations for action highlighted in this Report.

### Box 7.1: Recommendations for Action

#### A 20-point plan to reduce risk

##### Accelerate efforts to avoid dangerous climate change

- 1 Agree measures such as an effective multilateral framework to reduce greenhouse gas emissions and policies for sustainable carbon budgeting. These are essential if potentially catastrophic increases in disaster impacts and associated poverty outcomes are to be avoided in disaster prone developing countries.

##### Increase the economic resilience of small and vulnerable economies

- 2 Coordinate policies on trade and productive sector development with policies in climate change adaptation and disaster risk reduction in order to strengthen economic resilience, particularly in the case of SIDS and LLDCs.
- 3 Promote the development of catastrophe pools between such countries to allow the transfer of sovereign risk at an affordable cost and provide a more reliable mechanism for recovery and reconstruction.

##### Adopt high-level development policy frameworks to reduce risk

- 4 Adopt overarching national development policy frameworks at the highest level, backed by the necessary political authority and resources, focusing on the underlying drivers of disaster risk. These should bring coherence to, align and integrate existing efforts being pursued under the HFA and through poverty reduction and climate change adaptation instruments.

### Focus development policy on addressing the underlying risk drivers

- 5** Build the capacities of urban and local governments to integrate disaster risk reduction considerations into a broader strategy to ensure the supply of safe land, secure tenure, infrastructure and services, and adequate, disaster resistant housing for the urban poor.
- 6** Invest in natural resource management, infrastructure development, livelihood generation and social protection to reduce vulnerability and strengthen the resilience of rural livelihoods.
- 7** Protect and enhance ecosystem services through mechanisms such as protected area legislation, payment for ecosystem services and integrated planning.
- 8** Shift the emphasis of social protection from an exclusive focus on response to include pre-disaster mechanisms and more effective targeting of the most vulnerable groups.

### Adopt an approach supportive of local initiatives

- 9** Promote a culture of planning and implementation of disaster risk reduction that builds on government–civil society partnerships and cooperation and is supportive of local initiative, in order to dramatically reduce the costs of risk reduction, ensure local acceptance, and build social capital.

### Build on existing systems for public administration to incorporate innovations into the governance of disaster risk reduction

- 10** Ensure that responsibility for disaster risk reduction is vested in the highest level of political authority and is explicitly incorporated into national development plans and budgets.
- 11** Harmonize and where possible integrate the governance arrangements for disaster risk reduction and climate change adaptation.
- 12** Promote greater synergy in hazard monitoring and risk identification, leading to comprehensive multi-hazard risk assessment, through the functional integration of the scientific and technical bodies responsible for meteorology, geology and geophysics, oceanography and environmental management, etc.
- 13** Subject all public investment to a cost–benefit analysis to enhance its sustainability and cost-effectiveness, and contribute significantly to the reduction of disaster risk.
- 14** Encourage national control and audit offices to undertake periodic reviews of the implementation of disaster risk reduction policy in order to achieve improvements in accountability, enforcement and control.
- 15** Strengthen the linkages between the organizations that generate warnings and those responsible for disaster preparedness and response, and between the national and local levels in order to increase the effectiveness of early warning systems in risk prone communities.
- 16** Support the development of insurance markets so that a larger proportion of at-risk households can have access to risk transfer mechanisms, complemented by other financial tools such as microfinance and contingency financing.

### Invest to reduce risk

- 17** Increase the resources available for climate change adaptation in risk prone developing countries, in order to complement resources pledged to achieve the MDGs and allow such countries to address the underlying drivers of risk.
- 18** Use increased public spending in the context of economic stimulus packages, to invest in risk-reducing infrastructure and other measures that address the underlying risk drivers.
- 19** Ensure that additional investments are made to factor disaster risk reduction considerations into all new development.
- 20** Strengthen the capacities of disaster prone countries to develop the policy and governance frameworks necessary to organize and manage all the above.

## 7.2 Global action to reduce risk

### 7.2.1 Climate change mitigation

The evidence of increasing disaster risk presented in this Report underlines the critical importance of avoiding dangerous climate change. Greater urgency is needed in efforts to reduce GHG emissions and energy consumption if a potentially catastrophic increase in disaster risk – the impacts of which will be largely concentrated in developing countries – is to be avoided.

Mitigation must be a priority for high-income nations because they are responsible for most GHG emissions to date. For most low-income nations, there is not much scope for mitigation because current levels of GHG emissions are so low. In many low-income countries, carbon dioxide emissions per capita are less than 1/200th that of the United States of America and Canada. In 2004, annual per capita carbon dioxide emissions were around 20 tonnes in the United States of America and Canada, between six and ten tonnes in most European nations, and less than 0.25 tonnes for many nations in sub-Saharan Africa and Asia<sup>1</sup>. These nations' per capita figures are also far below the targets for the world average sought for 2030 or 2050 to slow and then stop the increase in carbon dioxide concentrations in the atmosphere.

However, achieving the necessary reductions in global emissions will also require 'low-carbon' development paths for all growing economies (including the successful low- and middle-income nations).

### 7.2.2 Trade policy and productive development

The threat posed by disaster risk is highest in the case of SIDs, LLDCs and countries with small and vulnerable economies. Many of these countries are also highly susceptible to climate change. As climate change worsens, hazard levels and economic vulnerability will rise. Given the reliance of many vulnerable countries on a single economic sector, risk may reach unsustainable levels, in some extreme cases threatening their social and economic viability as nations.

A key recommendation is to start coordinating policies on trade and productive sector development with those on climate change adaptation and strategies for disaster risk reduction. Strategies are needed to develop capacities and reduce dependence on a single economic sector. The resilience of these countries will increase if they can diversify their economies and improve their participation in world trade.

## 7.3 Policy frameworks for risk reducing development

### 7.3.1 Addressing the underlying risk drivers is possible

It is possible to address the underlying drivers of disaster risk. In all regions, innovative approaches are already being applied at the local level and in different sectors, which show that it is possible to address these underlying risk drivers. These include mechanisms for providing land, infrastructure and housing for the urban poor; strengthening the resilience of rural livelihoods; enhancing valuable regulatory and provisioning ecosystem services; using microfinance, microinsurance and index-based

insurance to strengthen resilience. The most successful of these experiences have emerged in the context of innovative partnerships between national and local governments and civil society that increase the effectiveness and sustainability of investments, reduce costs, and build valuable social capital.

These experiences demonstrate that the underlying risk drivers can be addressed, and that the tools, methods and approaches necessary to do so already exist. However, they must still be integrated into the policy mainstream. Most countries still lack a determined and focused

high-level development policy framework that addresses these drivers and is supportive of such innovative approaches. Without such central support, ongoing efforts in disaster risk reduction and climate change adaptation cannot gain traction.

The adoption of such an overarching policy framework would allow the different plans, programmes and projects in poverty reduction, climate change adaptation and disaster risk reduction – as well as in sustainable development in general – to become better aligned in order to address the underlying drivers of disaster risk. These plans and programmes include PRSPs, National Adaptation Programmes of Action (NAPAs), United Nations Development Assistance Frameworks (UNDAFs) and nationally specific programming instruments. To be relevant and successful such a policy framework must be at the centre of the political agenda, backed by dedicated resources in the national budget, and should have leadership at the highest levels of government.

### **7.3.2 Seizing the opportunity to reduce risk**

The principal focus of risk-reducing development should be to avoid the rise of new disaster risk. While it is difficult to reduce existing major concentrations of accumulated risk, the avoidance of new risk will stabilize and eventually reduce the overall stock of disaster risk.

From this perspective, the reduction of extensive risk is particularly important, given that it represents the initial stages of disaster risk accumulation. Extensive risk can normally be addressed with relatively small investments: for example, minor investments in storm drainage in informal settlements can greatly reduce flood risk. It is better to address extensive risk now, than to deal with major concentrations of intensive risk in the future.

However, even intensive disaster risk can be addressed over time. All buildings and infrastructure, for instance, are periodically renewed, repaired, replaced or upgraded, all of which provide opportunities to avoid new disaster risk. Each of these moments of change is a point of bifurcation: if the opportunity is seized, new

risk will not arise, but if it is missed, new risk begins to accumulate.

Risk is periodically liberated in disaster events, reducing the stock of accumulated risk. The recovery and reconstruction period, after a disaster, therefore, is a particularly powerful moment of opportunity to stop new risk from arising. But it can only be seized if a clear policy framework for risk reducing development exists.

A second aim should be to avoid the translation of disaster impacts from existing risks into poverty outcomes. Even if countries are successful in avoiding the creation of new risk, existing concentrations of unrealized risk may be so vast that further and increased disaster loss can be expected in the short- and medium-term. Ensuring that these impacts do not feed back into increased poverty is critical to defusing the disaster risk–poverty nexus.

### **7.3.3 Urban and local governance**

Every year the population of urban, informal settlements increases by approximately 25 million people globally. If the expansion of unregulated, informal settlements continues to be the principal mechanism for absorbing urban growth, there will be a commensurate increase in both extensive and intensive disaster risk, as well as urban poverty. Both will be accentuated through climate change.

Improving urban and local governance should therefore be a key policy priority in most developing countries. As was highlighted in Chapter 6, good urban and local governance is usually built on a partnership between competent and accountable local government and an active civil society that can articulate needs and priorities, as well as the decentralization of authority and resources from a supportive central government. Improvements in urban and local governance can integrate disaster risk reduction considerations into a broader strategy that ensures the supply of safe land, secure tenure, infrastructure and services, and adequate, disaster resistant housing for the poor. Chapter 6 provided a non-exhaustive list of good practices, which have already been applied by cities around the world, and which show that it is possible to absorb urban growth in a way that does not increase risk.

### 7.3.4 Strengthening rural livelihoods

As highlighted in Chapters 3 and 4, disaster impacts translate into particularly challenging poverty outcomes for the rural poor. Despite urbanization, disaster risk in poor rural areas will continue to be a major challenge and one that will be accentuated by climate change, since rural livelihoods still depend heavily on weather-sensitive activities.

In those countries with large, poor rural populations, it will be essential to focus policy on strengthening rural livelihoods. As outlined in Chapter 6, a range of innovative approaches exist in areas including natural resource management, infrastructure development, livelihood generation and others. While strengthening rural livelihoods per se decreases vulnerability and increases resilience, it is essential that disaster risk reduction considerations are factored into the process, for example, to ensure that new schools in rural areas are built to hazard resistant standards.

### 7.3.5 Enhancing ecosystem services

Any further decline in the regulatory services provided by ecosystems will increase weather-related hazard. A decline in provisioning services will further increase the vulnerability of rural livelihoods, as well as the availability of water and energy in urban centres. Protecting and enhancing such ecosystem services is therefore another key policy priority.

It is cheaper and easier to manage and protect ecosystems than to restore damage. Chapter 6 highlighted a number of mechanisms that are already available and that could be mainstreamed including payments for ecosystem services and integrated planning.

### 7.3.6 Targeted social protection for the poorest and most vulnerable

At present most countries rely on ex post mechanisms such as emergency assistance, cash transfers and food aid to assist those affected by disasters. Such mechanisms are short-term and often fail to target the most vulnerable groups, which according to the context may include female-headed households, the elderly and children. They also fail to address the longer-term increases in poverty and inequality caused by disaster loss, and negative effects on health, human development and productivity.

Another key policy recommendation, therefore, is to shift the emphasis of social protection from ex post to include ex ante mechanisms, and to more effectively target the most vulnerable groups. This Report has not reviewed social protection practice and therefore does not provide detailed policy guidance. Improved social protection should be a key priority not only in those areas subject to concentrations of intensive risk, but in all communities affected by ongoing manifestations of extensive risk.

## 7.4 An approach based on partnership

Risk reducing development should be supportive of – and build upon – ongoing local and sectoral initiatives. It should explicitly adopt an approach built on partnerships between national and local government, civil society and the private sector.

This Report has stressed the limitations of conventional approaches to planning and regulating development in low- and middle-income countries where a considerable proportion of both economic and urban development

occurs outside the formal sector. While further improvements in building codes, land-use planning and environmental regulations can contribute to risk reduction in high- and upper-middle income countries, they produce diminishing returns in poorer countries and may even be counter-productive. This might occur, for example, if high building standards are used to exclude poor families from the formal housing market.

If a policy framework for risk-reducing development is to be actionable, a different culture of implementation will be required, one that builds on government–civil society partnerships and cooperation. As highlighted in Chapter 6, such partnerships can dramatically reduce the costs of risk reduction, ensure local acceptance, and help to build social capital, which reduces long-term vulnerability.

The importance of this approach cannot be overstressed. For example, investments in urban drainage to reduce extensive risk in informal settlements will be ineffective if the drains are not maintained, are obstructed with garbage, or are encroached upon by buildings. If the drainage is planned and built in partnership with local government and the affected communities, there

is a far better chance of it being maintained and protected in the long-term.

This approach, however, needs a change in culture in public administration in many countries and therefore a corresponding investment in capacity development with support from the international community. Bilateral and multilateral donors have traditionally preferred large, top-down projects as an easy mechanism for disbursing and managing resources. They also, therefore, have a responsibility for supporting a more process-based approach built on local partnerships. There is now enough experience of working through consortiums of NGOs and mechanisms such as social funds to manage the interface between donors, governments and local communities.

## 7.5 Effective risk reduction governance

In addition to a policy framework that prioritizes risk-reducing development, a set of governance arrangements is needed for disaster risk reduction, poverty reduction and climate change adaptation, which is capable of ensuring that risk considerations are factored into all development investments. Improvements to risk reduction governance are critical, in order to provide a vehicle for policy and a systematic approach to planning, financing and monitoring investment in all sectors.

In particular, the existing institutional and governance arrangements for disaster risk reduction and climate change adaptation need to be harmonized, building on existing systems of public administration. Each country has a different political and legal system and arrangements for public administration: there is no one-size-fits-all framework for risk reduction governance. The development of a single governance framework for risk reduction would seem to offer opportunities for more effective policy implementation and for avoiding duplication and lack of coordination. The harmonization of international frameworks and requirements for planning and reporting would

be supportive of better integration at the country level.

The institutional and administrative responsibility for risk reduction has to be vested at the highest possible level in government, in order to have the necessary political authority and resources to influence development policy. If risk reduction can be included explicitly in national development plans and budgets, all parts of government are then able to programme risk reduction actions and investments.

Fortunately, the review of HFA progress highlighted that many countries are already putting into place innovative mechanisms for risk reduction governance, on which an improved governance framework can be built.

### 7.5.1 Hazard monitoring and risk information

Responsibilities for both hazard monitoring and risk information management are currently highly dispersed amongst a large number of governmental technical institutions, universities, and international technical cooperation projects. As a result, little progress is being made in comprehensive multi-hazard risk assessments

and hazard monitoring is often ad hoc and discontinuous.

It is recommended, therefore, that in the context of a country's planning system, greater synergy is sought in hazard monitoring and risk identification. This might be achieved by the functional integration or merging into a single institution of the large number of scientific and technical bodies responsible for meteorology, geology and geophysics, oceanography, and environmental management.

Such functional integration or institutional merging would improve the availability of accurate and up-to-date disaster risk information in appropriate scales and formats to support decision-making. This would facilitate, for example, the analysis of costs and benefits of incorporating disaster risk reduction into public investment, including ecosystem protection and renovation; the identification of priorities for investments in corrective disaster risk reduction; the assessment of probabilistic risk levels for the calculation of insurance premiums; the provision of hazard maps for use by local and city governments in land-use and territorial planning and regulation; the formulation of building codes; the dissemination of risk information for the private sector and civil society; and the establishment of norms and standards for risk reduction, such as the new ISO 3100 Standard currently under discussion.

Enhanced hazard monitoring would support improved early warning related to the major risks faced by a country, including cyclones, floods, volcanic eruptions and risks associated with climate variability such as El Niño Southern Oscillation (ENSO) cycles.

### **7.5.2 Incorporating cost–benefit analysis into public investment**

Some countries have incorporated governance innovations in their public investment systems, such as the analysis of the costs and benefits of disaster risk reduction, illustrated by Table 5.5.

On the basis of accurate and up-to-date information on hazards, vulnerabilities and risks, an effective public investment system, normally located in either the planning or the finance ministry, could ensure that all new

public investment is subject to a cost–benefit analysis to determine whether the additional costs of incorporating disaster risk reduction measures are justified by the level of risk. This would enhance the sustainability and cost-effectiveness of public investment, whether in sectoral or local development, new development or in rehabilitation of existing infrastructure and services. Such action would contribute significantly to the reduction of future disaster risks.

Normally the finance or planning ministry would also manage national budget resources for investments in reducing and correcting existing risks or those that are likely to increase due to climate change. These resources would be used for hazard mitigation; retrofitting of highly vulnerable key facilities and infrastructure (for example, schools, hospitals, water, sanitation and energy networks); for the development of early warning systems; for the restoration of ecosystems; and for other corrective disaster risk reduction investments.

If disaster risk reduction is incorporated into public investment systems, the finance or planning ministry would then also be best placed to negotiate the transfer of residual sovereign risk through participation in catastrophe pools, the issue of catastrophe bonds or other instruments, and to ensure that adequate resources exist for investment in recovery and reconstruction after disasters, through the management of contingency funds.

### **7.5.3 Ensuring implementation**

A further governance innovation implemented in some countries is the inclusion of disaster risk reduction on the national audit or controller's office agenda of periodic audits of public sector performance. This in turn depends on risk reduction becoming a central component of national policy and being included in national development plans and budgets.

This can ensure that risk reduction policies and norms are implemented and enforced at all levels and sectors of government. Without improvements in implementation, enforcement and control, there is a real danger that other advances in policy and governance lead to

achievements on paper but have little effect on the underlying risk factors.

Audits can lead to administrative or other sanctions for non-compliance. However, they can also be used to highlight deficiencies and areas where improvements can be made and should become a key element in governance frameworks for risk reduction.

#### 7.5.4 Improvements in early warning systems

The review of early warning systems (see Box 5.2) highlighted nine areas in which improvements are required to ensure that those at risk have access to timely and understandable early warning information, know their risks, and are prepared to take appropriate risk-reducing action. In particular, linkages need to be enhanced between the systems that provide early warnings of impending hazard events and the organizations responsible for disaster preparedness and response; local and community capacities for preparedness and response also need to be strengthened. Experience has shown that even when national and regional early warning fails, those areas with strong local capacities experience

drastically reduced mortality rates even in cases of catastrophic events.

#### 7.5.5 Risk transfer and financial mechanisms

There are still major barriers to the penetration of catastrophe insurance in lower-middle and low-income countries. These barriers include the lack of accurate and systematic risk assessments and the necessary financial infrastructure.

Support for the development of insurance markets in lower-income countries is another governance innovation that addresses these barriers, allowing a larger proportion of at-risk households to have access to risk transfer mechanisms. The development of insurance markets should be complemented by measures such as microfinance and contingency funding mechanisms to address different layers of risk in each country.

A greater penetration of risk transfer mechanisms in lower-income countries will also provide a quicker, more predictable and transparent mechanism for financing recovery and reconstruction, enabling a rapid recovery of livelihoods and lost assets.

## 7.6 Investing today for a safer tomorrow

In general terms, the cost implications of the recommendations presented above have three principal components:

- 1. Investment in risk-reducing development:** the cost of providing the infrastructure and services needed to address the underlying risk factors. For example, this might include improvements to storm and surface drainage in urban areas; retrofitting existing buildings and infrastructure to reduce their vulnerability; improving water and sanitation, health and education; or providing infrastructure in rural areas.
- 2. Incorporating risk reduction considerations:** the additional costs of factoring risk reduction considerations into all the above investment.

- 3. Risk reduction governance framework:** the costs of building the governance frameworks and capacity at both the national and local levels to organize the tasks listed in points 1 and 2 above, and ensuring they are implemented.

Progress in the first two components depends on the presence of an adequate governance framework. At the same time, a governance framework without investment in the first two components is analogous to a country that has developed a comprehensive building code, but where 90% of the housing of the poor is built in the informal sector without reference to the code. In other words, investment in all three areas is mutually supportive.

### 7.6.1 Investment in risk-reducing development

Calculations of the costs of risk-reducing development investment must include both the cost of addressing existing development deficits, such as upgrading existing informal settlements or restoring damaged ecosystems, and that of ensuring that new development contributes to risk reduction – for example, ensuring that the urban poor have access to safe land, infrastructure and services.

It is difficult or impossible to provide accurate global estimates of the cost of reducing the development deficit in rural and urban areas. However, as Box 7.2 shows, the estimates developed by the Millennium Project serve to give an idea of the magnitude.

These different estimates indicate that several hundred billion dollars of investment a year are required to address the underlying risk

factors in rural and urban areas. As Chapter 6 indicated, these costs can be greatly reduced through innovative government–civil society partnerships. However, even assuming that governments up-scale and mainstream such participatory approaches, there is no getting round the fact that addressing the underlying risk factors requires major and sustained investment, of which the international community will have to pay a significant portion. Reducing disaster risk and adapting to climate change in developing countries is not a free ride for the international community.

Paradoxically the current global economic crisis may offer an opportunity to promote such investment. Many countries are increasing public investment in areas such as infrastructure and employment creation as part of economic stimulus packages. To the extent that this investment could be targeted at risk-reducing

#### Box 7.2: The cost of meeting the MDGs

Detailed estimates of the cost of meeting the MDGs in Bangladesh, Cambodia, Ghana, Tanzania and Uganda suggest a total of around US\$ 1,000 per person<sup>2</sup>. Of this, about half is for infrastructure. The only housing-related component is around US\$ 30 per person allocated to slum upgrading<sup>3</sup>. The difference between the total investment needed to meet the MDGs and current domestic resource mobilization from households and governments is estimated to be approximately US\$ 600 per person for these five countries. If this average were applied only to the LDCs, this would still imply a need for external investment of US\$ 480 billion over ten years. The MDG finance gap for all low- and middle-income countries was estimated at US\$ 73 billion in 2006, rising to US\$ 135 billion in 2015. This costing exercise highlights the high monetary cost of addressing the development deficit that underpins disaster risk reduction in poor countries.

The estimated cost of remedying existing deficiencies in the provision of water, sanitation and drainage in urban areas provides another relevant example. If we assume that there are 30 million urban dwellings lacking provision for water and sanitation in Africa and Latin America, and 150 million lacking such provision in Asia<sup>4</sup>; and that the average cost per household of providing water, sanitation and drainage is US\$ 200–400<sup>5</sup>, with another US\$ 200–400 needed for the trunk infrastructure this requires

(including water abstraction and treatment), then US\$ 42–84 billion would be needed. The proportion of this that could be funded by local and national governments would differ greatly between regions and countries. At the same time, this only considers the water and sanitation infrastructure needed in urban areas and does not consider the investment needed for the 55% of the population who live in rural areas.

The cost of upgrading informal settlements has been estimated at an average of US\$ 665 per person<sup>6</sup>. This implies that the cost of upgrading the 800 million to one billion people living in informal settlements would be US\$ 532–665 billion<sup>7</sup>. If 30% of these investments could be recovered through small loans and 10% was contributed by residents themselves, this would still imply the need for some US\$ 300–400 billion.

The cost of providing good quality alternatives to the growth of informal settlements for an estimated 457 million people between 2005 and 2020, through assisted owner-driven housing, would require a per capita investment of US\$ 400. This implies a total requirement of US\$ 182 billion, of which 60%, or US\$ 110 billion, would have to come from subsidies. The other 40% could be funded through savings and contributions from participant households and cost-recovery from small loans.

development (for example, improving drainage in flood prone areas) it could be used as a risk reducing tool.

### 7.6.2 Incorporating risk reduction

Risk reduction (whether conceptualized as disaster risk reduction or adaptation to climate change) is usually viewed as an additional development cost. In fact, one of the principal arguments that has been used to justify the lack of progress in disaster risk reduction, is that developing countries have other priorities, such as reducing poverty, and cannot afford the additional costs.

This Report puts forward a contrasting view. As Table 5.5 illustrated, investment in disaster risk reduction generally represents a large saving in terms of avoided losses and reconstruction costs. It is thus a way of lowering the costs of poverty reduction and of addressing the underlying risk factors. This means that the real cost of development investments is actually lower if disaster risk reduction is included.

Mechanisms such as catastrophe pools and bonds may provide a means to transfer residual risks, where it is not cost-effective to reduce them. Given that insurance markets in most lower-middle and low-income countries are highly undeveloped, this policy recommendation requires public sector support to ensure that risk assessments are available for the estimation of hazard and risk levels, and to assist with the start-up costs associated with opening an insurance market. These costs need to be included in

budgets for improving governance arrangements for disaster risk reduction.

### 7.6.3 Risk reduction governance framework

It is likewise difficult to estimate the investments required to enhance national policy and governance frameworks, because needs and capacities vary from one country to another.

Many of these investments require an element of international technical cooperation, even in countries where most of the key resources and capacities are available nationally. In any case, the key resource in this case is political will more than international finance. When the necessary political will is present, even small investments can produce huge benefits. Without political will even large investments in capacity building may have little tangible effect.

In conclusion, the key requirements are to help countries strengthen governance arrangements and improve management of investments for addressing the underlying risk drivers, and to ensure disaster risk reduction is incorporated into those investments. Without strengthening these arrangements and capacities, even large investments in development may have little tangible effect or be counter-productive. If the governance arrangements and capacities for risk reduction can be strengthened, small investments can produce huge benefits. Investing today to strengthen capacities is essential if future generations are to enjoy a safer tomorrow.

## Endnotes

- 1 World Bank, World Development Indicators On-line: <http://go.worldbank.org/U0FSM7AQ40>, accessed 1 November 2008
- 2 Sachs and UN Millennium Project, 2005. The original listed figures for individual years for 2006, 2010 and 2015. To get the figures above, an average was taken of these three annual figures and multiplied by 10.
- 3 An inadequate figure. Personal communication from David Satterthwaite, IIED, London. Received 10.01.2009
- 4 Hardoy, et al., 2001
- 5 It is impossible to estimate the real costs, in part because they will vary so much from place to place – and indeed within each place – depending on who designs and implements it. A 'high-income' nation solution with a 24-hour service of piped water supplies to drinkable standards and a flush toilet is generally much more expensive than this; some innovative programmes that have provided good quality water and sanitation are less than this.
- 6 UN Millennium Project, 2005. This estimate includes funding for land purchase and transfer, housing improvement, network and bulk infrastructure, schools and health clinics, community facilities, planning and oversight, and community capacity building.
- 7 This is in line with other estimates – for instance, by the Cities Alliance, that US\$ 50 billion was needed to upgrade housing for 100 million slum dwellers; and the estimate of US\$ 74 billion for this by UN-HABITAT; see Flood, 2004.