



HAITI, 2011

DIARY OF AN IGNORANT SCIENTIST

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Photograph K. Hudnut, USGS



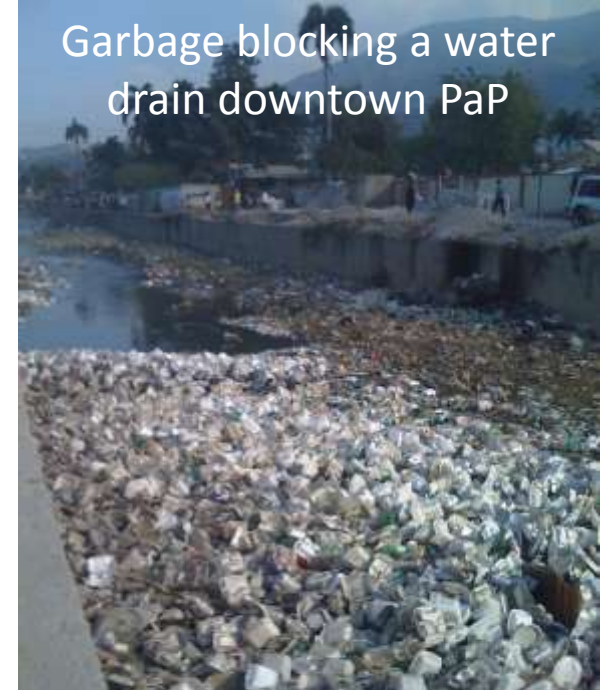
The “other” context

- Human development index (1-0) = 0.532 => 149th place out of 182 countries ranked, lowest in Caribbean–Central America.
- Human poverty index (HPI) = 31.5% => 97th out of 135 countries ranked in 2007.
- 76% of population below poverty line (< 2\$/day), 56% below extreme poverty (< 1\$/day).
- Literacy rate = 53%
- ½ population “food insecure”
- Life expectancy = 44 years

⇒ Priority: reduce poverty via development.

⇒ Opportunity/challenge: link earthquake safety to sustainable development (?)

Garbage blocking a water drain downtown PaP



Frankétienne, “Le Roi”

Hazard	GDP affected	People affected	Fatalities
2004 hurricane Jeanne	7%	300 000	5 000
2007 hurricanes Dean+Noel	2%	194 000	330
2008 hurricanes FGHI	15%	1 000 000	800
2010 earthquake	100%	2 000 000	222 500
Total		3 494 000	228 600

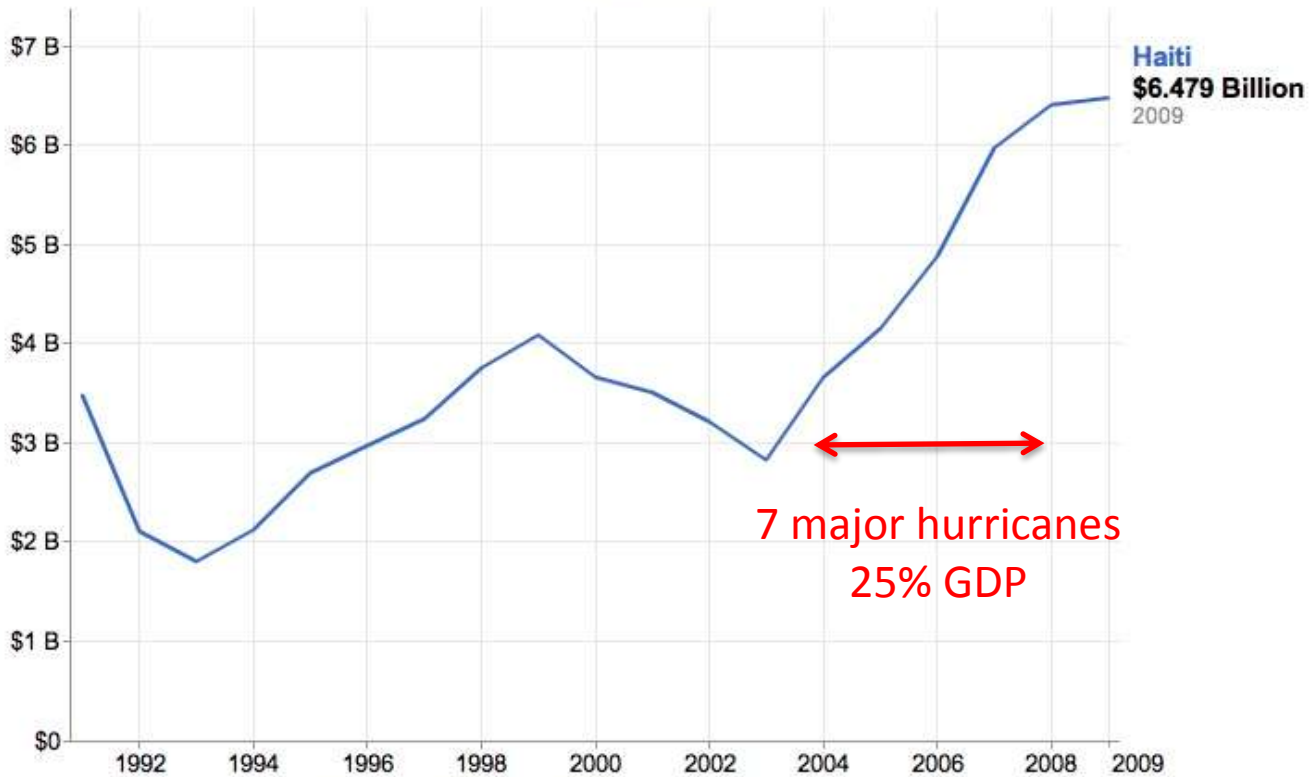
Source PDNA, 2010

“The most destructive event a country has ever experienced when measured in terms of the number of people killed as a share of the country’s population.” IDB, 2010



Gross Domestic Product

GDP in current U.S. dollars. Not adjusted for inflation. [More info »](#)



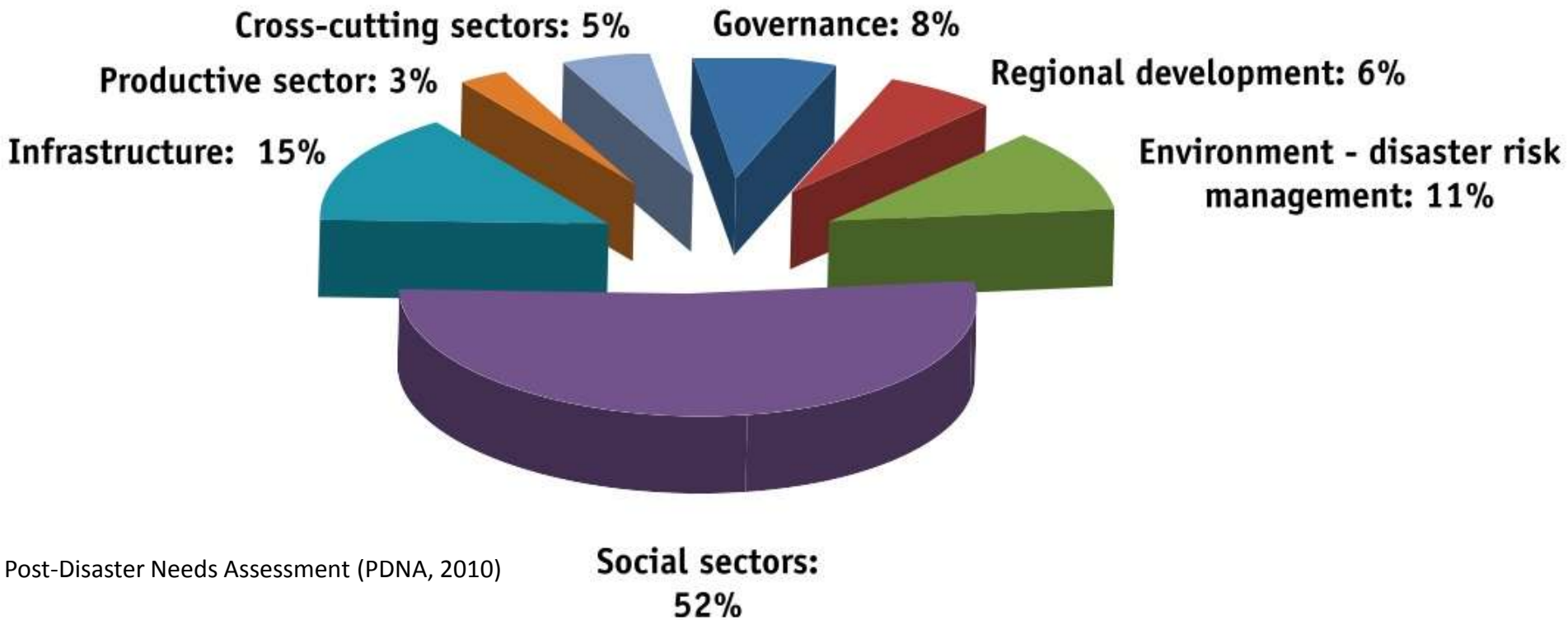
Data source: [World Bank, World Development Indicators](#) - Last updated December 21, 2010

GDP primarily controlled by political factors

2010 GDP should be down – recovery speed?

Beyond: will the earthquake help?

Proposed needs by sector (up to 3 years)



DRR => better policies => reduce losses => improved development => reduce poverty

Reduce poverty => boost economy, social sectors, and governance => improved development => resources => DRR

The natural disaster “Hot Spots”

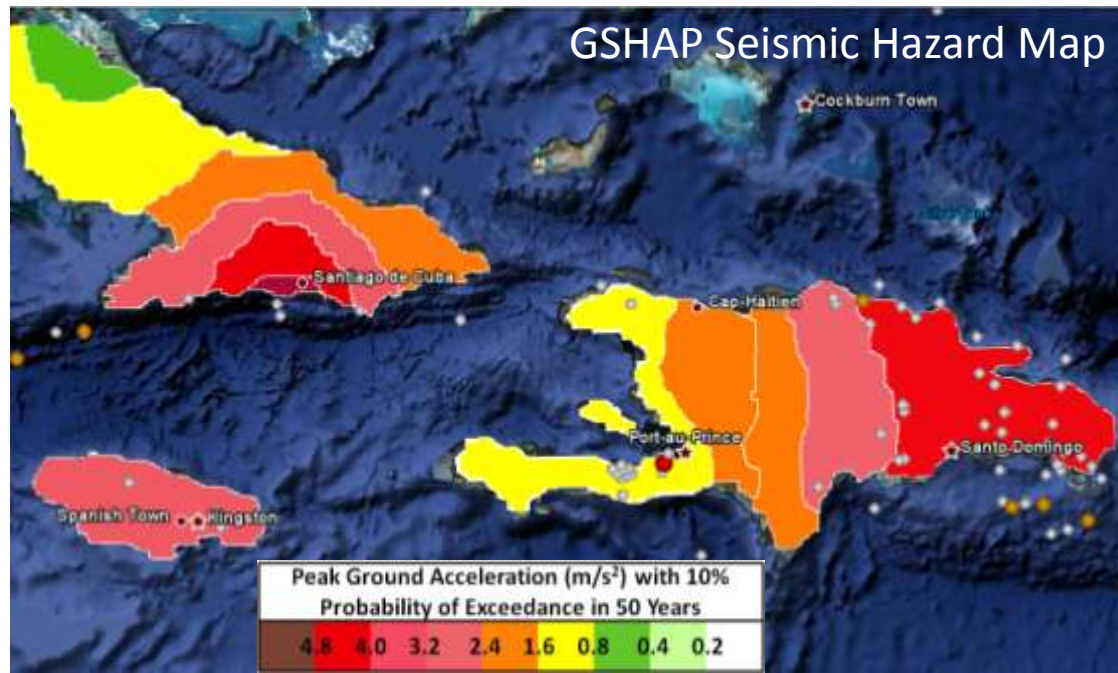
CENTER FOR HAZARDS & RISK RESEARCH
AT COLUMBIA UNIVERSITY



- DRM specialists should take seismology 101...
- Seismologists have not paid attention...

Table 1. Summary of data sources for each hazard.

Hazard	Parameter	Period	Resolution	Source(s)
Cyclones	Frequency by wind strength	1980-2000	30"	UNEP/GRID-Geneva PreView
Drought	Weighted Anomaly of Standardized Precipitation (50% below normal precip. for a 3-month period)	1980-2000	2.5°	IRI Climate Data Library
Floods	Counts of extreme flood events	1985-2003*	1°	Dartmouth Flood Observatory, <i>World Atlas of Large Flood Events</i>
Earthquake	Expected $p_{ga} > 2 \text{ m/s}^2$ (10% probability of exceedance in 50 years)	n/a	sampled at 1'	Global Seismic Hazard Program
	Frequency of earthquakes > 4.5 on Richter Scale	1976-2002	sampled at 2.5'	Advanced National Seismic System Earthquake Catalog
Volcanoes	Counts of volcanic activity	79-2000	Sampled at 2.5'	UNEP/GRID-Geneva and NGDC
Landslides	Index of landslide and snow avalanche hazard	n/a	30"	NGI



Should international donors invest in seismic risk reduction in Haiti?

NO

Human Exposure

Modelled number of people present in hazard zones that are thereby subject to potential losses.

Hazard type	Population exposed	Percentage of population	Country ranking
Cyclone	246,272		19th out of 89
Drought	997,929		53rd out of 184
Flood	75,554		35th out of 162
Landslide	8,438		23rd out of 162
Earthquake	13,950		97th out of 153
Tsunami	0		0th out of 265

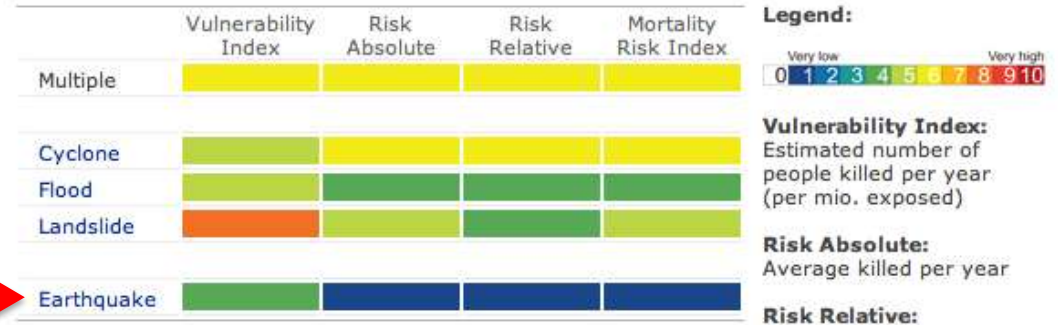
Economic Exposure

Modelled amount of GDP (Gross Domestic Product) present in hazard zones that are thereby subject to potential losses.

Hazard type	GDP exposed (billions-US\$)	Percentage of GDP	Country ranking
Cyclone	0.11		40th out of 89
Flood	0.02		88th out of 162
Landslide	0.03		61st out of 162
Earthquake	0.04		126th out of 153
Tsunami	0.00		0th out of 265

Vulnerability and Risk

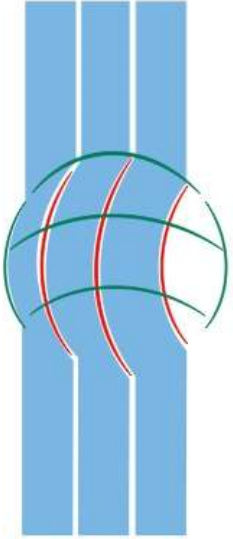
The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.



Hyogo Framework for Action 2005-2015

Building the Resilience of Nations and communities to disaster

- Goal: *“The substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries.”*
1. Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation (*institutional*).
 - 2.
 - 3.
 - 4.
 5. Strengthen disaster preparedness for effective response at all levels (*civil protection*).



UN International Strategy
for Disaster Reduction

World Conference on Disaster Reduction

18-22 January 2005, Kobe, Hyogo, Japan

Positive indicators

- GoH:
 - Orders seismic macro- and microzonation
 - Orders “roadmap to seismic safety”
 - Publishes eq-safe construction and repair guides
 - Works on a building code
 - Wants to include risk reduction in lodging projects
 - Wants to include risk reduction in urban planning
 - Orders “Earthquake plan for the North”
- Warning:
 - What is Haiti-led versus “led” by outside interests?
 - Long-term political will for DRR?
 - Societal will for DRR?



Conclusions

- Earthquake hazard in Haiti
 - Scientists knew and talked about it
 - Very little impact: listened to, but not heard
 - No local critical mass to relay advocacy
 - Scientists like problems, politicians want solutions
- Translating (earthquake) science into policy
 - Starts with the scientists ...
 - ... willing to do the extra step out of their comfort zone
 - One cannot do DRR in the void: social, economy, financial, politics, culture, etc.
- “DRR? We want to do it, but tell us what “IT” is....” (large anonymous donor)
 - Many projects are done for the sake of doing a project
 - Little understanding of natural processes in DRR community
 - Opportunities to have an impact – if scientists accept to “get dirty”, mix up with DRR crowd.

