

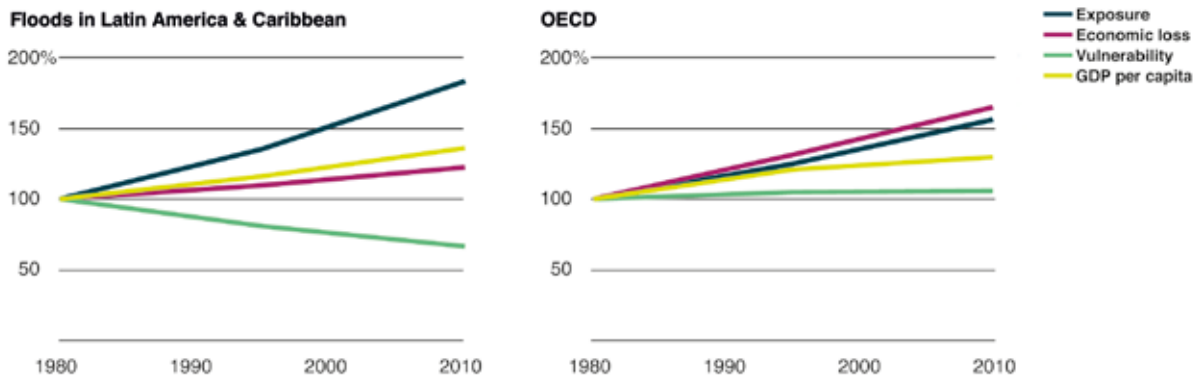
Annex 3. Trends of Exposure to Disaster Risk and References

There are two main drivers for the increase in disaster losses due to exposure, according to the [UN 2011 Global Assessment Report on Disaster Risk Reduction: Revealing Risk, Redefining Development](#). First, there is a net movement of people and economic activities to areas prone to floods and tropical cyclones. In the last 40 years, the world's population increased by 87%. In contrast, the proportion of the population living in flood-prone river basins increased by 114% and that of people located on coastlines that are exposed to cyclones by almost 200%. Most of this increase has occurred in low and lower-middle income countries.

Secondly, the absolute value of GDP exposed to tropical cyclones increased from less than USD 600 billion in the 1970s to USD 1.6 trillion in the new millennium, making increasing exposure one of the main drivers of increased disaster risk. This demonstrates that the economic incentives for choosing to invest in hazard-prone areas continue to outweigh the perceived disaster risks.

There is also some good news. Globally, the mortality risk from floods and tropical cyclones is going down. This is a significant achievement, but largely due to major successes in East Asia and the Pacific and in those countries where vulnerability reduction is outpacing increases in exposure. Along with improving development conditions, these countries (and some cities) have improved disaster management, thanks to better early warning systems, preparedness and response that have led to dramatically reduced mortality when hazards strike.

In contrast, economic loss risk is increasing in all regions. Worryingly, from a global economic perspective, the risk of economic losses due to floods in OECD countries is today rising faster than GDP per capita, meaning that the risk of losing wealth in weather-related disasters is increasing faster than that wealth is being created. This does not mean that countries are not reducing their vulnerability—they are. But these improvements are not happening fast or deeply enough to compensate for increasing exposure. The figures below demonstrate these points.



Read more at www.preventionweb.net/gar.

IPCC Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. Intergovernmental Panel on Climate Change, 2012.

This IPCC report addresses, for the first time, how integrating expertise in climate science, disaster risk management and adaptation can inform discussions on how to reduce and manage the risks of extreme events and disasters in a changing climate. The report evaluates the role of climate change in altering characteristics of extreme events. It assesses experience with a wide range of options used by institutions, organisations, and communities to reduce exposure and vulnerability and improve resilience to climate extremes. Among these are early-warning systems, innovations in insurance coverage, improvements in infrastructure, and the expansion of social safety nets. This report also incorporates case studies that illustrate specific extreme events and their impacts in different parts of the world, as well as a range of risk management activities.

The report provides information on how:

- Natural climate variability and human-generated climate change influence the frequency, intensity, spatial extent, and duration of some extreme weather and climate events;
- The vulnerability of exposed human society and ecosystems interacts with these events to determine impacts and the likelihood of disasters;
- Different development pathways can make future populations more or less vulnerable to extreme events;
- Experience with climate extremes and adaptation to climate change provides lessons on ways to better manage current and future risks related to extreme weather and climate events, and;
- Populations can become more resilient before disasters strike.

Key themes

- In parts of the world, increases in some extreme weather and climate events have been observed. Further increases are projected over the 21st century.
- Socioeconomic development, natural climate variations, and human-caused climate change influence climate—and weather-related disaster risk.
- Experience with disaster risk management and climate change adaptation provides a knowledge base for developing effective approaches to prepare for and respond to extreme events and disasters.

Read more at www.preventionweb.net/go/srex.

Guide to Climate Change Adaptation in Cities. World Bank, 2011.

This is a practical resource on responding to the challenges of climate change adaptation in cities. The principal intended audience is city officials and practitioners in developing countries who are beginning to consider the issues of climate change adaptation, and can find in this guide an introduction and comprehensive overview of this evolving topic. The

Guide offers examples of good practices and successful experiences and describes other available resource materials and tools. It outlines practical perspectives, showing ways to link climate change to community priorities and other important city issues such as disaster risk reduction, economic development, public health, sustainability, food security and other priorities. In so doing, it can contribute to the development and implementation of adaptation plans in cities, strengthening capacities and helping to catalyze dialogue on adaptation among city managers and other stakeholders. This knowledge product was prepared by the World Bank, with the participation of ICLEI and MIT, and produced through the World Bank-UNEP-UN-HABITAT Joint Work Programme on Cities and Climate Change, supported by the Cities Alliance.

Read more at <http://go.worldbank.org/EEBXSYPRO>.

Cities and Flooding: A Guide to Integrated Urban Flood Risk Management for the 21st Century. World Bank, GFDRR, 2012.

This document provides operational guidance to policy and decision makers and technical specialists in cities in developing countries on how to manage the risk of floods in a quickly transforming urban environment and changeable climate. It takes a strategic approach in which appropriate measures are assessed, selected and integrated into a process that both informs and involves the full range of stakeholders. Illustrated with over fifty case studies, a series of “how-to” sections and a set of guiding policy principles, the Guide embodies the state-of-the-art on integrated urban flood risk management.

Integrated urban risk management is a multi-disciplinary and multi-sectoral approach that falls under the responsibility of diverse government and non-government bodies. Flood risk management measures need to be comprehensive, locally specific, integrated, and balanced across all involved sectors. The Guide builds on the following principles:

- Every flood risk scenario is different: there is no flood management blueprint.
- Designs for flood management must be able to cope with a changing and uncertain future.
- Rapid urbanization requires the integration of flood risk management into regular urban planning and governance.
- An integrated strategy requires the use of both structural and non-structural measures and good metrics for “getting the balance right.”
- Heavily engineered structural measures can transfer risk upstream and downstream.
- It is impossible to entirely eliminate the risk from flooding.
- Flood management measures have multiple co-benefits over and above their flood management role.
- Clarity of responsibility for constructing and running flood risk programs is critical.
- Implementing flood risk management measures requires multi-stakeholder cooperation.
- It is important to consider the wider social and ecological consequences of flood management spending.
- Continuous communication to raise awareness and reinforce preparedness is necessary.
- Plan to recover quickly after flooding and use the recovery to build capacity.

Read more at: www.gfdr.org/urbanfloods