

**Oxfam America**  
Research Backgrounders

# **From the Ground Up:**

## Strategies for scaling up community-based disaster risk reduction

Kelly Hauser

# Oxfam America's Research Backgrounders

Series editor: Kimberly Pfeifer

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- "Risk and Risk Transfer in Agriculture: Facilitating food security and poor farmer participation," by Leander Schneider (2010).
- "From the Ground Up: Strategies for global community-based disaster risk reduction," by Kelly Hauser (2010).

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## Citations of this paper

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# Executive summary

As climate change precipitates an increase in extreme weather events, both slow-onset and rapid-onset disasters will increase in frequency and intensity, leading to more disaster-affected people, setbacks in development, and the risk of downward spiraling vulnerability. Disaster risk can be reduced through decreasing vulnerability and increasing the capability of a system to respond.

In addition to very supportive anecdotal evidence, investments in disaster risk reduction (DRR) show substantial and measureable economic and social returns, whether they are in emergency preparedness activities or in development and climate change adaptation initiatives that integrate DRR thinking into their design.

Recognizing this, governments and stakeholders around the world have committed to implementing the principles of DRR on a global scale by signing the Hyogo Framework for Action (HFA). Meanwhile, nongovernmental organizations and community-based organizations have demonstrated the importance and benefits of engaging residents in such a way that the residents are the leaders in DRR activities within their communities.

While many countries have adopted the laws and rhetoric of the HFA and many successful community DRR projects and programs exist, there is a gap between national action and community-level leadership in DRR activities. However, the recognition is emerging that strategies to scale up community-led DRR to national and sub-national levels are necessary for global development and adaptation to climate change.

In examining instances in which successful community-based DRR approaches have been scaled outside their originating community, the author identifies four bridging strategies:

1. Creating national and subnational multi-stakeholder platforms
2. Using existing public structures
3. Harnessing financial and private-sector incentives
4. Encouraging natural and viral replication of programs and principles

Through examples, anecdotes, and mini case studies, the author illustrates these strategies in the hopes of stimulating thought and discussion on new practices and policies to bring community-led DRR to a global scale. However, actually

doing so will require substantial public funding. Currently, global funding is equal to only 0.14 percent of official global development assistance.

# Abbreviations

ACODEP	Association of Consultants for the Development of Small, Medium, and Micro Enterprise
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CILSS	Comité permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel
CPP	Cyclone Preparedness Program
CRED	Collaborating Center for Research on the Epidemiology of Disasters
DfID	Department for International Development
DRR	disaster risk reduction
DWF	Development Workshop France
EM-DAT	Emergency Events Database
GDP	gross domestic product
HARITA	Horn of Africa Risk Transfer for Adaptation
HFA	Hyogo Framework for Action
IMRC	Indonesia Medical Relief Committee
MFI	microfinance institution
NGO	nongovernmental organization
OFDA	Office of Foreign Disaster Assistance
PROFIN	Fundación para el desarrollo productivo y financiero
PSNP	Productive Safety Net Program
SRI	System of Rice Intensification
TFP	total factor productivity
UNISDR	UN International Strategy for Disaster Reduction
USAID	US Agency for International Development
WASSAN	Watershed Support Services and Activities Network
WFP	World Food Program
WWF	World Wildlife Fund

# Introduction

Just a few weeks after the January 2010 Haitian earthquake killed over 230,000 people, the US Office of Foreign Disaster Assistance (OFDA), which handles the majority of US emergency response and preparedness, announced that it would be reducing resources around the globe by 40 percent to attend to the Haitian crisis.<sup>1</sup> While Haitians are surely in need of every dollar available in emergency response assistance, such scenarios produce a higher likelihood that humanitarian response and disaster risk reduction (DRR) in other parts of the world may go underfunded in the wake of major catastrophes. In a stretched, voluntary global humanitarian response system, increasing and increasingly severe natural disasters could replicate this scenario, placing already vulnerable people in a more precarious position.

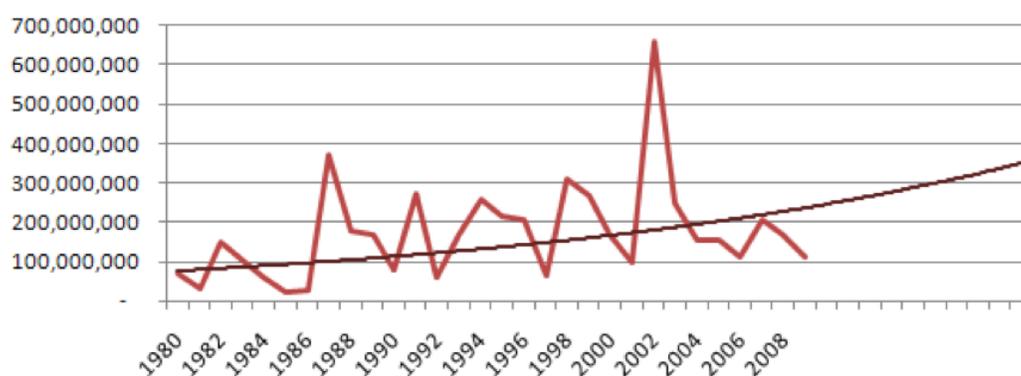
In 2007, the Intergovernmental Panel on Climate Change's "Fourth Assessment Report" revealed compelling evidence that climate change has already led to and will continue to lead to increases in several disaster categories.<sup>2</sup> It projects that the world is likely or very likely to see increases in the occurrence and intensity of extreme temperatures and heavy precipitation, in the intensity of tropical cyclones, and in the size of areas affected by drought and floods. For example, in the 1990s, 35 percent of tropical cyclones were classified as Category 4 or 5, compared with only 20 percent of tropical cyclones in the 1970s. Globally, since the 1970s, areas designated as "very dry" on the Palmer Drought Severity Index have doubled in size.

Such increases in severe natural phenomena are projected to lead to increased human risk and impacts. In 2009, 111 million people were affected by weather-related disasters in the developing world, and Oxfam America estimates that in 2015 around 375 million people will be affected (See Figure 1).<sup>3</sup> The livelihoods and homes of the world's growing coastal populations are particularly susceptible to destruction following storm surges and flooding during cyclones. Crop failures resulting from the unpredictability of rainfall and droughts, combined with the vulnerabilities of small farmers, have and will lead to crop failures, jeopardizing food security for rural populations, and it is expected that

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1. Natalie Eisenbarth, email message to Humanitarian Policy and Practice Committee and Haiti Working Group (February 2, 2010).
  2. Rajendra K. Pachauri and Andy Reisinger, eds., "Climate Change 2007: Synthesis Report," contribution of Working Groups I, II, and III to the "Fourth Assessment Report," Intergovernmental Panel on Climate Change (2007).
  3. Oxfam projections based on data from the Emergency Events Database (EM-DAT), maintained by the WHO Collaborating Centre for Research on the Epidemiology of Disasters (CRED): [www.emdat.be/database](http://www.emdat.be/database) (accessed March 2010).

these losses will outweigh any gains in agricultural production due to temperature increases in certain areas. In fact, by 2020, between 75 million and 250 million people in sub-Saharan Africa will face water scarcity.<sup>4</sup> Finally, flooding and longer warm periods pose health risks to affected communities, which will likely suffer from negative impacts related to increases in malaria, malnutrition, cardiorespiratory diseases, and diseases and injuries related to extreme weather events.<sup>5</sup>

**Figure 1. People in developing countries affected by weather-related disasters from 1980 through 2009, projected to 2019.**



Source: Historical line based on data from the Emergency Events Database (EM-DAT), “The OFDA/CRED International Disaster Database”: [www.emdat.be](http://www.emdat.be) (accessed March 5, 2010). Trendline and its projections from author’s calculations based on data from same source.

Poor countries are particularly vulnerable to the impacts of climate-related natural disaster. A World Bank study shows that following extreme climatic events, low-income countries suffer economic losses two to four times greater than higher-income countries.<sup>6</sup> This injustice is particularly striking when one compares the relatively miniscule proportion of greenhouse gases emitted by low-income countries. Indonesia, for example, is the second most disaster-prone country in the world, yet its greenhouse gas emissions per capita are equivalent to only six percent of the US per capita figure.<sup>7</sup>

4. Cristina Tirado-von der Pahlen, “Climate Change Challenges,” Research Backgrounder, Oxfam America (forthcoming).

5. Ibid.

6. Claudio Raddatz, “The Wrath of God: Macroeconomic Costs of Natural Disasters,” policy research working paper no. 5039, World Bank (March 2009).

7. Oxfam calculation based on data from World Resources Institute, Climate Analysis Indicators Tool, in “Navigating the Numbers: Greenhouse Gas Data and International Climate Policy”: <http://cait.wri.org/figures.php> (accessed March 2, 2010).

It is important to note that the phenomena that we commonly call *natural disasters* are not wholly natural. They are the product of natural hazards, human vulnerability, and a proportionally small capacity to deal with the impacts of such combinations. Natural hazards can be extreme weather events or other natural phenomenon that are potentially damaging on one or more levels. (See Appendix 1 for additional clarification on terms related to DRR.)

According to the Pressure Model, the root causes of vulnerability lie in governance structures (transparency, accountability, and participation), ideologies (ethnic, racial, religious, or gender discrimination), socioeconomic structures (land ownership, market control, wealth concentration), and climate, geo-physical, and natural resources.<sup>8</sup> These root causes manifest themselves in dynamic forces that produce the conditions that make people vulnerable to natural hazards. An increase in either natural hazard or vulnerability will increase the disaster risk faced by a population, as will a decrease in the capacity of a population. As humans have not yet proven their ability to control the weather or other extreme natural events, the most logical approach to shrinking disaster risk is to reduce vulnerability. However, disaster risk can also be reduced by increasing the capacity of a community to deal with shocks. This model of disaster risk forms the lens through which we will look at and analyze the landscape of DRR in this paper.

This paper is based on background research carried out under the Oxfam America-CNA project “Natural Disaster Response: The Impact of Climate Change on Response Providers,” funded by the Rockefeller Foundation. The purpose of this background paper is to provide a substantive and useful synopsis of the DRR landscape for climate change, humanitarian, and development researchers and practitioners, both internal and external, who wish to familiarize themselves with the topic, refer to its facts and case studies, and/or use its ideas in the strategic development of future work.

In particular, the author is interested in highlighting the importance of systematic community-led approaches and in presenting cases that have taken such approaches to scale. To do so, we will first define DRR and examine the rationale for its application. Second, we will look briefly at assessments of global progress towards the goals of the international framework agreement for action on DRR. Following that section, we will examine why a community-based approach to DRR makes sense. Then, we will illuminate a series of case studies that demonstrate four strategies for taking community-based interventions to scale at national or subnational levels. Finally, we will examine the international donor and nongovernmental organization commitments around DRR.

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8. The “Pressure Model” was adapted by Oxfam America from Ben Wisner et al., *At Risk: Natural Hazards, People’s Vulnerability, and Disasters* (New York: Routledge, 1994).

Ultimately, we hope that this publication stimulates debate and discussion on the topic of DRR and, in particular, DRR in the context of a changing climate.

# Why disaster risk reduction?

Unless rich countries reduce their greenhouse gas emissions, poor countries will continue to be subject to increasing hazards and risk due to the increasing frequency and intensity of extreme weather events. However, reducing the vulnerabilities of disaster-prone communities can reduce the overall risk burden on poor people.

Bangladesh is a perfect example of how disaster risk reduction (DRR)—the systematic effort to reduce the chance of damage suffered by a population—can save lives. As a result of the massive cyclone that killed over 500,000 people in 1970, the League of Red Cross Societies and the Bangladesh Red Crescent Society created the national Cyclone Preparedness Program (CPP).<sup>9</sup> Since its inception, the CPP has been training volunteers, building cyclone shelters on high ground, and spreading awareness of the country's national disaster preparedness plan, which was prepared by the national government. As a result of government, nongovernmental organization (NGO), and community efforts, the death toll from Cyclone Sidr in 2007 was significantly less than from the cyclone that hit in 1970. Although 3,300 people died, despite the efforts of 35,000 trained volunteers, this smaller figure demonstrates the power of preparedness in reducing vulnerability.

A more recent example is the earthquake of magnitude 8.8 on the Richter scale that Chile suffered in late February 2010. Fewer than one thousand people died in the quake and its related aftershocks and tsunami, compared to the more than 200,000 deaths that resulted from the 7.3-magnitude earthquake the month before in Haiti. Much of Chile's relative good fortune comes from its long history of preparedness policies and more structurally sound buildings, better emergency response capabilities, and a more robust communications infrastructure.<sup>10</sup> Although not yet compared in the media, one could logically conclude that the proportional economic impacts of these recent earthquakes at the household level will be smaller in Chile, given that its gross domestic product (GDP) per capita is more than ten times the per capita GDP of Haiti.

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9. Information in this paragraph from Rebecca Scheurer, "Cyclone Sidr: Community-Based Early Warning in Bangladesh," *Monday Developments* 26, no. 4 (2008).

10. Lisa Robinson, "Chile's Earthquake and Tsunami Crisis—Crucial Role of Media and Governance," BBC World Service Trust (March 1, 2010): <http://bbcworldservicetrust.wordpress.com/tag/disaster-preparedness/> (accessed March 3, 2010).

Victor Ruiz Caballero, "Why Chile's Stronger Earthquake Won't Be as Deadly as Haiti's," *Newsweek* (February 27, 2010): <http://blog.newsweek.com/blogs/thehumancondition/archive/2010/02/27/why-chile-s-stronger-earthquake-won-t-be-asdeadly-as-haiti-s.aspx> (accessed March 3, 2010).

The UN International Strategy for Disaster Reduction (UNISDR) – the international organization overseeing DRR policy – defines terms related to DRR, and Appendix 1 includes a glossary of many of these terms. UNISDR defines DRR as follows:

The concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessen vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.<sup>11</sup>

While the term “disaster reduction” is sometimes used, the term “disaster risk reduction” provides a better recognition of the ongoing nature of disaster risks and the ongoing potential to reduce these risks.

DRR can be seen along a spectrum, with emergency preparedness and humanitarian response at one end and resilience building and development at the other. In its broadest sense, disaster risk can be reduced through any sort of development that builds the resilience of a community. However, the unifying concept in the practice of DRR is in the approach, which relies on systematic efforts to assess the hazards, vulnerabilities, and capacity of a community, followed by the implementation of actions to either reduce the vulnerabilities or increase the capacity of the community to lower the overall unaddressed risk. The outcome sought by disaster risk reduction is protection of life and assets and a measureable reduction in potential damages as a result of extreme events.

Development initiatives do not necessarily reduce vulnerability to natural hazards. Instead, they can unwittingly create new forms of vulnerability or exacerbate existing ones, as happened on the Caribbean island of Monserrat in 1989. Following the devastation created by Hurricane Hugo, a new aid-funded hospital was built at the foot of a volcano; it was subsequently destroyed when the volcano began eruptive activity in mid 1995. Mainstreaming DRR requires analysis on how potential hazards events could affect the performance of policies, programs, and projects and, in turn, on the impact of those policies, programs, and projects on vulnerability to natural hazards. This analysis should lead to the adoption of related measures to reduce vulnerability where necessary, treating risk reduction as an integral part of the development process rather than as an end in itself. The key to mainstreaming DRR practice into development and humanitarian response is having a methodology that permeates all stages of the

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11. UN International Strategy for Disaster Reduction, “Terminology on Disaster Risk Reduction” (2009): [www.unisdr.org/eng/library/UNISDR-terminology-2009-eng.pdf](http://www.unisdr.org/eng/library/UNISDR-terminology-2009-eng.pdf) (accessed October 3, 2010). A full list of disaster risk reduction terminology can be found in Appendix 1.

program development cycle, diminishing the chance that programs will have negative effects on disaster risk.<sup>12</sup>

Several studies show that DRR<sup>13</sup> can yield significant economic savings in disaster response, reconstruction, and lost productivity. Notably, the World Bank and the US Geological Survey have estimated that economic losses worldwide from natural disasters in the 1990s could have been reduced by \$280 billion if \$40 billion had been invested in preventative measures – a seven to one return.<sup>14</sup> According to the Collaborating Center for Research on the Epidemiology of Disasters (CRED) Emergency Events Database (EM-DAT), the direct economic impacts of disasters during the 1990's totaled \$700 billion.

Additionally, there are numerous community-level analyses available as evidence of the economic benefits of DRR (see Table 1). Economic losses include direct economic losses and do not take into consideration indirect economic losses or social costs associated with the disruption in life caused by disasters, however even without taking indirect economic losses or social costs into account, the benefits and savings are significant. In Vietnam, for example, the Red Cross spent \$1.1 million on planting mangroves to protect about 70 miles (110 kilometers) of dykes and saved the government \$7.3 million in dyke maintenance costs *per year*, in addition to protecting nearly eight thousand people living nearby.<sup>15</sup> In addition to the evidence in Table 1, a conservative economic analysis by the Office of Foreign Disaster Assistance (OFDA) in Kinshasa, Democratic Republic of Congo, showed that each dollar of investment in DRR in 1998 resulted in the avoidance of economic losses of more than \$45.58 during the 1999 rainy season.<sup>16</sup> The avoided losses added up to more than half of the average household income of the participants – an amount significant enough to lead to distressed asset sales in many cases. Importantly for the US taxpayer and victims of disasters elsewhere, OFDA was not called to Kinshasa to respond and was able to use its finite response resources elsewhere.

Avoided losses can also be calculated when disaster-reducing precautions were not taken. For instance, the year after a port in Dominca was built, Hurricane

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12. This paragraph taken directly from Oxfam America, "DRR Strategic Framework 2008–2012," internal document (2008).

13. Oxfam America has adopted the UN International Strategy on Disaster Reduction definition for disaster risk: a combination of hazard and vulnerability inversely proportional to the capacity of a population. For a more complete definition and those of other terms related to disaster risk reduction, see Appendix 1.

14. World Bank, "Natural Disasters: Counting the Cost," Disaster Risk Management (March 2, 2004): <http://go.worldbank.org/WVARPQ0VT0> (accessed March 5, 2010).

15. Ilan Kelman and Sian Pooley, "Mitigation Saves" v. 9 (January 10, 2006): [www.ilankelman.org/miscellany/MitigationSaves.rtf](http://www.ilankelman.org/miscellany/MitigationSaves.rtf) (accessed March 2, 2010).

16. See note #15. Neither compounding economic benefits over time, nor indirect economic benefits, nor social benefits were taken into account.

David damaged the port and caused damage to the tune of 41 percent of its construction costs. However, building the port to hurricane-resistant standards would have cost only 12 percent more than the original construction costs.<sup>17</sup>

**Table 1. Evidence of the economic benefits of disaster risk reduction.**

Source and type of analysis	Actual or potential benefits	Result/return
Ex-ante appraisal (assessment before implementation)		
Kramer (1995): Appraisal of strengthening the roots of banana trees against windstorms in St. Lucia	Increase in banana yields in years with windstorms	Expected return negative as banana yields decreased
World Bank (1996): Appraisal of Argentinean Flood Protection Project. Construction of flood defence facilities and strengthening of national and provincial institutions for disaster management	Reduction in direct flood damages to homes, avoided expenses of evacuation and relocation	Internal Rate of Return (IRR): 20.4% (range of 7.5%–30.6%)
Vermeiren et al. (1998): Hypothetical evaluation of benefits of retrofitting of port in Dominica and school in Jamaica	Potentially avoided reconstruction costs in one hurricane event each	Benefit/cost ratio: 2.2–3.5
Dedeurwaerdere (1998): Appraisal of a range of different prevention measures (mostly physical) against floods and lahars (volcanic flows) in the Philippines	Avoided direct economic damage	Benefit/cost ratio: 3.5–30
Mechler (2004a): Appraisal of risk transfer for public infrastructure in Honduras and Argentina	Reduction in macroeconomic impacts	Positive and negative effects dependent on exposure to hazards, economic context and expectation of external aid
Mechler (2004b): Prefeasibility appraisal of Polder system against flooding in Piura, Peru	Reduction in direct social and economic and indirect impacts	Best estimates: Benefit/cost ratio: 3.8 IRR: 31% Net Present Value (NPV): \$77.7 million
Mechler (2004c): Research-oriented appraisal of integrated water management and flood protection scheme for Semarang, Indonesia	Reduction in direct and indirect economic impacts	Best estimates: Benefit/cost ratio: 2.5 IRR: 23% NPV: \$45.5 million
Ex-post evaluations (assessment after implementation of measures)		
Benson (1998): Ex-post evaluation of flood control measures in China over the last four decades of the 20th century	Reduction in direct damage to property and agricultural land	\$3.15 billion spent on flood control averting damage of about \$12 billion
IFRC (2002): Ex-post evaluation of Red Cross mangrove planting project in Vietnam for protection of coastal population against typhoons and storms	Savings in reduced costs of dyke maintenance	Annual net benefits: \$7.2 million. Benefit/cost ratio: 52 (over period 1994–2001)
Venton and Venton (2004) Ex-post evaluations of implemented combined disaster mitigation and preparedness programme at the community level in Bihar and Andhra Pradesh, India	Reduction in direct social and economic, and indirect economic impacts	Bihar: Benefit/cost ratio: 3.76 (range: 3.17–4.58) NPV: \$814,000 (\$55,000–\$129,800) Andhra Pradesh: Benefit/cost ratio: 13.38 (range: 3.70–20.05) NPV: \$46,200 (\$8,800–74,800)
ProVention (2005): Ex-post evaluation of Rio Flood Reconstruction and Prevention Project, Brazil. Construction of drainage infrastructure to break the cycle of periodic flooding	Annual benefits in terms of avoidance of residential property damage	IRR: > 50%

Source: Courtenay Cabot Venton, “Justifying the Cost of Disaster Risk Reduction: A Summary of Cost-Benefit Analysis,” *Humanitarian Exchange Magazine* 38 (June 2007): [www.odihpn.org/report.asp?id=2894](http://www.odihpn.org/report.asp?id=2894).

17. Phillip White et al., “Disaster Risk Reduction: A Development Concern,” UK Department for International Development (2004): [www.preventionweb.net/files/1070\\_drrscopingstudy.pdf](http://www.preventionweb.net/files/1070_drrscopingstudy.pdf).

On a micro level, large dollar figures invested in DRR may translate into many individuals making small investments that are spurred by awareness-building and education on the part of states and organizations. For instance, as reported to a researcher, a Lahore, Pakistan, shopkeeper invested 25 rupees (about \$0.55) in raised stepping stones around his store and, during a flood, sold 100–200 rupees (about \$2.25–\$4.50) worth of sweets per day that he would not have sold without the stepping stones.<sup>18</sup>

Given the negative effect of disasters on poverty outcomes, the relatively small contribution to climate change made by poor countries, and the high returns to investment in DRR (and comparatively low cost of DRR compared to disaster response), it makes both economic and social sense to invest in community-based DRR in disaster-prone developing countries.

## A note on DRR and climate change adaptation

DRR and climate change adaptation are intricately linked and overlap significantly in theory, practice, and objective. Part of DRR can be considered a subset of adaptation insofar as disasters are increased in frequency or intensity by climate change. Under climate change terminology, adaptation is understood as the discipline that supports societies to adjust to the already existing effects of a changing climate. These can be manifested as disasters (more intense hurricanes, for instance) or as slower but constant changes (such as rising sea level). Where the effects are manifested as disasters, we see DRR and adaptation to climate change come together.<sup>19</sup> However, the institutions, policies, and frameworks that move DRR and climate change adaptation forward are somewhat siloed. Although many National Adaptation Programs of Action integrate DRR activities, global frameworks, such as the UN Framework Convention on Climate Change and the Hyogo Framework for Action (see page 14) are distinct and may even compete for resources and duplicate efforts. Nor have NGOs typically integrated the two areas. DRR is often seen as the first line of defense in climate change adaptation, if it is recognized at all.

Agricultural adaptation to climate change has the potential to reduce disaster risk for poor farmers. However, until disaster risk is considered and measured at every step of the program cycle, it cannot be said that such programs use DRR methodology. Nevertheless, adaptation in agriculture can be instrumental in building the resilience of poor farmers and preventing irreparable losses in the

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18. See note #15.

19. Oxfam America, "DRR Strategic Framework" (2008).

case of drought or other extreme weather events (see Appendix 2 for a discussion of drought and agricultural adaptation).

# The Hyogo Framework for Action

In the wake of the destruction and loss from the Indian Ocean tsunami of late 2004, representatives of 168 countries met in Japan and adopted the Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters (HFA). It is intended to substantially reduce disaster losses, “in lives and in the social, economic and environmental assets of communities and countries.”<sup>20</sup> The HFA entails integrating disaster risk reduction (DRR) into development policies and planning, emergency preparedness, response programs, and recovery efforts, as well as strengthening institutional capabilities and mechanisms that build resilience to hazards. The HFA outlines the following priorities for action:

1. Ensure that DRR is a national and a local priority, with a strong institutional basis for implementation.
2. Identify, assess, and monitor disaster risks and enhance early warning.
3. Use knowledge, innovation, and education to build a culture of safety and resilience at all levels.
4. Reduce the underlying risk factors.
5. Strengthen disaster preparedness for effective response at all levels.

To guide implementation and follow up for these actions, the HFA identifies guiding principles: a multi-hazard approach, gender and cultural perspective, community and volunteer participation, and capacity building and technology transfer. It discusses general considerations and assigns responsibilities to states, regional organizations and institutions, international organizations, and the UN International Strategy for Disaster Reduction (UNISDR). Finally, the HFA addresses funding streams that should primarily come from states, regional organizations, and international organizations.

The HFA recognizes that it is important to work at multiple levels – community, local, provincial, national, and global. An example of working at multiple levels can be found in an Australian government-funded program in the Mekong Basin that helps local and national governments perform capacity and needs analyses, build risk-aware capacity, increase the connection between national and

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20. Information in this paragraph was taken from the UN International Strategy for Disaster Reduction, “Summary of the Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters”: [www.unisdr.org/eng/hfa/docs/summary-HFP-2005-2015.pdf](http://www.unisdr.org/eng/hfa/docs/summary-HFP-2005-2015.pdf) (accessed May 2010). The entire document can be found at [www.unisdr.org/eng/hfa/hfa.htm](http://www.unisdr.org/eng/hfa/hfa.htm).

provincial governments, and build the capacity of local governments to carry out DRR activities. However, many communities in Vietnam, for example, are without preparedness plans or have vulnerable livelihoods. Communities, especially vulnerable ones, need to know how to demand their rights to local funds that are available.

Since 2005, HFA has had varying degrees of implementation, and the two main reports on stakeholder progress take different, yet complementary, approaches to its evaluation: the “UNISDR Global Assessment Report on DRR: Risk and Poverty in a Changing Climate” and “Views from the Frontline: A Local Perspective of Progress Towards Implementation of the Hyogo Framework for Action.”

The UNISDR “Global Assessment Report”<sup>21</sup> identifies three main underlying risk drivers (vulnerable rural livelihoods, poor urban governance, and declining ecosystems) and conducts its evaluation through this lens. It notes that organizations and governments have applied many innovative local and sectoral community-based solutions, and, in particular, emergency preparedness programs and early warning systems have been well implemented, even in poor countries, such as Bangladesh and Cuba. However, the report finds, what is lacking is a holistic effort to mainstream local and sectoral approaches and also the integration of DRR, climate change adaptation, and poverty reduction into policy and governance frameworks.

“Views from the Frontline”<sup>22</sup> takes a look at the implementation of DRR policies and plans from a local perspective. In engaging civil society organizations around the globe to conduct over 6,000 surveys, the “Views from the Frontline” authors discovered that a significant gap exists between national-level policies and local action, countries make more progress against HFA when approaches are community-based, civil society organizations are more engaged in DRR than local government or community representatives, and resources and human capacity are often major constraints to progress.<sup>23</sup> The report recommends increasing local community participation to build community awareness of risk, improving planning and preparedness, and bridging the gap between local and national levels. This will require some decentralization of authority, innovative financing strategies, social adoption of risk awareness, and many measures to increase the engagement of at-risk groups in decision-making around DRR. Top-

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21. UN International Strategy for Disaster Reduction, “Global Assessment Report on Disaster Risk Reduction” (2009).

22. Global Network of Civil Society Organizations for Disaster Reduction, “Views from the Frontline: A Local Perspective of Progress Towards Implementation of the Hyogo Framework for Action” (2009): [www.preventionweb.net/files/9822\\_9822VFLfullreport06091.pdf](http://www.preventionweb.net/files/9822_9822VFLfullreport06091.pdf).

23. The study also found that the Middle East and Africa are lagging behind other regions in their progress against the Hyogo Framework for Action, and that Asia and Central America are leading the pack.

down national policies alone are not translating into effective DRR on the ground.

InterAction, a coalition of over 150 organizations committed to policy and practice change in the humanitarian and development field, has recognized the importance of bridging national policies and community action in DRR. In the words of InterAction's working group chair for DRR:

The DRR group sees many challenges as field programs reach larger scales; it's very hard to keep quality and dynamic interventions. One of the big challenges is finding the right people who can "mediate between scales"; you need a unique set of skills to see the big and small pictures and to link them in ways communities are able to understand. Like a "scaling up and scaling down."<sup>24</sup>

This very well could be where nongovernmental organizations (NGOs) come into play. To illustrate, in an effort to implement HFA and change Indonesia's disaster management focus from a responsive approach to a more preventative one, Indonesia created its National Action Plan for Disaster Risk Reduction with an emphasis on engaging government, civil society, and private-sector stakeholders.<sup>25</sup> In line with the plan, the Indonesian Disaster Management Law (Law No 24/2007) was enacted in April 2007, providing a legal framework with clear government responsibilities for disaster management at national and subnational levels. However, in spite of significant progress at the national level, there is a need to merge these frameworks with action at the community level to fulfill commitments made at Hyogo.

In attempt to fill this gap, Oxfam Great Britain has engaged at multiple levels in Eastern Indonesia. At the provincial level, Oxfam Great Britain and partners have advocated for developing a disaster management regulation in East Nusa Tenggara Province. In the nearby province of Central Sulawesi, NGOs and government offices engaged in a similar initiative after Oxfam's staff shared their experiences and approaches and were able to build the advocacy capacity of NGOs through consultative sharing and discussions.<sup>26</sup> At the community level, Oxfam Great Britain trained community organizers and local partners in methodologies, including risk assessment and action planning, advocacy, and mobilization. As a result of action at the community level, combined with government support at national and subnational levels, knowledge and skills are

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24. Linda Poteat, Disaster Response Manager, InterAction, speaking at InterAction's "Principles of Effective Adaptation Practices Workshop," Washington, DC (September 2009).

25. Unless otherwise noted, information on Indonesia and Oxfam Great Britain's programs in Indonesia is from "Building Resilience in Eastern Indonesia: Strengthening Government, Civil Society, and Community Action for Disaster Risk Reduction – PRIME," an Oxfam Great Britain program proposal.

26. Patricius Usfomeny, personal communication (February 2010).

sustainable at the community level; a district government provided elevated houses; first aid training to Village Preparedness Teams prepares communities in case of disaster-related casualties; communities have mobilized to plant bamboo for reforestation and to protect river banks in line with locally developed plans; flood-resistant wells were installed to ensure access to clean water during flood seasons; and, in some areas, new bridges ensure children access to school and access to markets during flood season.

# Community-led disaster risk reduction

Both communities and local governments must be empowered to act together and autonomously in emergencies, in designing preparedness plans, and in building long-term resilience. Most emergencies will be small and localized, and, even when they are widespread, impacts and local capacities to respond will be vary from town to town and community to community. It is nearly impossible for a national government to adequately design evacuation routes, facilitate drills, build awareness, and implement locally appropriate disaster risk mitigation measures in every community. As a result, decentralization of risk reduction is necessary. However, local governments alone do not have the manpower, the capacity, or the resources to act adequately. As such, communities, with the support of their governments, are the true and best “first responders” in emergencies. Building resilience and reducing vulnerabilities contribute to the avoidance of poverty traps and to the protection of assets. In ideal scenarios, communities and governments, working with scientific and historical data from credible sources, accurately identify hazards, vulnerabilities, and the capacities that they have available for mitigating their risk. Nongovernmental organizations (NGO) can play a unique role in facilitating this identification process with a wide variety of tools for assessing hazards, vulnerabilities, and community capabilities available to reduce risk. They can help strengthen the capacities of both communities and local governments.

The involvement of community stakeholders in the identification of risk-reducing solutions has many benefits:

- Discovering approaches that address the risk-reduction priorities of the community
- Increased likelihood that solutions will be sustainable
- Increased risk awareness within the community
- Capacity building and training of community members in both DRR and advocacy
- Spontaneous and viral dissemination of ideas
- Cost effectiveness – local labor, local maintenance, local materials, and fewer mistakes because of lack of familiarity with the culture, terrain, economy, available resources, or environment

Community engagement can happen in many ways. Vulnerability assessment mapping can be done with community participation. However, participation is only empowering (and is most effective) when communities are involved at the decision-making stage.<sup>27</sup> In Kenya, ActionAid worked in the Ijara District because of the drought, floods, and windstorms that affect it and, through participatory vulnerability analyses, the community determined that drinking water shortages were a major vulnerability during disasters.<sup>28</sup> As a result, new guttered roofs were installed to capture water in storage tanks on school grounds, reducing the amount of time that children and women have to spend gathering water each day and lessening the risk that they will either go without water during drought or drink unsanitary water during a flood.

Many NGOs use a methodology called Participatory Action Research to help communities determine their risk and how to reduce their vulnerabilities in the face of natural hazards. Such research has the power to become a tool for advocacy, education, and precise program development.<sup>29</sup> In the wake of the 2004 tsunami, such research led to positive impacts for farmers in Tamil Nadu, India, who adapted their cropping plans to new patterns in rainfall, for Sri Lankan women who doubled or tripled their incomes, and for communities in Andhra Pradesh, India, whose local organizations created flood contingency plans.<sup>30</sup>

Additionally, cost-benefit analysis can be a community decision-making tool that can aid in designing risk reduction activities. Communities at risk are invited to identify the possible actions they can take to reduce their risk, compare the benefits of those actions against the cost of implementing them, and use this information in deciding which activities will be most efficient in reducing risk.

These are just a few tools of community participation that can lead to better risk reduction, adaptation, and, therefore, development. Literature abounds on the successes of disaster risk reduction (DRR) within communities. The question now is how to make the practice and concepts of DRR widespread, permeating both the development and humanitarian worlds.

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27. Lisa VeneKlasen and Valerie Miller, *A New Weave of Power, People, and Politics: The Action Guide for Advocacy and Citizen Participation* (Bouton on Dunsmore, UK: Practical Action, 2007).

28. ActionAid Kenya, "Disaster Risk Reduction in Schools": [www.actionaid.org/india/index.aspx?PageID=4281](http://www.actionaid.org/india/index.aspx?PageID=4281) (accessed March 4, 2010).

29. Oxfam International, "Collaboration in Crisis: Lessons in Community Participation from the Oxfam International Tsunami Research Program" (2009).

30. Ibid.

# Bridging the gap

Given the results of the first two large assessments on progress towards the Hyogo Framework for Action (HFA) goals, the question looming before development practitioners, donors, and governments is how to bridge the gap between national policies and local action. As “Views from the Frontline” concluded, top-down policies alone will not work.<sup>31</sup> Bottom-up, community-based approaches need to be scaled up and development actors must work at multiple levels to make such approaches widespread and effective.

The examples that follow were chosen precisely because (1) they are based in community-led approaches and participation and (2) they exemplify efforts to bring such approaches to disaster risk reduction (DRR) to scale. Within these examples, four main strategies for bringing DRR interventions to scale were identified:

1. Creating national and subnational multi-stakeholder platforms
2. Using existing public structures
3. Harnessing financial and private-sector incentives
4. Encouraging natural and viral replication of programs and principles

We hope that this framework and the examples that follow will spur further ideas and debate about strategies to bring the benefits of community-led DRR to more people.

## Creating national and subnational multi-stakeholder platforms

### **El Salvador: A national network for DRR<sup>32</sup>**

Although predating the HFA, El Salvador’s national DRR network, the *Mesa Permanente para Gestion de Riesgos*, has been working toward HFA priority one—“ensuring that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.” The network, or *Mesa*, rose out of

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31. See note #22.

32. Oxfam America and National Network for DRR, “El Salvador: Efforts by National Network for DRR Help Curb Poverty Cycle” (forthcoming). Personal communication with Karina Copen of Oxfam America (February 2010).

collaboration between civil society and government actors after Hurricane Mitch in 1998. El Salvador has both a strong tradition of civil society activism and an annual hurricane season that is both costly and deadly. With the support of nongovernmental organizations (NGOs) such as Oxfam America, *Mesa* has worked to broaden the political discourse around DRR from just emergency response to an additional emphasis on small-scale community projects to reduce risk, such as making river banks more flood resistant, publicizing evacuation routes, rebuilding schools farther from a hurricane-prone shoreline, and others, depending on the particular vulnerabilities of communities. Built through cross-sectoral alliances, regular meetings, and a common agenda, *Mesa* uses advocacy and social pressure to hold governments accountable. In 2005, the network helped push through the Law for Civil Protection, which created a legal mandate for the establishment of local-level committees for civil protection that connect with provincial, and thus national-level, bodies.

In theory, according to this law, municipalities and local governments are responsible for reducing some disaster risk, responding in the case of emergency, and accessing the National Civil Protection System. However, many mayors and municipal governments are not aware of the Law for Civil Protection, do not care, or do not fully understand its implications or the risks that their communities face. In line with this, NGOs in El Salvador are helping build awareness directly with governments and communities, often facilitating the establishment of civil protection committees, as well as training members in emergency response and in conducting risk assessments to understand the risk profile of their community, how are they vulnerable, and what capacities they have for addressing the risks identified. Oxfam's long-term approach is to build the rights awareness and advocacy capabilities of community committees, in addition to training on the more technical aspects of DRR, preparedness, and response. Outreach is carried out through town meetings, existing community structures, cell phones and speaker systems, and some radio announcements. In one pre-election regional event, advocates brought candidates together to sign a letter agreeing to support risk reduction in their communities.

Although the Law for Civil Protection is not perfect – it is more response-focused than *Mesa* wanted, and its implementation is currently spotty and constrained by lack of funding and local political will – progress is increasing as momentum around DRR builds. The law is in place, training is happening, and the advocacy capacity of both communities and *Mesa* is growing. For example, in Acajutla, where Oxfam America has been active in advocacy training, the municipal government partners with civil protection committees in preparedness drills and in building risk-reducing infrastructure.

## **Fiji: Ecology, livelihoods, and advocacy**

In Fiji, to create a policy environment that will enable local solutions, the World Wildlife Fund (WWF) Climate Witness program combines community-based risk reduction with national advocacy to help communities identify vulnerabilities, risks, and risk-reducing solutions and then relay community perspectives to the national government. The program is an excellent example of the intersection of livelihoods, governance, and the environment.

In the district of Kabara, WWF provided villages with technical assistance through workshops to identify climate change vulnerabilities and solutions themselves.<sup>33</sup> The issues that villages in Kabara identified included the islands' poor soil, lack of freshwater, and frequent droughts, which make agriculture increasingly difficult; the dynamiting, polluting, and overfishing of threatened reefs, which reduces the sustainability of fishermen's livelihoods; erosion; and an increase in cyclone intensity, which results in destroyed homes, dead vegetation, and threatened infrastructure. The communities then identified and subsequently implemented solutions designed to build resilience and prevent destruction in the event of storms. They decided to focus on establishing and enforcing rules about rainwater use and storage, seeking NGO assistance in increasing their water-storage capacity, replanting mangrove forests to protect against storm surges and to preserve the natural ecology, and monitoring and enforcing rules on fishing and dumping practices.

WWF's office in Fiji takes this type of scientific and community-based knowledge to the national level and also participates in multi-stakeholder consortiums, such as the National Mangrove Management Committee.<sup>34</sup> Made up of NGOs, academics, and government officials, the National Mangrove Management Committee has succeeded in having mangrove forests included in the National Marine Protected Areas, which enables government-supported mangrove replanting in other communities in Fiji. The office also works with the Ministry of the Environment and advocates for policies and programs that address the risks faced by communities as identified in community vulnerability assessments.

The destruction of mangrove forests is one of the leading drivers of vulnerability for coastal populations. According to the UN Food and Agriculture Organization

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33. Information about the Kabara case study comes from Francis Areki and Monifa Fiu, "Climate Witness: Report for Kabara, Lau, Fiji Islands," World Wildlife Fund, South Pacific Program: [http://assets.panda.org/downloads/cw\\_community\\_wksp\\_rpt.pdf](http://assets.panda.org/downloads/cw_community_wksp_rpt.pdf) (accessed November 2009).

34. Jonathan Cook, telephone interview (February 2010).

of the United Nations, 20 percent of the world's mangroves have been lost since 1980 to aquaculture, tourism, and other development.<sup>35</sup>

## Using existing public structures

### **Bangladesh: Integrating community voices into water-management plans**

The involvement of communities in flood disaster management is a standard and mandatory practice in Bangladesh.<sup>36</sup> Bangladesh's dense population, extreme poverty, altitude below sea level, many rivers, and strong typhoons make it especially vulnerable to the loss of lives during storms and floods. Thus, the national government has a long history of flood management laws, beginning with infrastructure improvements in the 1960s and progressing to nonstructural improvements, such as forecasting and early warning systems, for which civil society was instrumental in achieving. Now, in both the National Water Management Plan and the Comprehensive Disaster Management Program, communities play a key role.<sup>37</sup> Training for local people to disseminate flood preparedness information is funded, and public consultation is mandatory for any flood management project. In line with these standards, the government has invested resources in producing guidelines and in training staff in consulting community-based organizations.

### **Bolivia: Building agricultural resilience with the government and through ancient practices**

In the flood-prone Trinidad district of Bolivia, Oxfam Great Britain is working with municipalities to rejuvenate ancient land-use practices that allowed farmers to grow crops despite frequent floods and without exhausting soils. The practices consist of sophisticated management techniques to enhance soil fertility and building raised platforms out of soil, called *camellones*. By sowing seeds into *camellones*, farmers facilitate drainage, promote soil aeration, and prevent seeds and plants from being swept away by floodwaters. It is working well in Trinidad, and the national government now wants to expand the practice to scale where possible. Working with civil society and academics, the government is looking at topography and cities and is in the initial stages of planning.

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35. UN, "Implementation of the International Strategy for Disaster Reduction," report of the Secretary General, 63rd Session (2008).

36. Unless otherwise noted, information in this paragraph is from Akhtar Hossain, "Bangladesh: Flood Management," Associated Programme on Flood Management case study (September 2003): [www.apfm.info/case\\_studies.htm](http://www.apfm.info/case_studies.htm) (accessed March 2010).

37. Bangladesh's National Water Management Plan includes the management of flood, drought, and erosion risk while the Comprehensive Disaster Management Program includes emergency coordination plans.

## **Ethiopia: Crop insurance and government safety nets**

During 2006, the World Food Program (WFP) implemented a pilot project to assess the feasibility of indexing drought risk and transferring drought-related risk from Ethiopian farmers to international risk markets. The project showed that it is possible to insure the Ethiopian government's Productive Safety Net Program (PSNP)<sup>38</sup> in its ability to scale up its food security coverage to protect the livelihoods of farmers in the case of a severe drought.<sup>39</sup> The program design relies on a government contingency fund made up of two tiers – a small, first-response cash fund and a larger tier made up of in-principle commitments from donors, which can be in cash or food. Despite positive feedback from the project evaluation, the project was discontinued due to low farmer-uptake rates, which were likely related to the project's supply-side approach, its complicated product, and lack of market research.<sup>40</sup> Another pilot, which is taking a more community-based approach and spearheaded by Oxfam America and local partners, has picked up where the World Bank left off, proving that crop insurance is of value to local farmers (see Box 1).

## **Indonesia: NGOs in partnership with the Ministry of Health**

During disasters, the community need for medical attention and first aid often outstrips supply, presenting unique management problems for health workers.<sup>41</sup> In Indonesia, the second-most disaster prone country in the world, the Indonesia Medical Relief Committee (IMRC), made up primarily of local NGOs, has been working to build preparedness and organizational capacity within the health sector.<sup>42</sup> By building a robust volunteer roster and training both hospital staff and community members in basic emergency medicine, first aid (for non-medical personnel), mass casualty management, and disaster management plans, the IMRC hopes that the targeted communities will be able to sustain themselves during the first 24 to 48 hours following a shock. The committee is now scaling up its trainings at the behest of the country's Ministry of Health.

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38. The Productive Safety Net Program seeks to provide support to vulnerable households at the beginning of a crisis so the crisis does not result in malnutrition, a sell-off of productive assets, children being taken out of school, medical treatment forgone, or other coping mechanisms that result in a decrease in productivity and well-being.

39. World Food Program, "Final Report on the Ethiopia Drought Insurance Pilot Project" (February 2007).

40. Personal communication with Marjorie Victor-Brans, consultant and microinsurance specialist, Oxfam America (September 2010).

41. Health facilities play a unique role in relief as venues for tending to the sick and injured, and the need to make sure they will continue functioning in the event of a disaster is strong. As such, in more-developed areas, backup power and communications systems should be implemented, site selection for new hospitals should take into consideration disaster hazards, and staff should be trained in emergency management. For more information, the Pan American Health Organization produces lists of guidelines for analyses of structural integrity and damage risks to hospital equipment and surrounding infrastructure.

42. Mukesh Kapila, "The Health Sector and Disaster Risk Reduction," *Monday Developments* 26, no. 4 (2008).

## **Around the world: Schools as centers of disaster risk awareness and reduction**

Schools, often centers of communities for both children and adults, can play an important role in awareness building and disaster preparedness during non-crisis times, as temporary shelters in the early stages of disaster response, and then as an instrument of a community's return to normalcy after a crisis. The theme of the UN Strategy for Disaster Reduction (UNISDR) World Disaster Reduction Campaign 2006–07 was "Disaster Risk Reduction Begins at School." Fifty-five countries participated in the campaign, making school buildings more disaster-tolerant and integrating disaster preparedness into curricula. Currently, ActionAid – in partnership with the UK Department for International Development (DfID), the Institute of Development Studies, UNISDR, and local NGOs – is implementing the program Disaster Risk Reduction Through Schools in Bangladesh, Kenya, Malawi, Ghana, Haiti, and Nepal.<sup>43</sup> ActionAid and a local partner in Kenya, Womankind, are training teachers and community leaders as trainers in disaster preparedness and management so the community has the technical knowledge to adapt to the disasters that climate change may bring. Additionally, A UN-funded program in India trained 100,000 children and 2,500 teachers to create disaster preparedness plans for their schools, while in Tajikistan, DRR has been included in school curricula.

## **India: Telecenters at the end of early warning systems**

Telecenters, or centers of technology and communications, have the capacity to compliment early warning systems and connect rural communities with information on disaster hazards and risk reduction. Nallavadu, a 3,600 person village in Tamil Nadu, India, is part of the M S Swaminathan Research Foundation Village Knowledge Centre project, in which telecenters – or Knowledge Centers, as they are known in India – are set up in rural areas.<sup>44</sup> In one instance, a phone call to the Village Knowledge Centre about an approaching tsunami set off the village's warning system. While a siren sounded, an alert was repeatedly announced over a public address system, and villagers were able to evacuate. As a result, there were no victims of the tsunami in Nallavadu.

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43. See note #28.

44. Xuan Zengpei, "Using Telecentres for Disaster Risk Management at the Community Level," UN Economic and Social Commission for Asia and the Pacific, "Policy Brief on ICT Applications in the Knowledge Economy," no. 5 (September 2009): [www.unescap.org/IDD/pubs/Policy\\_Brief\\_No.5\\_camera-ready.pdf](http://www.unescap.org/IDD/pubs/Policy_Brief_No.5_camera-ready.pdf) (accessed March 2010).

## Harnessing financial and private-sector incentives

### **Nicaragua: Microfinance institutions protect themselves through DRR**

Disasters pose significant liquidity problems for microfinance institutions (MFIs); emergencies often lead to missed payments, declines in savings deposits, and increases in cash advances and emergency loans.<sup>45</sup> Because of this, MFIs have a vested interest in DRR and can play an important role in DRR through their community groups and networks of borrowers. In Nicaragua, the Association of Consultants for the Development of Small, Medium, and Micro Enterprises (ACODEP), one of the largest MFIs in the country, has been learning from the experience of Hurricane Mitch in 1998 and more recent disasters.<sup>46</sup> The association has developed a Disaster Prevention Plan for identifying, preparing for, and mitigating natural and manmade disasters to protect institutions, their clients, and staff from possible losses. For example, ACODEP suspends payments on loans during a crisis and provides short-term loans to affected clients.

### **Around the world: Disaster risk reduction as insurance to insurers**

The Bali Action Plan of December 2007 recognized the potential role of “risk-sharing and transfer mechanisms such as insurance” in reducing the increasing disaster risks faced by vulnerable people due to climate change.<sup>47</sup> Efforts on behalf of the insurance sector could include awareness raising and risk education, accurate risk pricing, a policy environment that enables incentives for risk reduction, payments for risk-reducing measures, or requiring risk reduction as a prerequisite to partake in the insurance scheme. The incentives for such measures lie in the potential reduction in payouts as a result of extreme weather events.

The private sector has recognized the value in using mangrove forests to protect assets from storm surges and may offer a strategy for scaling up beneficial DRR activities, if it proves beneficial for them. Along the coasts of Burma, Indonesia, the Philippines, and Thailand, the insurance company Tokio Marine & Nichido invests in mangrove plantations in areas where it has policyholders inland.<sup>48</sup> The

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45. Ronald T. Chua, “Rapid Onset Natural Disasters—MFI Liquidity Problems after a Natural Disaster,” *Microenterprise Best Practices* (June 1999).

46. Norman A. Messer, “The Role of Local Institutions and Their Interaction in Disaster Risk Mitigation: A Literature Review” (September 2003): [www.fao.org/docrep/006/ad710e/ad710e00.htm](http://www.fao.org/docrep/006/ad710e/ad710e00.htm) (accessed March 2010).

47. Koko Warner et al., “Adaptation to Climate Change: Linking Disaster Risk Reduction and Insurance,” paper for the UN Framework Convention on Climate Change for the Sixth Ad Hoc Working Group on Long-Term Cooperative Action (2009).

48. *Ibid.*

private sector may offer additional opportunities – both local and national – for funding DRR.

So far, the profit risks and opportunity costs of designing, building, and testing mechanisms to transfer risk away from vulnerable people in developing countries, especially small farmers, have been too high to entice the private sector to participate on a large scale.<sup>49</sup> As a result, NGOs, foundations, and the public sector have begun laying the base for a future weather risk market and developing the public goods, such as weather data and regulatory systems, necessary for index-based insurance. Index-based insurance is preferable to conventional insurance because it lowers the cost of verification and reduces the risk to insurers of moral hazards associated with the behavior of individuals. The opportunity to structure payouts around indices is likely to increase the feasibility of private-sector ventures.

Microinsurance programs that seek to build resilience through related, disaster-risk-reducing programs proliferate in many corners of the world and have been embraced by small and large development organizations and microfinance institutions. In Bolivia, Fundación para el desarrollo productivo y financiero (PROFIN) has designed an insurance and risk reduction program in which groups of farmers select one of their peers to be their technical advisors, and then PROFIN trains them in techniques to reduce risks and increase productivity. Each technical advisor's field then becomes the reference point for ascertaining when a fall in yields occurs due to weather conditions and triggering payouts. The World Bank has an index-based microinsurance program that is part of a larger DRR and disaster risk transfer strategy for herders in Mongolia that includes an early warning system, feed and grazing reserves, conflict prevention and management, microcredit, and community-prioritized infrastructure investments.

### **Box 1. Microinsurance and climate change adaptation in Ethiopia**

Oxfam America is working with Ethiopian farmers, the global reinsurance company Swiss Re, the Relief Society of Tigray, the International Research Institute for Climate and Society at Columbia University, Nyala Insurance, the Protective Safety Net Program (PSNP), and several other organizations to launch an innovative resiliency project called Horn of Africa Risk Transfer for Adaptation (HARITA). HARITA contributes to resiliency for smallholder agricultural producers through risk management. By lowering agricultural risk through farming practices that function better in drought conditions, farmers lower their risk; by transferring risk to markets

49. Information in this paragraph is from Ulrich Hess et al., "Creating Pathways Out of Poverty in Rural Areas: Managing Weather Risk with Index Insurance," World Food Program: <http://home.wfp.org/stellent/groups/public/documents/communications/wfp201797.pdf> (accessed February 2010).

through the insurance plan, farmers also lower the risk that they may face if a drought occurs. Because they face less risk due to weather, farmers are more likely to take out loans to improve their land even more or expand their business, which in effect can further lower weather risk.

To ensure that the program is in line with community needs, Oxfam included farmers on the program design team and referred to a focus group often during the process. The insurance scheme reaches the poorest farming families in Adi Ha, Tigray, through a premium-for-assets program supported by the World Food Program and in partnership with PSNP, which monetizes the risk-reducing labor of poor farmers into premiums that are contributed to the scheme. To identify which activities they would engage in, farmers participated in a community-wide Vulnerability and Capacity Assessment and identified lack of rainfall and droughts as the primary hazards to their well being. As a result, they apply resilience-building and agricultural risk-reducing solutions, such as composting, water harvesting, seed washing, and tree and grass planting. Less-poor farmers who do not qualify for the premium-for-work program can buy participation in the insurance scheme. The program will be sustainable when the right mix of poor and less-poor farmers are participating and when its coverage includes areas that have different climate shock patterns. There is potential to scale up this program to villages by integrating it nationally into the PSNP. Eventually, if Oxfam and Swiss Re's micro-insurance program scales up to other regions of the world, it will be even more sustainable—the covariant risk of the overall scheme will decline as it expands globally.

The biggest difference between the Ethiopian macroinsurance projects and HARITA is that with HARITA, individual farmers are the payees in the case of a payout, which means they can count on the payment much more than if the government holds the funds and it goes through many layers of bureaucracy before reaching them. However, micro and macro approaches to drought risk management in Ethiopia are not mutually exclusive and could be compatible and/or complementary, especially if the program scales up worldwide.

\*Information about HARITA is from Oxfam America, "Horn of Africa Risk Transfer for Adaptation (HARITA) Project Brief" (2009); David Satterthwaite, telephone interview (February 11, 2010).

\*Payouts will be made based on satellite imagery and mathematical interpretations of the imagery.

There are a few examples of meso- and macro-level weather-based disaster insurance schemes for poor countries. In 2008, the International Fund for Agricultural Development and the World Food Program set up a Weather Risk Management Facility to facilitate smallholder access to and develop replicable models of index-based weather insurance and other risk-management products. The facility envisions collaboration with the World Meteorological Organization, the World Bank Commodity Risk Management Group, the International Research Institute for Climate and Society, the Micro Insurance Agency, and the Consultative Group to Assist the Poorest. The world's first multi-country macro-insurance program is the Caribbean Catastrophe Risk Insurance Facility (CCRIF), started in 2007 with assistance from the World Bank and other donors; CCRIF will provide policy-holding governments with immediate access to liquidity if

hit by a hurricane or earthquake and, although it is not community-based, it marks a shift towards proactive disaster management and readiness.<sup>50</sup>

## Encouraging natural and viral replication of programs and principles

### **Africa: Arts and events create awareness that spreads virally**

In a best-case scenario, awareness of disaster risk becomes viral and spreads, creating a politically willing base for action. This has happened with an Oxfam Great Britain program in Uganda.<sup>51</sup> After severe floods put the results of joint local government and community risk analysis and reduction to the test, prepared communities and governments began sharing their knowledge with communities around them. They have done this by hosting sporting events, theatre performances, fairs, and demonstrations. Text messaging has also been very successful at virally spreading awareness and forecasts. In Zambia, young people created their own radio content tailored to their context and locality to address the unique set of risks that their community faces. Programming has spanned from advising people of the dangers of leaving waste in drainage areas to raising awareness of government commitments made at Hyogo, so they can start demanding their rights to available resources, influencing development plans, and creating a culture of accountability.

### **Around the world: Natural replication of disaster-tolerant construction**

In Burma in late 2007, many people died in part because their wattle and daub houses offered zero protection from the elements during Cyclone Sidr. Such largely preventable deaths make a strong case for architecture, retrofitting, and site selection that reduces vulnerability in the face of disaster hazard. Policymakers teamed with engineering elites have often attempted to prevent such tragedies through establishing building codes, although in most poor countries, adequate enforcement is lacking due to inadequate financial resources and monitoring and the informal and unskilled nature of the construction sector.<sup>52</sup> A community-based approach to building construction is focused more

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50. World Bank, "First Ever Regional Catastrophe Risk Insurance Pool for the Caribbean Receives US\$47 Million from Donors," press release, no. 2007/255/LAC (February 26, 2007): <http://go.worldbank.org/RXFT9YC290> (accessed February 12, 2010).

51. Christopher Anderson, telephone interview (January 29, 2010).

52. Unless otherwise noted, information in this paragraph from Marla Petal et al., "Community-Based Construction for Disaster Risk Reduction," chapter 10, *Hazards and the Built Environment: Attaining Built-in Resilience*, ed. Lee Boshier (London: Spon Press, 2008).

on “building code compliance” rather than enforcement. In this approach, builders and designers collaborate with the users of the structures to be built. Knowledge exchange through action-oriented participatory research and assessment can serve to synthesize community vulnerabilities, capabilities, and knowledge with the knowledge and resources of an outside group. Construction projects that take this sort of approach and rely on bridging individuals and/or organizations usually have a much higher rate of success and replication.<sup>53</sup> Occasionally, construction modifications are so successful that they spread naturally from person to person and village to village.

In Peru, after an earthquake destroyed 3,000 houses in Alto-Mayor, a development group called Tecnologia Intermedia Peru worked with communities to create a modified, earthquake-proof traditional rammed-earth house. The construction technology and materials proved to be accessible enough for local residents, who then built thousands of their own after they saw that the houses withstood an earthquake with a magnitude of 6.2 on the Richter scale.<sup>54</sup> While earthquakes are not climate-related disasters, the reduction of associated risks can reduce the setbacks faced by developing economies and reduce the strain placed on the increasingly burdened international disaster response system.

In Vietnam, Development Workshop France (DWF) promotes 10 simple, cost-effective steps to making houses more flood and typhoon resistant.<sup>55</sup> DWF involves animators from the communities who spread messages about disaster prevention, and it conducts demonstrations on how families can implement the innovations and communicates how inexpensive it is (around \$250 per house). As families see the benefits, many invest their own money and time in the steps.

Creating tools with local community members to share knowledge about disaster-tolerant building construction and site planning is a strategy for scaling up such innovations and encouraging public awareness about risk.<sup>56</sup> Tools could include brochures, booklets, live demonstrations with housing models, or any

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53. Although not discussed here, urban residents face an increasing and unique set of risks related to construction as more people migrate from rural areas. See Rebekah Green, “Informal Settlements and Natural Hazard Vulnerability in Rapid Growth Cities,” chapter 11, *Hazards and the Built Environment: Attaining Built-in Resilience*, ed. by Lee Boshier (London, Spon Press, 2008). Also see Samantha de Silva et al., “Building Resilient Communities: Risk Management and Response to Natural Disasters Through Social Funds and Community-Driven Development Operations,” World Bank: [http://siteresources.worldbank.org/INTSF/Resources/Building\\_Resilient\\_Communities\\_Complete.pdf](http://siteresources.worldbank.org/INTSF/Resources/Building_Resilient_Communities_Complete.pdf) (accessed February 2010).

54. Charlotte Benson and John Twigg, “Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisations,” ProVention Consortium (January 2007): 144.

55. Development Workshop France example from UN International Strategy for Disaster Reduction, “Building Disaster Resilient Communities: Good Practices and Lessons Learned” (2007): [www.unisdr.org/eng/about\\_isdr/isdr-publications/06-ngos-good-practices/ngos-good-practices.pdf](http://www.unisdr.org/eng/about_isdr/isdr-publications/06-ngos-good-practices/ngos-good-practices.pdf).

56. Marla Petal et al., “Community-Based Construction for Disaster Risk Reduction,” chapter 10, *Hazards and the Built Environment: Attaining Built-in Resilience*, ed. Lee Boshier (London: Spon Press, 2008).

other communicative tool. As seen in the preceding examples, the success of an improvement could be enough to spur local investments in risk reduction.

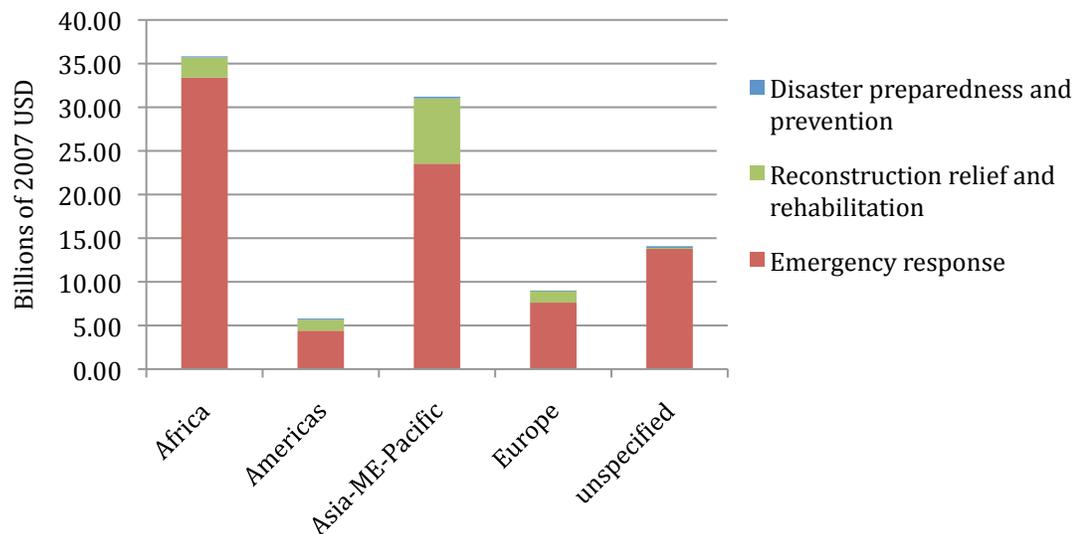
## From the ground up

Whether the best strategy for scaling up successful DRR is through creating national platforms, using existing public structures, engaging through the private sector, or encouraging ideas and practices to spread through grassroots channels will depend on the capabilities of communities and states and of the particular type of vulnerabilities and hazards a community or state faces. To accurately determine the components of disaster risk and the best ways to address it, all levels – from community to global – must be engaged strategically in the process.

# Funding for disaster risk reduction

In 2004, the UK Department for International Development committed to allocating 10 percent of disaster response funds to disaster risk reduction (DRR).<sup>57</sup> Possibly following that lead, in 2009, both InterAction, a US coalition of humanitarian and international development nongovernmental organizations (NGOs), and the International Council of Voluntary Agencies, a global network of humanitarian and international development NGOs, began advocating for a minimum of 10 percent of global humanitarian spending to be allocated towards DRR and for building the resilience of vulnerable communities. Currently, however, only two percent of humanitarian assistance, or 0.14 percent of all official development assistance, goes to DRR.<sup>58</sup> Figure 2 shows how small support for DRR is in comparison to support for emergency response and reconstruction within the humanitarian assistance sector.

**Figure 2. Global humanitarian assistance by region, cumulative 1995–2008.**



Source: Author calculations based on data from OECD.Stat Creditor Reporting System (accessed March 5, 2010).

57. Department for International Development, "DFID's 10% Commitment on Disaster Risk Reduction": [www.dfid.gov.uk/Documents/publications/disaster-risk-reduction-10pc.pdf](http://www.dfid.gov.uk/Documents/publications/disaster-risk-reduction-10pc.pdf) (accessed March 2010).

58. Nick Martlew, "Band Aids and Beyond: Tackling Disasters in Ethiopia 25 Years After the Famine," briefing paper 133, Oxfam International (October 22, 2009).

This lopsidedness is especially pronounced in African and Asian-Middle Eastern-Pacific disasters, where humanitarian funding for disaster preparedness and prevention is less than one percent of total humanitarian spending (Table 2).

**Table 2. Disaster prevention and preparedness as a share of global humanitarian assistance, 1995–2008.**

Region	Share
Africa	0.3%
Americas	2.5%
Asia-ME-Pacific	0.6%
Unspecified	1.4%

Source: Author calculations from OECD.Stat Creditor Reporting System (accessed March 5, 2010).

Since the UN reform process of the mid 2000s, the UN has organized its spending and coordination through clusters of actors within each sector, which do not account for the need for cross-cutting approaches, such as DRR, with the exception of the early-recovery cluster. This is where most DRR coordination takes place.

It is difficult to accurately assess US government spending on DRR. The US Agency for International Development (USAID) Office of Foreign Disaster Assistance (OFDA) reports that its spending on its “risk reduction” sector during fiscal year 2008 was three percent of its budget, or around \$21 million, but that “risk reduction includes geological and meteorological hazard mitigation activities and some disaster risk reduction activities. The sector does not include all disaster risk reduction activities, many of which are included in other sector totals.”<sup>59</sup> Two USAID employees put OFDA’s actual percentage at around 10 percent, or roughly \$74 million per year.<sup>60</sup> Meanwhile, the USAID Office of Food for Peace invests a minimum of 15 percent of its multiyear assistance program funds in development-related activities—\$354 million in 2008. However, it is not clear how much, if any, of this amount is related to resilience-building or disaster-related risk reduction.<sup>61</sup> The overall percentage of US government funding invested in DRR is virtually impossible to deduce. However, recent

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59. US Agency for International Development Office of Foreign Disaster Assistance, “Annual Report for Fiscal Year 2008,” [www.usaid.gov/our\\_work/humanitarian\\_assistance/disaster\\_assistance/publications/annual\\_reports/index.html](http://www.usaid.gov/our_work/humanitarian_assistance/disaster_assistance/publications/annual_reports/index.html) (accessed March 2010).

60. Interview with two Office of Foreign Disaster Assistance regional advisors (November 2009).

61. There is consensus within the government and the nongovernmental organization community that there is a distinct gap in the capacity of either US Agency for International Development Office of Foreign Disaster Assistance or Food for Peace to make disaster risk reduction and livelihoods-related investments following a disaster.

estimates for 2009 put the amount of the US foreign disaster aid budget devoted to DRR at 10 percent, or \$86.7 million.<sup>62</sup>

Although there is a movement to mainstream DRR into donor and national government development programs, which makes tracking investments in DRR more difficult, political support for DRR funding usually comes immediately after a disaster and from the humanitarian sector. Funding usually lasts for about one year and addresses emergency preparedness, leaving the underlying vulnerabilities exposed. Additionally, there is very little funding globally available for local governments and communities. DRR should be a priority before and long after disaster strikes and should be directed toward multiple stakeholder levels. While using the private sector is one strategy for reducing the disaster risk faced by vulnerable populations, very few disaster damages or livelihoods are insured. Loans from development banks are often costly and focused on reconstructing infrastructure, and donors since 1992 have met less than 70% of UN emergency appeals.<sup>63</sup>

Risk reduction must be comprehensive if it is to allay the additional unmet humanitarian need due to the increase in weather-related disasters as a result of climate change. As extreme climate events increase in frequency and intensity, the capacity of the world system to respond to and to bounce back from disasters may decrease relatively and unmet humanitarian need may grow even larger than it is today. However, a large-scale shift from response and relief to community-based DRR could increase people's resilience, making extreme weather events less damaging. As climate change becomes the source of increased hazards, governments should consider how to integrate DRR into National Adaptation Programs of Action as well as national development plans.

International NGOs generally have not mainstreamed DRR into their programming but do consider it part of their strategic orientation and advocacy agendas. In 2008, InterAction's DRR working group conducted a survey of NGOs and their integration of DRR into their programming.<sup>64</sup> The survey found that most NGOs have less than one staff member dedicated to DRR. DRR is typically not mainstreamed into development programming, and 70 percent of respondents base the sector in the humanitarian response unit (the survey also found that funding typically comes from crisis-reconstruction streams). When NGOs do integrate DRR into development programs, it is usually in the form of sustainable agriculture and natural resource management. Three-quarters of

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62. *Huffington Post*, "Climate Change Shifts Foreign Policy Paradigms" (September 7, 2010): [www.huffingtonpost.com/minute-to-save-the-world/climate-change-shifts-for\\_b\\_707758.html](http://www.huffingtonpost.com/minute-to-save-the-world/climate-change-shifts-for_b_707758.html) (accessed September 10, 2010).

63. UN Financial Tracking Service: <http://fts.unocha.org/> (accessed October 3, 2010).

64. Anne Castleton, "Where Do We Stand? Results of the First U.S.-Based NGO Baseline Disaster Risk Reduction Survey," *Monday Developments* 26, no. 4 (2008): [www.preventionweb.net/files/11408\\_MDApr20081.pdf](http://www.preventionweb.net/files/11408_MDApr20081.pdf).

survey respondents estimated that their NGO allocates five percent or less of their budget to DRR. However, half said that DRR is part of their strategic plan and two-thirds said that they do advocacy on risk reduction. InterAction itself started a working group on DRR in 2006.

Finally, the funding pathways discussed above should not be considered exhaustive. The largest thrusts will come from communities and national, subnational and local governments. Additional possibilities exist in the realm of the private sector through a global climate fund and through the adoption of DRR practices within development and climate change adaptation professions. For international bodies, further research in international funding mechanisms and DRR advocacy within development and adaptation communities is needed.

# Conclusions

Disaster risk reduction (DRR) can save lives, help avoid economic losses, and break the cycle of vulnerability of which disasters are a part. To this end, in 2005 the Hyogo Framework for Action (HFA) laid out a plan for governments, donors, international organizations, and nongovernmental organizations to reduce disaster risk in communities around the world. Approaches to reducing community vulnerabilities and strengthening capacities vary from place to place, but what is constant is the importance of involving community members in the decision-making process, empowering them to engage with their governments, building awareness of hazards and vulnerabilities, and increasing capacities to cope in times of extreme natural phenomena. However, in-depth studies have revealed that while there are many successful examples of DRR at the community level, top-down measures have not succeeded in making these practices and principles widespread. Thus, the most difficult aspect of implementing the HFA has been bridging national, sub-national, and community levels for effective risk reduction.

Creating national, multi-stakeholder platforms, using existing public structures, harnessing private-sector incentives, and encouraging natural and viral replication of programs and principles all offer paths to scaling-up DRR. Until such strategies are implemented or new ones are discovered and subsequently implemented, DRR will remain successful in only small pockets of communities.

Of particular interest to donors, DRR can offer a path to mitigating the growth of the gap in unmet humanitarian and disaster needs within the current system.<sup>65</sup> Investment in DRR in advance of disasters has the potential to lessen strain on the international system, save lives, and protect livelihoods.

Given the projected increases in the frequency and intensity of extreme weather-related events due to climate change, in the future DRR will become even more important as a tool, especially as it relates to events such as drought, storms, storm surges, windstorms, fires, and other weather-related events.

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65. A more comprehensive solution may lie in reforming our disaster response system from a voluntarily based response system to one that integrates disaster risk reduction into an insurance-type system that allows governments and humanitarian responders predictable, automatic funding payouts in cases of emergency, for example, based on the shocks suffered in a given geographical area.

# Appendix 1. Selected disaster risk reduction terminology<sup>66</sup>

## **Disaster**

A serious disruption of the functioning of a community or a society involving widespread human, material, economic, or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

Disasters are often described as a result of the combination of the exposure to a hazard, the conditions of vulnerability that are present, and insufficient capacity or measures to reduce or cope with the potential negative consequences. Disaster impacts may include loss of life, injury, disease, and other negative effects on human physical, mental, and social well-being, together with damage to property, destruction of assets, loss of services, social and economic disruption, and environmental degradation.

## **Hazard**

A dangerous phenomenon, substance, human activity, or condition that may cause loss of life, injury, or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

The hazards of concern to disaster risk reduction as stated in footnote 3 of the Hyogo Framework for Action are those “of natural origin and related environmental and technological hazards and risks.” Such hazards arise from a variety of geological, meteorological, hydrological, oceanic, biological, and technological sources, sometimes acting in combination. In technical settings, hazards are described quantitatively by the likely frequency of occurrence of different intensities for different areas, as determined from historical data or scientific analysis.

## **Vulnerability**

The characteristics and circumstances of a community, system, or asset that make it susceptible to the damaging effects of a hazard.

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66. See note #11.

There are many aspects of vulnerability, arising from various physical, social, economic, and environmental factors. Examples may include poor design and construction of buildings, inadequate protection of assets, lack of public information and awareness, limited official recognition of risks and preparedness measures, and disregard for wise environmental management. Vulnerability varies significantly within a community and over time. This definition identifies vulnerability as a characteristic of the element of interest (community, system, or asset), independent of its exposure; however in common use the word is often used more broadly to include the element's exposure.

### **Capacity**

The combination of all the strengths, attributes, and resources available within a community, society, or organization that can be used to achieve agreed goals.

Capacity may include infrastructure and physical means, institutions, and societal coping abilities, as well as human knowledge, skills, and collective attributes, such as social relationships, leadership, and management. Capacity also may be described as capability.

### **Disaster risk management**

The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies, and improved coping capacities to lessen the adverse impacts of hazards and the possibility of disaster.

This term is an extension of the more general term "risk management" to address the specific issue of disaster risks. Disaster risk management aims to avoid, lessen, or transfer the adverse effects of hazards through activities and measures for prevention, mitigation, and preparedness.

### **Resilience**

The ability of a system, community, or society exposed to hazards to resist, absorb, accommodate to, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.

Resilience means the ability to "resile from" or "spring back from" a shock. The resilience of a community in respect to potential hazard events is determined by the degree to which the community has the necessary resources and is capable of organizing itself, both prior to and during times of need.

## **Preparedness**

The knowledge and capacities developed by governments, professional response and recovery organizations, communities, and individuals to effectively anticipate, respond to, and recover from the impacts of likely, imminent, or current hazard events or conditions.

Preparedness action is carried out within the context of disaster risk management and aims to build the capacities needed to efficiently manage all types of emergencies and achieve orderly transitions from response through to sustained recovery. Preparedness is based on a sound analysis of disaster risks and good linkages with early warning systems, and includes such activities as contingency planning; stockpiling equipment and supplies; developing arrangements for coordination, evacuation, and public information; and associated training and field exercises. Preparedness activities must be supported by formal institutional, legal, and budgetary capacities. The related term “readiness” describes the ability to quickly and appropriately respond when required.

## **Prevention**

The outright avoidance of adverse impacts of hazards and related disasters.

Prevention (i.e., disaster prevention) expresses the concept and intention to completely avoid potential adverse impacts through action taken in advance. Examples include dams or embankments that eliminate flood risks, land-use regulations that do not permit any settlement in high-risk zones, and seismic engineering designs that ensure the survival and function of a critical building in any likely earthquake. Very often the complete avoidance of losses is not feasible and the task transforms to that of mitigation. Partly for this reason, the terms prevention and mitigation are sometimes used interchangeably in casual use.

## **Mitigation**

The lessening or limitation of the adverse impacts of hazards and related disasters.

The adverse impacts of hazards often cannot be prevented fully, but their scale or severity can be substantially lessened by various strategies and actions. Mitigation measures encompass engineering techniques and hazard-resistant construction, as well as improved environmental policies and public awareness. It should be noted that in climate change policy, “mitigation” is defined differently, being the term used for the reduction of greenhouse gas emissions that are the source of climate change.

## **Covariant Risk**

A risk, or combination of risks, that affects a large number of the insured items or people at the same time, for example an earthquake, or a major flood.<sup>67</sup>

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67. Jim Roth, Michael J. McCord, and Dominic Liber, "The Landscape of Microinsurance in the World's 100 Poorest Countries," The MicroInsurance Centre (April 2007).

## Appendix 2. Drought and resilience in the agriculture sector

Slow-onset hazards, such as drought, can become disasters and food security emergencies if resilience in a community is low. Building resilience is a way to reduce the likelihood that lives and assets, both tangible and intangible, will be lost in an extreme event. Although the examples highlighted below do not employ the disaster risk reduction (DRR) methodology, they present ideas worth considering for reducing vulnerability in cases where drought is identified as a hazard.

### Crop substitution and existing extension networks in Ethiopia

In Ethiopia, the nongovernmental organization (NGO) Food for the Hungry played a facilitative role in using existing national structures to help farmers adapt and build their resilience in spite of decreasing rainfall and a higher chance of drought as a result of climate change.<sup>68</sup> Farmers in a highland region of Ethiopia had traditionally grown wheat commercially and for subsistence; however, wheat requires six months to mature and as such has a much higher chance of failing due to a drought. So farmers began switching to potatoes, another locally consumed crop but one that requires only four months to mature, only to find that the traditional potato varieties are susceptible to blight and have low yields. After identifying this vulnerability and the local capacity for adaptation, Food for the Hungry went to the government agricultural research centers and discovered that they had developed blight-resistant, higher-yielding potatoes based on the local varieties, but they did not have the resources to fund extension to the farmers in the highlands. Food for the Hungry played a coordinating role in the facilitation of a grant from the US Agency for International Development to the Ministry of Agriculture to get Ethiopian extension agents out to the highland communities to test the improved varieties. The farmers, struggling with the blight and low yields, welcomed testing and subsequently adopted the improved varieties in their fields. Food for the Hungry's intervention was appropriate because they understood the local vulnerabilities and the particular agricultural challenges the highland farmers were facing as a result of climate change.

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68. This anecdote was presented by Andrew Barnes of Food for the Hungry at InterAction's Principles for Effective Adaptation Programs workshop (September 2009).

## An institutional mechanism for fighting drought in the Sahel

Sitting on the plains directly south of the Sahara desert, the Sahel is a geoclimatic region characterized by low rainfall and strong inter- and intra-year rain variability, meaning that droughts are likely and difficult to predict. Having recognized drought as the major hazard to West African farmers and food security, Gambia, Guinea-Bissau, Mauritania, Senegal, Burkina Faso, Mali, Niger, Chad, and Cape Verde created Comité permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel (CILSS) – The Permanent Inter-State Committee for Drought Control in the Sahel – in the mid-1970s to combat desertification.

CILSS is composed of three sites, which work in partnerships with local and international partners. The Executive Secretariat in Ouagadougou, Burkina Faso, maintains a documentation center where it houses, makes available, and disseminates technical and scientific publications on topics such as desertification and drought control, natural resources management, food security, and water control. CILSS centers in Bamako, Mali, and Niamey, Niger, conduct research, capacity building, and pilot projects. CILSS also conducts policy analysis, formulation, and advocacy, seeking to institutionalize policies that reduce drought-related vulnerabilities in its member states.

The 2007 Intergovernmental Panel on Climate Change Fourth Assessment Report indicated that the Sahel region of West Africa will likely suffer from increasingly variable rainfall and unpredictable droughts. As this occurs and threatens livelihoods, resources for regional institutions, such as CILSS, will likely be in higher demand than ever before. Interstate conflicts over resources could be avoided or worked out through interstate platforms such as CILSS.

## System of Rice Intensification in India

The System of Rice Intensification (SRI) is a system of rice growing developed in the 1980s in Madagascar. Supporters of the system report that it can achieve yields on par with or greater than those of traditional rice growing methods, while requiring fewer inputs, thus raising profits, boosting farmer resilience, and mitigating the environmental impacts of their farming. SRI requires less water, less seed, less fertilizer, less petroleum, and, by some accounts, less labor. Single seedlings are transplanted at a young age into meticulously leveled fields and spaced farther apart than their conventional counterparts. SRI rice plants are not inundated with water; rather, applications of water are made more precisely, and organic material is used to fertilize, aerate, and build up biomass in the soil.

However, in most reports, SRI methods do require more knowledge and time spent weeding and transplanting.

As the earth's climate changes, more agricultural areas will likely be subject to prolonged drought and flash floods.<sup>69</sup> SRI, because of the reduced use of water, can reduce pressure on scarce water resources, thus mitigating the impacts of drought. Increased soil aeration allows root systems to grow deeper, faster, and stronger, thus increasing the chances that rice plants will survive a flash flood or heavy rain.<sup>70</sup>

The inclusion of SRI as one of India's official programming approaches and focus areas may be attributed to efforts within multi-stakeholder platforms that have grown to include policymakers and other influentials. In 2006, the promoters of SRI within India began hosting a National Symposium on SRI. The first of these multi-stakeholder platforms included researchers, scientists, NGO representatives, and government officials. Since then, the organizers have expanded the invitees to include policymakers, academics, representatives from international organizations, and farmers. The symposiums have been important in facilitating networking for participants to share their points of view on SRI methods and in motivating forward-thinking research and action.

The Third Symposium took place in 2008 and brought key stakeholders to consensus on many aspects of SRI, including the need to make its case in a way that is palatable to policymakers, not only in India but in the larger rice-growing world. For example, participants discussed the idea of incorporating total factor productivity (TFP) into the concept of SRI. TFP considers such metrics as profit or yield per unit of input, as opposed to just yield per hectare, which until now has been the de facto indicator of agricultural success. Total factor productivity is of significant interest as resources, especially water, grow scarcer due to climate change and is a concrete system of measurement that could appeal to a wide audience that could include policymakers.

Among the participants in the national symposiums is a local NGO, the Watershed Support Services and Activities Network (WASSAN).<sup>71</sup> WASSAN's specialty is in designing and advocating for participatory processes, institutional designs, and administrative procedures that are based on field experience. Their Annual Network Meetings bring communities, NGOs, and government officials

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69. See note #4.

70. T.M. Thiyagarajan and Biksham Guja, "Single-Seedling Planting and the *Gaja* Planting System," "System of Rice Intensification Newsletter," no. 4 (April-May 2009): [http://sri-india.110mb.com/newsletter/SRI%20issue%206%20\(17-05-09\).pdf](http://sri-india.110mb.com/newsletter/SRI%20issue%206%20(17-05-09).pdf) (accessed March 2010).

71. For more information about the Watershed Support Services and Activities Network, see [www.wassan.org](http://www.wassan.org).

together, making them important advocacy platforms. WASSAN also participates on several state-level civil society committees.

The buy-in of local, state, and national government officials can make a huge difference in the scaling up of DRR practices as can the social entrepreneurship of extension agents. For instance, in the state of Tripura, India, the strong support of the Department of Agriculture and demonstration fields created by a local extension agent, Baharul Mazumder, helped drive the promotion of SRI by rice farmers.<sup>72</sup> After seeing SRI demonstration fields by set up by Mazumder, the state Department of Agriculture mandated that the locally elected leaders of *panchayats*, village-level governing bodies, visit the fields and consider how to adapt the system of principles to their districts.<sup>73</sup> In just three years, the number of farmers using SRI in the state went from 880 to 197,450, accounting for 16.7 percent of the rice land.<sup>74</sup>

The Department of Agriculture also supplies in-kind and cash incentives. However, research has shown that farmers would use the SRI principles without government incentives. They have seen the results and refer to it as “getting more out of less.”

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72. Shambu Prasad, “Report on an Exposure Visit on SRI Activities in Tripura,” Watershed Support Services and Activities Network (April 22–24, 2007): [www.wassan.org/sri/documents/Tripura\\_Report.pdf](http://www.wassan.org/sri/documents/Tripura_Report.pdf) (accessed March 2010).

73. See note #72.

74. See note #70.

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