REDUCING DISASTER RISK
a challenge for development

A Global Report from:
United Nations Development Programme
Bureau for Crisis Prevention and Recovery
Reducing Disaster Risk: a challenge for development

Why a global UNDP Report on Disaster Risk

- Economic losses and the numbers affected by disasters continue to increase.
- Disaster loss is challenging the achievement of the Millennium Development Goals in many countries.
- International community still focused on humanitarian actions to mitigate losses.
- No-one is addressing disaster risk through development
What are the objectives of the Report

- Demonstrate through quantitative analysis that disaster risk is *an unresolved problem of development*
- Identify and promote development policy alternatives that can reduce disaster risk and therefore facilitate the achievement of the MDGs
- Contribution by UNDP to the UN International Strategy for Disaster Reduction (ISDR)
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How are development and disaster risk linked

- Disaster risk is lower in high development countries than in low development countries.
- Development processes intervene in the translation of physical exposure to hazards into disaster risk.
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Disaster Risk Index (DRI)

- A global index that compares risk of mortality between countries
- Measures the population exposed to earthquakes, tropical cyclones and floods in each country
- Calculates the relative human vulnerability to each of the hazard types
- Identifies vulnerability indicators that correlate with risk
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Physical Exposure

- Physical exposure = \textit{Number of people located in areas where hazardous events occur combined with the frequency of hazard events.}
- Absolute exposure is larger in countries like India and China. Relative exposure is higher in small-island developing countries.
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Physical Exposure to Cyclones

Human exposure to tropical cyclones, 1980 - 2000

- Million people
- Annual average
- Annual average in proportion to population

- China
- India
- Philippines
- Japan
- Bangladesh
- USA
- Viet Nam
- Mexico
- Republic of Korea
- Cuba
- Democratic People's Republic of Korea
- Thailand
- Madagascar
- Myanmar
- Indonesia
- British Virgin Islands
- Vanuatu
- Mauritius
- Japan
- Reunion
- Bahamas
- New Caledonia
- Antigua and Barbuda
- Fiji
- Puerto Rico
- Anguilla
- Cuba
- Guadeloupe

Source: UNDP/CPER, UNISDR, Geoscientists
Relative Vulnerability

- The key indicator in the DRI
- Measures the number of people killed in a country due to a particular natural hazard with respect to the number of people exposed.
- Countries that suffer a far higher loss of life than others who are equally exposed have a higher relative vulnerability to the hazard in question.
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Earthquakes

Relative Vulnerability for earthquakes

Average Annual Deaths, 1980 - 2000

Average Population Exposed to Earthquakes, 1980 - 2000

Source: The ODP/GRD/International Disaster Database and UN/GRID-Geneva
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Relative Vulnerability Indicators for Earthquakes

Islamic Republic of Iran 1,074
Turkey 345
India 211
Italy 175
Algeria 109
Mexico 103
Japan 9
Costa Rica 2.91
United States of America 0.97
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Tropical Cyclones

Relative Vulnerability for Tropical Cyclones

Source: The UN/REACH International Disaster Database and WIR/ILS, Geneva
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Tropical Cyclones in SIDS

Relative Vulnerability for Tropical Cyclones in Small Islands

Average Annual Deaths, 1980 - 2000

Average Population Exposed to Tropical Cyclones in Small Islands, 1980 - 2000

Source: The Rockefeller Foundation and UN/ISDR/ISDR-Geneva
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Relative Vulnerability Indicators for Tropical Cyclones

Honduras 321
Nicaragua 202
Bangladesh 54
Haiti 13

United States of America 2.49
Australia 1.21
Japan 0.17
Cuba 0.16
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Floods

Relative Vulnerability for Floods

Source: The EM-DAT GFDR/CRED International Disaster Database and UNEP/GRID-Geneva
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Relative Vulnerability Indicators for Floods

Venezuela 491
Morocco 103
Botswana 70
Mozambique 67

United States of America 2.3
Argentina 1.5
Germany 0.25
Vulnerability Indicators that correlate with Risk

- Earthquakes: countries with rapid urban growth
- Tropical cyclones: countries with large rural populations and a low rank on the Human Development Index (HDI).
- Floods: countries with low GDP per capita and low local population densities
Limitations of the DRI

- Mortality calibrated
- 20 year reporting period
- Large and medium scale disasters
- Only three natural hazards
- Limited bundle of social, economic and ecological indicators.
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How does Development Configure Risk?

- DRI identified urbanisation and rural livelihoods as key development processes configuring risk.
- Urbanisation analysed in the context of economic globalization.
- Rural livelihoods analysed in the context of global climate change.
- Cross-cutting themes: governance, violence and armed conflict; social capital; HIV/AIDS and disease.
Conclusions and recommendations

- Governance for risk management
- Mainstreaming disaster risk into development planning
- Factoring risk into disaster recovery and reconstruction
- Integrated climate risk management
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- Managing the multifaceted nature of risk
- Compensatory risk management (disaster preparedness and response)
- Addressing gaps in knowledge for disaster risk assessment
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Interactive maps on relative vulnerability

http://gridca.grid.unep.ch/undp/analysis/result.php
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Interactive maps on relative vulnerability
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ANNEX
## Casualties (1980-2000) as recorded in CRED

<table>
<thead>
<tr>
<th>Disaster types</th>
<th>Deaths</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drought</td>
<td>563'701</td>
<td>46.54 %</td>
</tr>
<tr>
<td>Wind storm</td>
<td>251'384</td>
<td>20.76 %</td>
</tr>
<tr>
<td>Flood</td>
<td>170’010</td>
<td>14.04 %</td>
</tr>
<tr>
<td>Earthquake</td>
<td>158’551</td>
<td>13.09 %</td>
</tr>
<tr>
<td>Volcano</td>
<td>25’050</td>
<td>2.07 %</td>
</tr>
<tr>
<td>Extreme temp</td>
<td>19’249</td>
<td>1.59 %</td>
</tr>
<tr>
<td>Slide</td>
<td>18’200</td>
<td>1.50 %</td>
</tr>
<tr>
<td>Wave/surge</td>
<td>3’968</td>
<td>0.32 %</td>
</tr>
<tr>
<td>Wild fire</td>
<td>1’046</td>
<td>0.06 %</td>
</tr>
<tr>
<td>Insect infestation</td>
<td>0</td>
<td>0.00 %</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1’211’159</td>
<td>100%</td>
</tr>
</tbody>
</table>

Papua New Guinea and Ecuador, which are affected by tsunamis (respectively 67.8 and 14.3% of national casualties); landslides are also causing significant impact in Indonesia (13.88%), Peru (33%) and Ecuador (10.2%).
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Why a time span of 1980-2000

Due to significant improvement in access to information (telecommunications, media coverage, internet, satellites coverage,…) the number of reported disasters is much better covered since 1980 than previously.