



2011 Global Assessment Report on Disaster Risk Reduction

Revealing Risk, Redefining Development



United Nations

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Foreword

The second edition of the United Nations *Global Assessment Report on Disaster Risk Reduction* is a resource for understanding and analysing global disaster risk today and in the future. Large and small disasters, ranging from the catastrophe in Haiti in January 2010 to the recent impacts of floods in countries such as Benin or Brazil, continue to demonstrate the intimate relationship between disasters and poverty.

Meanwhile floods in Australia and the devastating earthquake that hit Christchurch, New Zealand in early 2011 have shown how the economies and populations of developed countries are also increasingly exposed. The recent events in Japan point to new and catastrophic risks that need to be anticipated. While global climate change provides a backdrop to many of these events, they expose unresolved development problems that governments could and should address.

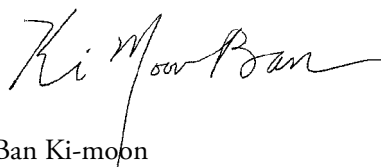
Drawing on new and enhanced data, the 2011 report explores trends in disaster risk for each region and for countries with different socio-economic development. At the same time, over 130 governments are engaged in self-assessments of their progress towards the Hyogo Framework for Action (HFA), contributing to what is now the most complete global overview of national efforts to reduce disaster risk.

Progress is mixed. Mortality risk, from floods and tropical cyclones, is now trending down in all regions, as countries invest in improved early warning and preparedness. But economic loss risk and damage to homes, schools, health facilities and livelihoods is trending up. While

the economies of many low- and middle-income countries are growing, it will take longer to tackle risks in a sustainable manner and develop institutions that successfully manage risks.

Nevertheless, the report delivers some very good news: countries all over the world, from Indonesia and Mozambique to Panama and Yemen, are significantly improving their knowledge about disaster losses. Governments are using existing development instruments, such as conditional cash transfer and temporary employment programmes, in innovative ways to reach millions of risk-prone citizens. Public investments in infrastructure, health and education are becoming more risk-sensitive. These strategies have the potential to reduce disaster risk and achieve the objective of the HFA, which is critical to the achievement of the Millennium Development Goals and to adapt to global climate change.

Seriously addressing disaster risk will be one of the hallmarks of good governance in the years to come. I encourage not only governments but all concerned citizens and organizations to study and make use of the recommendations of the *2011 Global Assessment Report on Disaster Risk Reduction*, which indeed helps to reveal risk and redefine development.



Ban Ki-moon
Secretary-General of the United Nations

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Preface

The *2011 Global Assessment Report on Disaster Risk Reduction* (GAR11) highlights the political and economic imperative to reduce disaster risks, and the benefits to be gained from doing so. Importantly, it offers guidance and suggestions to governments and non-governmental actors alike on how they can, together, reduce disaster risks.

Many countries have made commendable progress in reducing mortality risk, at least for weather-related hazards. Deaths from floods and tropical cyclones are concentrated in Asia, but the mortality risk is now declining. Unfortunately, far less progress is being made addressing other disaster risks, and the cost of disaster-related economic loss and damage is still rising. Damage to housing, local infrastructure and public assets such as schools and health facilities is soaring in many low- and middle-income countries. Drought risk is also still poorly understood and badly managed.

Governments report successes in strengthening their capacities to prepare for and respond to disasters, but admit having difficulty addressing the drivers responsible for increasing risk. Few governments are investing sufficiently to reduce recurrent losses that affect public assets or low-income households, or to protect themselves from future catastrophic loss. Even fewer have appropriate risk governance arrangements in place. Unfortunately, despite the growing interest shown by governments at the second session of the Global Platform for Disaster Risk Reduction in June 2009,¹ many countries have yet to find a clear political and economic imperative to ‘invest today for a safer tomorrow’.

The previous *Global Assessment Report on Disaster Risk Reduction* (GAR09) provided compelling evidence to show how certain drivers increase disaster risks, including badly planned and managed urban and regional development, degraded ecosystems, and poverty. It also highlighted how disaster losses can feed back into other outcomes such as deteriorating health and education, and broader and deeper poverty.

Reducing disaster risk is thus critical to the achievement of the Millennium Development Goals, and addressing underlying risk drivers is also vital to climate change adaptation, especially in the short- and medium-term.

Public investment is typically 3–15 percent of GDP in low- and middle-income countries (UNFCCC, 2007). In 2008 for example, it was US\$5.7 billion or 4.5 percent of GDP in Morocco, and US\$9.6 billion or 15 percent of GDP in Ethiopia (World Bank, 2010a). How sensitive such investments are to risk strongly influences whether disaster risk will decrease or increase over time.

Any decision to invest public resources in disaster risk management (DRM) involves trade-offs with other priorities in which the same resources could have been invested. At present, most countries do not systematically account for the cost of recurrent disaster losses, let alone the cost of indirect impacts on health, education and productivity. Even fewer comprehensively estimate the maximum losses they may incur. As such, governments are poorly positioned to assess the trade-offs implicit in their public investment decisions, and have difficulty justifying increased investment in DRM. By navigating in a sea of risks without a compass, public resources are constantly being diverted to rehabilitate or reconstruct damaged or destroyed assets, and disasters continue to surprise governments without adequate contingency measures in place.

A lack of data alone, however, does not explain the weak imperative to invest in reducing disaster risks. Although there has always been a strong political incentive for disaster response, the incentives for risk reduction are far more difficult to leverage. Recurrent losses in localized disasters, which mainly affect the assets and livelihoods of low-income households and communities, rarely have the gravity to translate into significant political momentum for risk reduction. Given short-term political time horizons and the tendency to strongly

discount low-probability future losses, the political incentive to address catastrophic risk may be equally elusive. Addressing underlying risk drivers may involve tackling politically charged issues such as land ownership or water rights. Also, it is often easy to evade political responsibility and accountability for avoidable losses, and attribute disaster risk to historical causes or factors such as climate change – over which individual governments may have little or no control.

Any further progress in reducing disaster risk and adapting to climate change, therefore, depends on clearly identifying the political and economic imperatives to invest in DRM, and on strengthening the necessary risk governance capacities in order to do so.

GAR11 explores these challenges. It highlights the need for systematic accounting of disaster losses and impacts, and comprehensive assessment of disaster risks. These are critical transformative steps that allow governments to visualize and assess the political and economic trade-offs. The economic imperative to invest is becoming increasingly clear. Case studies commissioned for this report confirm that making public investment risk-sensitive is generally less costly than retaining disaster risks and absorbing the losses. Putting in place risk financing mechanisms to anticipate catastrophic risk strengthens fiscal stability and reduces the political risk of being seen as unprepared. Being able to see these trade-offs does not automatically generate political incentives, but it does mean that decisions *not* to invest in DRM are taken consciously and with eyes wide open.

Innovative approaches are also emerging that suggest a new risk governance paradigm, such as the adaptation of existing policies and development instruments in areas such as public investment planning and social protection. These not only address underlying risk drivers, but also facilitate significant up-scaling of initiatives otherwise impossible with individual projects and programmes, by building on existing institutions and capacities and harnessing significant volumes of public investment. Furthermore, additional

political incentives accrue by acknowledging the ‘developmental by-products’ of improved infrastructure and services. Creative partnerships between civil society and central and local governments in urban areas are also generating innovative ideas. These are critical, given that future disaster risk will largely be determined by how towns and cities are planned and managed.

The kind of institutional and legislative arrangements that many countries have adopted to manage their disaster risks may be effective in responding to disasters, but they do not necessarily address the underlying risk drivers. Reforming these arrangements is therefore essential to further progress. This report discusses the case for locating policy responsibility for disaster risk management in a ministry with political responsibility for national planning and public investment, and with leverage and influence over development sectors. It also discusses the case for appropriately distributing responsibilities across governance scales, and for strengthening mechanisms to ensure accountability and partnerships with civil society.

What’s new in GAR11?

Risk trends by region and income group

An updated version of the powerful global risk model developed for GAR09 has been used to analyse trends in mortality and economic loss risk for major weather-related hazards such as tropical cyclones and floods. This identifies trends for geographic and income regions, showing where, why and which risks are increasing. This information is complemented by a new index, the DARA Risk Reduction Index (DARA, 2011; Lavell et al., 2010), which measures and compares the capacity of different countries to address underlying risk drivers identified. Factors that condition resilience to disaster loss are also revisited.

GAR11 also outlines a range of emerging, very low-probability and hard-to-measure risks, which countries should begin to anticipate and prepare for.

More representative geographical coverage

All the national disaster databases used to analyse extensive risk in GAR09 have been updated for GAR11, providing two years of new data. In addition, there has been significant progress in building disaster loss databases, for example in Chile, El Salvador, Guatemala, Indonesia, Jordan, Mozambique, Panama, the Syrian Arab Republic and Yemen. This means a larger and more compelling analysis of extensive risk has been possible, with a more representative geographical coverage. New case studies also provide further insights into underlying risk drivers.

Disaster impacts on child welfare and displacement

GAR09 featured a detailed set of studies on the interactions between disaster risk and poverty. GAR11 builds on that analysis with a comprehensive study of how disasters impact on child welfare and development, and the implications of this on DRM policy. Additional case study material also opens a window on how disasters cause internal displacement.

Drought risk

GAR11 includes a specific focus on drought risk, one that is poorly understood and receives inadequate attention both nationally and internationally. After an overview of the challenges in identifying and measuring drought risk, a set of country case studies examines the development drivers that translate meteorological drought into losses and impacts in agriculture and other sectors. It also points to the adoption of standards for measuring drought risk that can contribute to improving its identification and management.

The 2009–2011 HFA Progress Review

Currently, 133 countries are reviewing their progress towards the objectives and goals of the Hyogo Framework for Action (HFA) for 2009–2011. At the time of writing, 82 countries and

territories have submitted progress reports that provide unique insights into how governments themselves view disaster risk management. Governments reviewed their progress against each of the Priority Areas of the HFA, and also provided detailed information on challenges in critical areas such as investment and risk assessment with much supporting evidence. The 2009–2011 HFA Progress Review has already assembled the most important global reference currently available on disaster risk management at the national level.

Assessing the costs and benefits of DRM

Case studies from Colombia, Mexico and Nepal apply an innovative approach to risk modelling. By measuring and stratifying the full spectrum of extensive and intensive risks, they illustrate the real magnitude of recurrent and future maximum disaster losses faced by governments. This enables the visualization of the political and economic trade-offs, costs and benefits internalized in different strategies, and highlights why it is more cost-effective to invest today for a safer tomorrow.

Innovation in development practice

GAR11 reviews how governments are scaling up DRM by adapting existing development instruments, such as national planning, public investment systems and social protection mechanisms. It also critically examines other instruments where significant barriers still exist, such as land use planning, building codes and ecosystem management, and where new approaches need to be adopted based on partnerships with civil society.

Risk governance capacities

Finally, GAR11 has undertaken a critical review of the institutional and legislative arrangements for DRM at national and local levels, including a discussion of key issues such as political authority, decentralization and accountability, to provide guidance on how governments can adopt effective governance arrangements for DRM.

How to use this report

In addition to the print edition, GAR11 has also been designed as an interactive electronic report, structured around a set of background papers

and databases provided by many institutional and individual contributors. This provides authoritative evidence for the findings and recommendations, and interactive applications allow users to explore this data for themselves.³

Key definitions

This report uses a widely accepted model, in which **disaster risk** is considered to be a function of **hazard**, **exposure** and **vulnerability**. Disaster risk is normally expressed as the probability of loss of life or destroyed or damaged assets in a given period of time. Generic definitions of these and other terms are available in the UNISDR Glossary,² while the way these terms are used in GAR11 is explained below.

GAR11 uses the term **physical** (rather than natural) **hazard** to refer to hazardous phenomena such as floods, storms, droughts and earthquakes. Processes such as urbanization, environmental degradation and climate change shape and configure hazards, which mean it is becoming increasingly difficult to disentangle their natural and human attributes. **Major hazard** is used to refer to global or regionally important hazards such as earthquakes, tsunamis, flooding in large river basins and tropical cyclones. **Localized hazard** is used to refer to smaller-scale hazards such as flash or surface water flooding, fires, storms and landslides, which tend to affect particular localities. **Exposure** is used to refer to the location of people or economic assets in hazard-prone areas. **Vulnerability** is used to refer to their susceptibility to suffer damage and loss, due for example to unsafe housing and living conditions. **Resilience** is used to refer to the capacity of systems (such as a household, economy or community) to absorb or buffer losses, and recover.

Extensive risk is used to describe the risk of low-severity, high-frequency disasters, mainly but not exclusively associated with highly localized hazards. **Intensive risk** is used to describe the risk of high-severity, low-frequency disasters, mainly associated with major hazards. **Emerging risk** is used to describe the risk of extremely low-probability disasters associated with new patterns of hazard and vulnerability. **Underlying risk drivers** are development-related processes such as badly planned and managed urban and regional development, environmental degradation and poverty, which shape risk patterns and trends.

Disaster risk reduction (DRR) describes the policy objective of reducing risk. **Disaster risk management (DRM)** describes the actions that aim to achieve this objective. These include **prospective risk management**, such as better planning, designed to avoid the construction of new risks; **corrective risk management**, designed to address pre-existing risks; **compensatory risk management**, such as insurance and risk transfer, designed to avoid disaster losses spilling over into poverty and other outcomes, and; **disaster management** measures such as preparedness and response. **Risk governance** is used to describe how national or local governments, civil society and other actors organize DRM, for example through institutional arrangements, legislation and decentralization, and mechanisms for participation and accountability.

Notes

- 1 Held on 16–19 June 2009 in Geneva, Switzerland, it was attended by 1,668 participants from 152 governments and 137 organizations. The Chair's Summary recorded that "since the first session of the Global Platform in 2007, there has been a dramatic increase in political will in all regions to address disaster risk, across both developed and developing nations and [in] both governments and civil society organizations."
- 2 UNISDR, 2009. *Terminology on Disaster Risk Reduction*. Geneva, Switzerland: UNISDR. <http://unisdr.org/eng/terminology/UNISDR-Terminology-English.pdf>.
- 3 Visit www.unisdr.org/gar or www.preventionweb.net/gar.