



Quantifying Disaster Risk and optimizing investment

Protecting development gains: A path towards resilience

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A/RES/68/211: International Strategy for Disaster Reduction

29. Encourages the further implementation of all priorities for action of the Hyogo Framework for Action and, in particular, the carrying out of periodic risk assessments, the establishment of reliable disaster statistics, inter alia, a disaster loss database, and the dissemination of and ensured access to and availability of risk information, and, in order to assess outcomes, requests the Secretary-General to lead a review process on the 10 years of implementation of the Hyogo Framework;



HFA2: What is emerging?

(based on zero draft)

Expected outcome: *The substantial reduction of disaster losses, in lives, and in the social, economic and environmental assets of persons, communities and countries.*

Goal: *The prevention of disaster risk creation and the reduction of the existing disaster risk through economic, social, cultural and environmental measures which address exposure and vulnerability, and thus strengthens resilience.*

Priority 1: *Understanding disaster risk*

Priority 2: *Strengthening governance and institutions to manage disaster risk*

Priority 3: *Investing in economic, social, cultural and environmental resilience*

Priority 4: *Enhancing preparedness for effective response, and building back better in recovery and reconstruction*



HFA2:Targets *(based on zero draft)*

1. *reduce disaster mortality by [a given percentage in function of number of hazardous events] by 20[xx];*
2. *reduce the number of affected people by [a given percentage in function of number of hazardous events] by 20[xx];*
3. *reduce disaster economic loss by [a given percentage in function of number of hazardous events] by 20[xx];*
4. *reduce disaster damage to health and educational facilities by [a given percentage in function of number of hazardous events] by 20[xx];*
5. *and increase number of countries with national and local strategies by [a given percentage] by 20[xx].*

How to measure these targets? EVIDENCE



Our collective aim...

“Substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries”

“Expected outcome” of the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters (Hyogo Framework) and HFA2

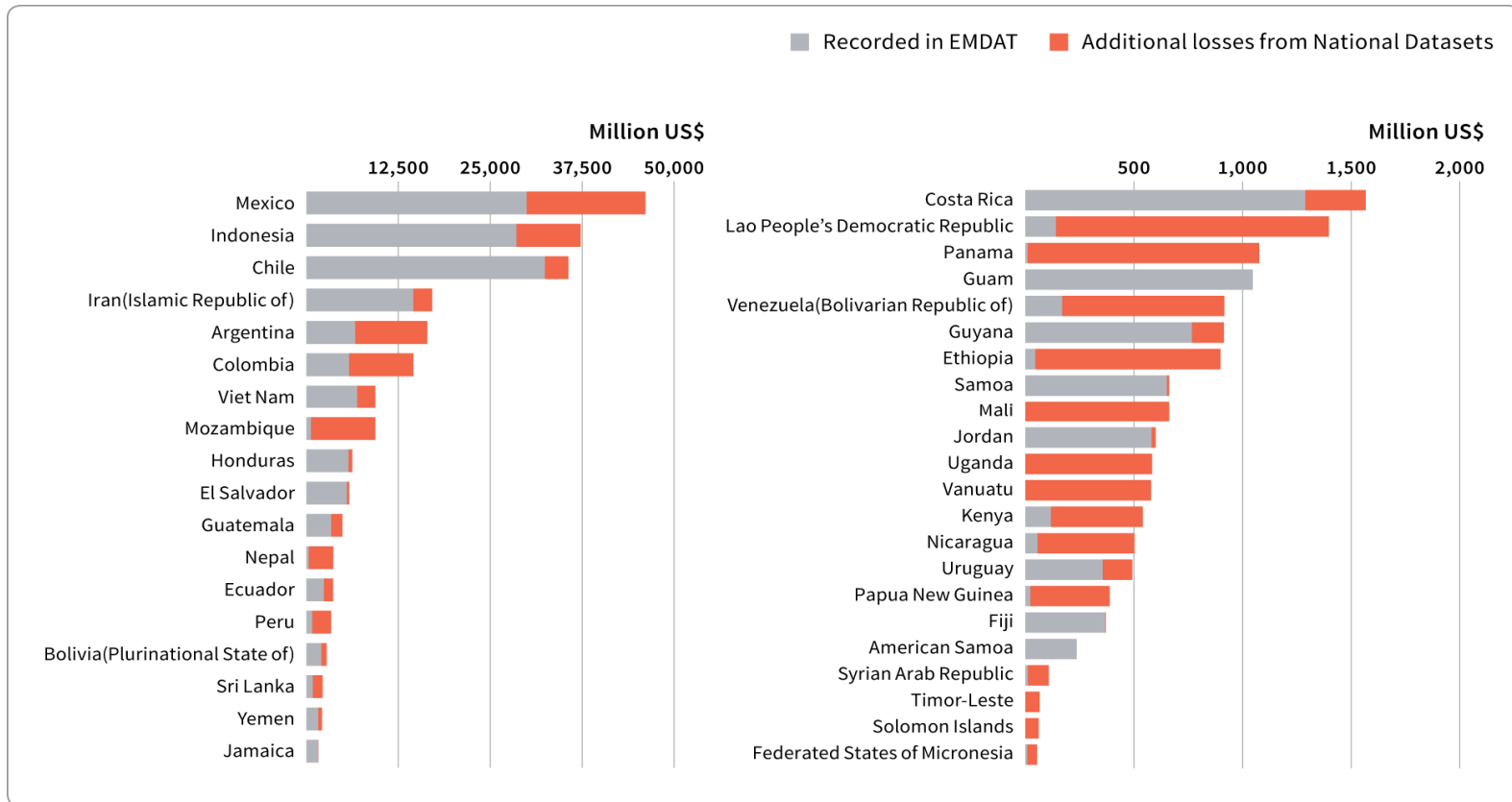


Risk can not be ‘Managed’ or ‘Reduced’ if it can not be ‘Measured’

*One starting point of understanding
‘Disaster Risk **Reduction**’ and the path
towards ‘**Resilience**’ could be by :-*

Measuring ‘Losses’ over time

Escalating losses



Total economic losses (1981 – 2011) in million US\$ for selected countries

Source: GAR 2013

Country perspective: Investment decisions

STOCK OF
DISASTER
RISK:
UNDERSTANDING
DISASTER
RISK

Hazard,
Exposure,
Vulnerability

Disaster losses
(*past*)

Future Risk
(*Probability of
losses or Annual
Average Loss*)



OPTIMIZING INVESTMENT IN DRR
OR THINKING INVESTMENT IN DRR

- Q1 How much fund should be allocated to DRM? (size of total pie)
- Q2 How to decide the most efficient and effective allocation of money between option A (risk reduction) and B (risk transfer and risk retention)? (how to divide the pie)
- Q3 How to comprehensively plan and finance risk reduction policies? For example, how to design risk sensitive investment mechanism?
- Q4 How to design risk transfer and risk retention schemes?



Country perspective: Understanding risk Evidence

- **How much was lost ?** (*Human and economic loss accounting from past disasters*) – **Loss Accounting**
- **How much will be lost in future?** (*Annual Average loss*) – **Risk Modeling**
- **Hazards** (*What hazards are relevant? What are the frequency and intensity of the hazards? What is the likely hood of occurrence of hazards? ...- Hazard modeling*)
- **Exposure: What physical assets are at risk ?** (*roads, buildings, critical infrastructure, electricity, telecom, ...and so on*)
- **Vulnerability:** (*Physical, Economic, Financial, Social, Environmental, Educational, Cultural, Political, Institutional*)
- **Accounting damages during disaster** (*PDNA, DaLA ...*)

Evidence base: At national level



Disaster losses <i>(Past and future)</i>	Human losses, housing, infrastructure, crop,
Hazard	Earthquakes, floods, cyclones....etc(frequency, intensity..)
Vulnerability	Poverty, educational, social, cultural.....
Exposure	Assets (buildings, roads, ...) at risk
Socio economic data/ Social statistics (baseline)	Poverty, income, population, gender, disability disaggregated, ...
Spatial/ GIS data/ Climate data	rainfall, climate variability, digital data...
Current status of investment and expenditure in DRR	Financial resources for mitigation, prevention,
Capacity	Technical knowledge, awareness, resources....
Post disaster damage and loss	Damage assessment, (event specific)

Visible layers:

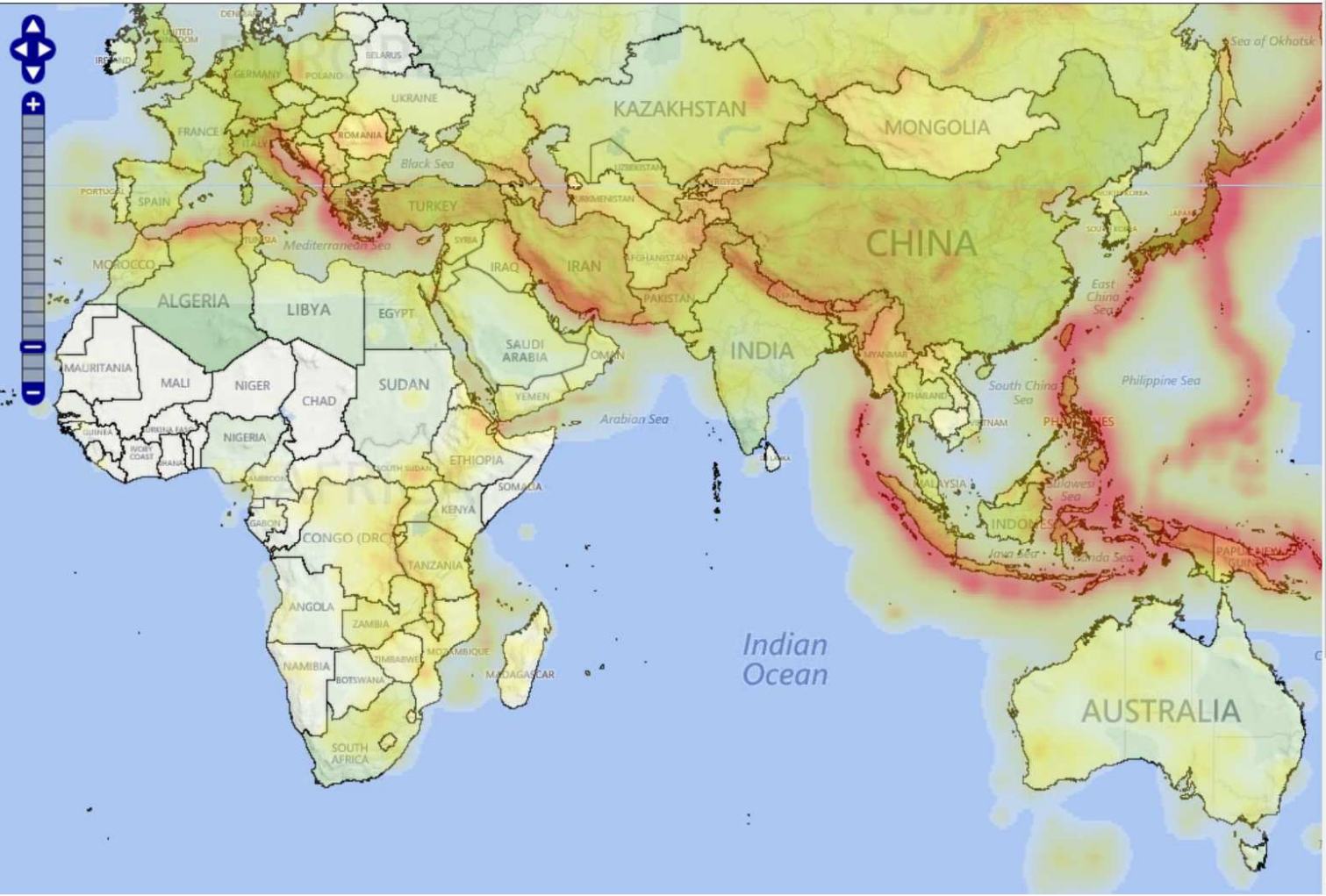
- Urban capital stock (buildings monetary value)
- Earthquake Annual Average Loss
- Earthquake Probable Maximum Loss (250 years)

* No Data
0
90
7400
630000
Million USD

- Cyclone Wind Annual Average Loss
- Cyclone Wind Probable Maximum Loss (250 years)
- Earthquake Hazard (Spectral Acceleration) 250 y.

* No Data
5
15
110
1100
cm2/s

- Cyclonic Wind hazard - 250 y..



<http://risk.preventionweb.net>



Integrated Research on Disaster Risk (IRDR)

Peril Classification and Hazard Glossary

DATA Project Report No. 1





Thank You ...