

More Than Half World Population Exposed to Natural Hazards

The World Bank has published a report entitled, "Natural Disaster Hotspots: A Global Risk Analysis," that presents a global view of disaster risks associated with some major natural hazards—drought, floods, cyclones, earthquakes, volcanoes and landslides. The report identifies high-risk geographic regions so that development efforts can be better informed and designed to reduce disaster-related losses in the future.

The report was produced by researchers from Columbia University, the World Bank, the Norwegian Geotechnical Institute and other partners. It indicates that 3.4 billion people, more than half the world's population, live in areas where at least one hazard could significantly impact them. Other key findings include:

- Approximately 20 percent of the Earth's land surface is exposed to at least one of the natural hazards evaluated;
- 160 countries have more than one quarter of their population in areas of high mortality risk from one or more hazards;
- More than 90 countries have more than 10 percent of their population in areas of high mortality risk from two or more hazards;
- In 35 countries, more than 1 in 20 residents lives at relatively high mortality risk from 3 or more hazards;
- More than one-third of the United States' population lives in hazard-prone areas, but only one percent of its land area ranks in the highest disaster-related mortality risk category;
- Taiwan may be the place on Earth most vulnerable to natural hazards, with 73 percent of its land and population exposed to three or more hazards;
- More than 90 percent of the populations of Bangladesh, Nepal, the Dominican Republic, Burundi, Haiti, Taiwan, Malawi, El Salvador, and Honduras live in areas at high relative risk of death from two or more hazards; and
- Poorer countries in the developing world are more likely to have difficulty absorbing repeated disaster-related losses and costs associated with disaster relief, recovery, rehabilitation and reconstruction.

On the topic of geographical distress and related impacts on poverty, Jeffrey D. Sachs, director of The Earth Institute at Columbia University wrote in his newly published *End of Poverty: Economic Possibilities for our Time*, "Adverse geography poses problems that can be solved, typically through physical investments and good conservation management. But adverse geography raises the costs of solving the problems of farming, transport, and health, and thereby makes it much more likely that a country will be caught in a poverty trap." Today's report, notes Professor Sachs, "offers precisely the

scientific underpinnings necessary to manage natural hazards in ways that reduce poverty and vulnerability.”

Dr. Maxx Dilley, report co-author and research scientist in disaster and risk management at the International Research Institute for Climate Prediction (IRI) at the Earth Institute, suggests that disaster preparedness become a standard element in development strategies. “With natural hazard cycles repeating themselves every few years, developing countries find themselves in a vicious cycle of loss and recovery without the ability to move forward and achieve sustainable development. We recommend that the international community manage disaster risk as an integral part of development planning rather than only as a humanitarian issue.”

The authors categorized regions by their level of exposure, or vulnerability, to multiple hazards. Vulnerability was estimated from hazard-specific mortality and economic loss rates for World Bank regions and country wealth classes, calculated from 20 years of historical loss data from the Emergency Events Database (EMDAT), developed by the Centre for Research on the Epidemiology of Disasters (CRED) in Brussels.

The information presented in the report aims to enhance disaster prevention and preparedness in high risk areas. The results are intended to inform measures that target more localized and detailed risk assessments, encourage implementation of risk-based disaster management and emergency response strategies, and promote development of long-term land use plans and multi-hazard risk management strategies. Additional recommendations from the report include prioritizing risk-reduction efforts in areas where risk management is most needed, and improving information exchanges among organizations and individuals working at local, national, regional and global levels.

Margaret Arnold, report co-author and program manager at the World Bank’s Hazard Management Unit (HMU), said, “Central America, East and South Asia, and large areas of the Mediterranean and the Middle East are at the greatest risk of loss from multiple hazards. Additionally, our analysis shows that in the last 20 years, developed countries have not faced relatively high mortality risk from hazards and related vulnerabilities, whereas industrial and lower-middle-income countries generally see larger economic losses.”

The report notes that from 1980 to 2003, the World Bank provided US\$14.4 billion in emergency lending to 20 countries, including India, Bangladesh, Mexico, Brazil, Honduras and China. With the exception of one of all 20 countries, half of their populations live in areas at a relatively high mortality risk from one or more hazards, and all the countries have at least half of their gross domestic product (GDP) generated in areas of relatively high economic risk from one or more

hazards.

“This has serious implications for how the World Bank works in these and other vulnerable countries. The analysis is part of our efforts to promote a more proactive, preventative approach to address disasters before they hit in order to enhance our mission of fighting poverty,” said Maryvonne Plessis-Fraissard, director of the World Bank’s Transportation and Urban Development Department.

Dr. Arthur Lerner-Lam, report co-author and director of the Center for Hazards and Risk Research (CHRR) at the Earth Institute agrees: “These statistics provide us with a strong warning that it is imperative to reduce the vulnerability of developing countries to natural hazards as part of any international poverty reduction strategy. This is one of our key recommendations to the international development community.”

In order to demonstrate how to reduce vulnerability and risk in areas that are prone to multiple hazards such as storm surges, landslides and drought, the project undertook case studies in Sri Lanka, Caracas, Venezuela and the Tana River basin in Kenya. The Caracas case study demonstrates how the vulnerability of urban areas can be reduced by incorporating locally appropriate risk-sensitive strategies into urban development planning.

The report was a joint effort of the World Bank’s HMU and the Earth Institute’s CHRR, IRI, and the Center for International Earth Science Information Network (CIESIN). The core project team included researchers from the World Bank’s Development Economics Research Group, and the International Center for Geohazards at the Norwegian Geotechnical Institute, in addition to the World Bank’s HMU and the Earth Institute. The project also worked closely with the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP), which recently published the report *Reducing Disaster Risk: A Challenge for Development*. Funding was provided by the United Kingdom’s Department for International Development and the Norwegian Ministry of Foreign Affairs through the ProVention Consortium, as well as by the U.S. Agency for International Development.

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