

## Background Note: GAR13 call for papers

### Introduction: general disaster risk trends

All countries have a unique risk profile or footprint and experience a mix of extensive (frequently occurring, low-severity) and intensive (infrequent, high-severity) disasters. Both categories of disaster risk have important social and economic consequences.

### Intensive risk impacts

Most disaster mortality and massive destruction of housing and infrastructure is a manifestation of intensive risk.<sup>1</sup> In absolute terms, mortality risk is concentrated in low- and middle-income countries, and economic loss risk in high-income countries; in relative terms, however, both kinds of risk are disproportionately concentrated in low- and middle-income countries.<sup>2</sup>

Manifestations of intensive risk can lead to sudden and negative impacts in a country's GDP, especially when there is a lack of liquidity to respond.<sup>3</sup> However, the literature on the economic impacts of intensive disasters contends that in some cases the inflow of new capital for reconstruction (insurance pay-outs, international credits, humanitarian assistance and contingency financing) may stimulate the economy.<sup>4,5</sup>

However, these impacts almost certainly depend on the characteristics of a country's economy. Small countries, such as SIDS, with economies concentrated in one or two sectors, low levels of gross national savings and capital accumulation, and difficulties to participate in the global economy are less resilient and have more difficulty recovering than countries with large, diversified economies (where in any case most assets are insured).<sup>6</sup>

In developing countries, average annual damages from large disasters were 7.1 percent of GDP over the period 1977–2001, but in small states the average damages were much higher: 9 percent of GDP from 1997–2001, and peaking at 34.7 percent from 1987–1991.<sup>7</sup> Looking at examples from individual countries, the occurrence of three back-to-back tropical cyclones in 1989 and 1990 inflicted damages that effectively set back Samoa's

---

<sup>1</sup> ISDR, 2009. *Global Assessment Report on Disaster Risk Reduction*, Chapter 2. United Nations, Geneva; and ISDR, 2011. *Global Assessment Report on Disaster Risk Reduction*, Chapter 2. United Nations, Geneva.

<sup>2</sup> Ibid.

<sup>3</sup> Linnerooth-Bayer, J., and Mechler, R., 2007. Disaster Safety Nets for Developing Countries: Extending public-private partnerships. *Environmental Hazards* 7:1, 54 – 61.

<sup>4</sup> Fomby, T., Ikeda, Y., and Loayza, N., 2009. The Growth Aftermath of Natural Disasters. Policy Research Working Paper 5002. The World Bank, Washington, DC.

<sup>5</sup> Wasileski, G., Rodríguez, H., and Diaz, W., 2011. Business closure and relocation: a comparative analysis of the Loma Prieta earthquake and Hurricane Andrew. *Disasters* 35:1, 102 – 129.

<sup>6</sup> Mechler, R., 2009. Disasters and economic welfare: Can national savings help explain post disaster changes in consumption? The World Bank, Washington, DC.

<sup>7</sup> Mahul, O., and Gurenko, E., 2007. The Macro Financing of Natural Hazards in Developing Countries. World Bank Policy Research Working Paper 4075. The World Bank, Washington, DC.

economy 35 years;<sup>8</sup> and five years after Hurricane Mitch (1998), the GDP of Honduras remained 6 percent below pre-disaster forecasts.<sup>9</sup>

### **Extensive risk impacts**

Most damage to housing, local infrastructure and livelihoods are manifestations of extensive risk, accounting for 54 percent of houses damaged by disasters, and 55 percent of damage to health facilities.<sup>10</sup> Manifestations of extensive risk are concentrated primarily in low- and middle-income countries that are unable to manage the underlying risk drivers of poverty, environmental degradation, badly managed and planned urban growth and poor governance.<sup>11</sup> Most high-income countries have invested in risk management measures that significantly reduce extensive risks but which may increase exposure to intensive risk.<sup>12</sup>

Recurrent extensive losses (when monetized) may also have significant impacts on a country's GDP, particularly when large numbers of events lead to covariate impacts. Between 2005 and 2009, for example, extensive disaster losses cost Costa Rica 0.8 percent of GDP, equivalent to approximately 18 percent of public investment.<sup>13</sup>

A large part of the losses associated with extensive risk are not accounted for, not paid for by governments and are instead absorbed by low-income households and small businesses.<sup>14,15</sup> These losses are often translated into poverty outcomes, such as the increasing breadth and depth of poverty, increased inequality, declines in nutrition and health, among others.<sup>16</sup> There are measurable impacts on particularly vulnerable groups such as children. The cost of these indirect impacts has not been adequately measured.

### **Disaster risk trends**

Disaster risk levels have been increasing over the last 30 years, though in a differential manner. In terms of intensive risk, exposure has increased rapidly as a consequence of demographic and economic growth: growth has been concentrated in areas exposed to major hazards, such as cyclone-prone coastlines and river flood plains.<sup>17,18</sup> However, along with improved development countries have at the same time been improving their capabilities for disaster management, meaning that mortality risk has been static or

---

<sup>8</sup> Baritto, F., 2008. Disasters, Vulnerability and Resilience from a Macro-economic Perspective. Background paper for the *2009 Global Assessment Report on Disaster Risk Reduction*. UNISDR, Geneva.

<[http://www.preventionweb.net/english/hyogo/gar/2011/en/bgdocs/GAR-2009/background\\_papers/Chap2/Baritto-Macroeconomic-Report.doc](http://www.preventionweb.net/english/hyogo/gar/2011/en/bgdocs/GAR-2009/background_papers/Chap2/Baritto-Macroeconomic-Report.doc)> [Accessed 30 January 2012]

<sup>9</sup> Mechler, R. 2004. *Natural Disaster Risk Management and Financing Disaster Losses in Developing Countries*. Verlag fuer Versicherungswissenschaft, Karlsruhe.

<sup>10</sup> ISDR, 2011. Chapter 2.

<sup>11</sup> ISDR, 2009. Chapter 4.

<sup>12</sup> Hallegatte, S., 2011. How economic growth and rational decisions can make disaster losses grow faster than wealth. Policy Research Working Paper 5617. The World Bank, Washington, DC.

<sup>13</sup> *The Economist*, 2011. Central America: The tormented isthmus. 14 April 2011.

<sup>14</sup> Linnerooth-Bayer and Mechler, 2007.

<sup>15</sup> ISDR, 2009 and 2011.

<sup>16</sup> Benson, C., and Clay, E.J., 2004. *Understanding the Economic and Financial Impacts of Natural Disasters*. The World Bank, Washington, DC.

<sup>17</sup> Mahul and Gurenko, 2007.

<sup>18</sup> Hallegatte, 2011.

declining in most regions—with the exception of countries with very low conditions and capacities for vulnerability reduction.<sup>19</sup>

Countries have not, however, been able to address the vulnerabilities that account for economic loss, and they have had far more difficulty using measures such as land-use planning, building standards and environmental management to reduce vulnerability.<sup>20</sup> As a consequence economic loss risk has continued to rise, particularly in rapidly growing economies: for example OECD countries in the 1990s and East Asian economies in the 2000s.<sup>21</sup> Rapidly increasing exposure, without commensurate reductions in vulnerability, means rapidly increasing economic loss risk. Even high-income countries, where vulnerability is already low, are experiencing higher economic loss risk due to increased exposure.<sup>22</sup>

In developing countries, this situation has been exacerbated in cases where access to free or inexpensive post-disaster funding has discouraged proactive, *ex ante* risk management. Given the higher cost of risk financing solutions offered by private markets, some argue that it is rational for these countries to rely largely on free *ex post* aid and development banks' post-emergency lending.<sup>23</sup> Another alarming trend in developing countries is that during the aftermath of large disasters, governments tend to decrease spending and increase revenues simultaneously, leading to deeper adverse macroeconomic outcomes.<sup>24</sup>

The increase in losses associated with extensive risk has been even more pronounced, particularly in countries with rapidly increasing exposure. Even allowing for improvements in disaster reporting and other data biases, damages to housing and local infrastructure have soared over the last 20 years, a trend that appears to be directly linked to rapid urbanisation, environmental change, poverty and weak governance which also magnify weather-related hazards associated with flash floods, landslides or storms. Costa Rica's extensive flooding in 2010, for example, was influenced by rapid urbanisation—this despite the fact that the country as a whole has relatively strong environmental protection capacities.<sup>25</sup>

### **Private investment and disaster risk accumulation**

It is not only public, but also private investment that drives accumulated increases in exposure and risk. Public investment normally represents only 5–15 percent of a country's GDP, implying that private investments are responsible for the other 85–95 percent.<sup>26</sup> The relationship between private investment and disaster risk works in both

---

<sup>19</sup> DARA, 2011. Índice de reducción del riesgo. Análisis de capacidades y condiciones para la reducción del riesgo de desastres: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panamá y República Dominicana. <[http://daraint.org/wp-content/uploads/2010/10/IRR\\_pdf-baja.pdf](http://daraint.org/wp-content/uploads/2010/10/IRR_pdf-baja.pdf)> [Accessed 30 January 2012]

<sup>20</sup> ISDR, 2009 and 2011.

<sup>21</sup> ISDR, 2011. Chapter 2.

<sup>22</sup> Hallegatte, 2011.

<sup>23</sup> Mahul and Gurenko, 2007.

<sup>24</sup> Noy, I., and Nualsri, A., 2011. Fiscal storms: public spending and revenues in the aftermath of disasters. *Environment and Development Economics* **16:1**, 113 – 128.

<sup>25</sup> ISDR 2011, Chapter 2.

<sup>26</sup> Derived from: World Bank, 2010. *Africa development indicators*. The World Bank, Washington, DC; and European Commission, 2012. Eurostat. National accounts—GDP, Table 5: Investment, 2000, 2005 and

directions: private investment is negatively affected in disasters, but it also can generate and magnify disaster risks, particularly when hazards have not been adequately factored into investment planning and decision-making. The private sector therefore shares responsibility with the public sector for the increase in both intensive and extensive disaster risk. Businesses are also affected by disaster losses and impacts on the wider community, such as on the living conditions of the workforce, interruptions of supply chains, damage to infrastructure and energy distribution, loss of markets, etc.<sup>27,28,29,30</sup>

Historically, small and medium-sized businesses have proven to be more vulnerable to disasters than large corporations, and in terms of sectors firms in the wholesale/retail and service sectors have been more vulnerable than manufacturing and financial firms.<sup>31,32</sup> Therefore, it seems likely that globally mobile international corporations may not in general factor disaster risk very highly in their investment and business decisions. The *big business* segment of the private sector is likely to be affected principally by manifestations of intensive rather than extensive risk,<sup>33</sup> meaning that in any one place it is only affected by disasters every twenty or thirty years.

While there may be incentives to ensure business continuity, through increased emphasis on preparedness and planning, for example in the tourism sector,<sup>34</sup> it is unclear to what extent disaster risk has influenced corporate decision-making. Last year, the direct and indirect losses attributed to the Great East Japan Earthquake in March and the October floods in Thailand contributed to a record amount of losses—estimated by Munich Re to be US\$378 billion—with the latter disaster alone setting back global industrial production by 2.5 percent.<sup>35</sup> The magnitude of these losses indicates that this type of risk is not well accounted for in investment decisions. Factors such as labour costs, tax breaks, subsidies and other incentives from governments, as well as access to markets and political stability probably had more weight in corporate decision-making. The majority of the assets of this segment are likely to be insured, and with investment and business spread over a large number of different countries risk is effectively spread. In a time of rapid economic growth it is also easier to write off losses when they occur.

In contrast, the small and medium-sized businesses—especially those in low- and middle-income countries—are likely to be affected not only by intensive but also by extensive risks.<sup>36,37,38</sup> The destruction of road infrastructure, bridges, local facilities, etc. can have

---

2010. <[http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Main\\_Page](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Main_Page)> [Accessed 31 January 2012].

<sup>27</sup> Flynn, D. T., 2007. The impact of disasters on small business disaster planning: a case study. *Disasters* **31:4**, 508 – 515.

<sup>28</sup> Wasileski et al., 2011.

<sup>29</sup> Albala-Bertrand, J.M., 2006. Globalization and localization: an economic approach. In *Handbook of Disaster Research*, H. Rodriguez, E.L. Quarantelli and R.R. Dynes (eds.). Springer, New York, NY. pp. 147–167.

<sup>30</sup> Benson and Clay, 2004.

<sup>31</sup> Flynn, 2007.

<sup>32</sup> Wasilski et al., 2011.

<sup>33</sup> Albala Bertrand, 2006.

<sup>34</sup> Richie, B., 2008. Tourism disaster planning and management: From response and recovery to reduction and readiness. *Current Issues in Tourism* **11:4**, 315 – 348.

<sup>35</sup> *The Economist*, 2011. Natural disasters: Counting the cost of calamities. 14 January 2012.

<sup>36</sup> Flynn, 2007.

<sup>37</sup> Hallegatte, 2011.

drastic impacts on small businesses that do not have financial reserves, access to credit or insurance or redundant supply chains. Government-insurer or public-private partnerships (as they exist in high-income countries) are generally inadequate for providing security against financial shocks because households, farmers and businesses in these countries cannot easily afford commercial insurance to cover their risks, even if it is offered and backed by the government.<sup>39,40</sup> Losses of employment and livelihood in the small and medium-sized business sector are also correlated with the increased poverty or poor macroeconomic outcomes described above.<sup>41</sup>

In all sectors of business, while insurance may permit the recovery of lost or damaged plant and facilities, it does not cover loss of markets and customers while production and services are interrupted. As a consequence, therefore, disaster loss and impacts often lead to business closure, with downstream impacts on employment, taxation and the economic health and social welfare of localities and regions.

### **Disaster risk and the global political economy**

These risk trends have to be interpreted in the context of changes in the global political economy during the last several decades.<sup>42</sup> While each country has evolved very differently, some common characteristics of this evolution include: liberalisation of markets and a rapid increase in trade and capital flows; deregulation and a retrenchment in terms of the role of the state to plan and manage development; structural adjustment, with a reduction in social spending and guarantees, and the transfer of responsibilities to the private sector in areas such as health and pensions; growth in inequality (both between rich and poor countries and between the rich and poor within countries).<sup>43</sup> While many countries have seen unprecedented economic growth during this period, this has also been accompanied by an equally unprecedented increase in exposure to physical hazards, which has not been compensated for by reductions in vulnerability.

Economic growth has always been characterised by “boom-and-bust” business cycles, with inherent and recurrent crises attributed to overproduction.<sup>44</sup> These crises, in turn, are also often associated with excessive risk taking and speculation. For example, the global credit crisis that began in 2008 was preceded by a period of overproduction and speculation in the real estate sector (in the United States and Spain, for example)<sup>45</sup> and the financial sector—which was closely linked to the real estate sector via risky sub-prime mortgages, mortgage-backed securities and credit default swaps. The initial crisis has spread to other sectors and countries as a result of a weaker dollar, a decline in global trade, crises of investor confidence and other factors.<sup>46</sup>

---

<sup>38</sup> Wasileski et al., 2011.

<sup>39</sup> Linnerooth-Bayer and Mechler, 2007.

<sup>40</sup> Mahul and Gurenko, 2007.

<sup>41</sup> Benson and Clay, 2004.

<sup>42</sup> Benson and Clay, 2004.

<sup>43</sup> See, for example: Cornia, G.A., 1999. Liberalization, globalization and income distribution. Working Paper No. 157. United Nations University, World Institute for Development Economics Research, Helsinki; Sundaram, J.K., and Baudot, J. (Eds.), 2007. *Flat World, Big Gaps: Economic liberalization, globalization, poverty and inequality*. United Nations, New York, NY; and Mkandawire, P.T. and Soludo, P.T., 1999. *Our Continent, Our Future: African perspectives on structural adjustment*. Council for the Development of Social Science Research in Africa, Dakar, among others.

<sup>44</sup> Mitchell, W.C., 1913 (Reprinted 1970). *Business Cycles*. Burt Franklin, New York, NY.

<sup>45</sup> Roubini, N., 2006. Why Central Banks Should Burst Bubbles. *International Finance* 9:1, 87 – 107.

<sup>46</sup> Roubini, N., 2008. The Coming Financial Pandemic. *Foreign Policy* 165, 44 – 48.

Another factor common to both the configuration of financial and disaster risk is the degree to which the investment community has deceived itself to the true risk inherent in individual investments, abetted by absent or ineffective regulatory and ratings systems.<sup>47</sup> While in periods of growth countries and economic sectors may have greater willingness to accumulate disaster risks and capacity to absorb losses and impacts, this is likely to be less so in a period of deep recession. Just as the capacity of states to service debt payments or to meet social obligations is compromised, so is their capacity to deal with disaster.

### **Looking ahead: hypotheses concerning future disaster risk trends**

The current constellation of political and global economic crises has a number of possible implications for the direction of disaster risk trends. Firstly, slower economic growth may slow down the rapid increase in exposure experienced during the last 20 or 30 years, effectively decelerating or flattening the growth of economic loss risk. However, this effect may be offset by increases in hazard due to climate change impacts and due to increases in vulnerability as a consequence of less investment in vulnerability reduction, pressure to weaken environmental and other regulations and cutbacks in social protection due to austerity budgets.

Another recent and potentially game-changing trend in disaster risk is the increasing concatenation between different kinds of risk—a trend that does affect big business. In July 2005, for example, a week of heavy rains in Mumbai disrupted water, sewer, drainage, road, rail, air transport, power, and telecommunications systems;<sup>48</sup> and the Great East Japan Earthquake and its resulting tsunami disrupted the power grid, which in turn precipitated a nuclear disaster at the Fukushima Daiichi nuclear power plant.<sup>49</sup>

The capacity of any given economy to absorb losses and recover will likely be reduced in a context where intensive disaster impacts coincide with an existing economic crisis. Similarly, disaster losses in key economic sectors, such as energy or food agriculture, may precipitate spikes in food, fuel or energy prices or other crises, which in turn may impact broader economic performance.

In contrast, however, in a context of increasing competition for investment between countries, regions, cities and businesses, it is also possible that risk reduction could become a characteristic of sustainability, competitiveness and resilience. In other words, reduced risk may become as important as low labour costs, political stability, access to markets and other factors that have traditionally influenced investment and business decisions. If this hypothesis is correct, managing disaster risk may become a key determinant of social and economic welfare in the decades to come. While the key incentive may be to avoid unaffordable losses and impacts, disaster risk reduction may

---

<sup>47</sup> de Soto, H., 2011. Who owns this mess? *New York Times*, 2 December 2011. <<http://www.nytimes.com/2011/12/02/opinion/magazine-global-agenda-who-owns-this-mess.html?pagewanted=all>> [Accessed 31 January 2012]

<sup>48</sup> Revi, A., 2005. Lessons from the Deluge: Priorities for Multi-Hazard Risk Mitigation. *Economic and Political Weekly*, **40:36**, 3911 – 3916.

<sup>49</sup> Kent, R., 2011. Disaster risk reduction and changing dimensions and dynamics of future crisis drivers. Background paper to the *2011 Global Assessment Report on Disaster Risk Reduction*. UNISDR, Geneva. <[http://www.preventionweb.net/english/hyogo/gar/2011/en/bgdocs/Kent\\_2010a.pdf](http://www.preventionweb.net/english/hyogo/gar/2011/en/bgdocs/Kent_2010a.pdf)> [Accessed 31 January 2012]

also facilitate reduced poverty and inequality, healthier ecosystems, more liveable cities and easier adaptation to climate change.

In order to examine these issues and hypotheses, UNISDR seeks background papers for the *2013 Global Assessment Report (GAR13)* that address the following questions:

1. What has been the relationship between changes in the broader political economy since the 1970s and disaster risk trends? If the political economy has generated incentives for greater (or lesser) risk-taking at all levels, how has this manifested in patterns of disaster risk?
2. How do investment decisions in the private sector (in a context of incentives and regulation by the public sector) increase levels of disaster risk and, in some cases, transfer risk from private investors to governments and to other sectors of society?
3. To what extent are increasing disaster losses, in a context of reduced fiscal space, in both the public and the private sector, leading to a greater consideration of disaster risk in investment decision making? What are the tradeoffs between longer-run and short-run perspectives in such decisions, and what combination of incentives and regulation could encourage more investment in risk reduction and an optimisation of risk management strategies?
4. To what extent do austerity measures result in higher levels of socio-economic and/or physical vulnerability?

#### **Abstract submission process**

- The deadline for submitting abstracts is Friday 30 March 2012.
- Abstracts should be 300 words or less.
- After a blind, external peer-review of the abstracts, UNISDR will invite successful applicants to develop full GAR13 background papers, which will be due in June 2012 and will award small grants/stipends to the authors.
- In addition, UNISDR will coordinate the submission of all final papers to an academic journal for consideration in a special issue focusing on the economics of disaster risk.
- Submissions and questions: [delpech@un.org](mailto:delpech@un.org).