

## Exploring Vulnerability and Resilience In Land Tenure Systems after Hurricanes Mitch And Ivan

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FIG – April 2010

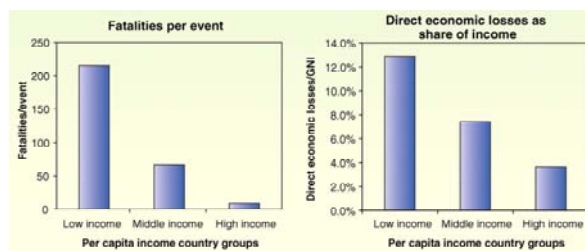
### Structure of Presentation

- Introduction
- Grenada (Ivan)
- Honduras (Mitch)
- Vulnerability and Resilience
- Role of Land Professional



## Approach of UN-Habitat Study

- **Pro-poor** land perspective
- Utilize concepts of **vulnerability and resilience** as applied to natural disasters
- Include focus on institutional and land **governance**
- Seek opportunities for **long-term improvement** to land tenure and administration following natural disasters



[Linnerooth-Bayer et al. 2005]

## Central America and the Caribbean



Location of Honduras and Grenada Case Studies

## CASE STUDY DESCRIPTION

	<b>Grenada</b>	<b>Honduras</b>
<b>Population</b>	103,000 (2005)	7,000,000
<b>Area</b>	344 sq. kms	112,000 sq. kms
<b>Additional islands</b>	Carriacou and Petit Martinique	Roatan, Guanaja
<b>Population Density</b>	300 / sq km	62 / sq km
<b>Rural/Urban Percentages</b>	58 / 43	46 / 54
<b>Area Forested (hectares and % of total land area)</b>	6,000 (20%)	5,383,000 (48%)
<b>WBI Governance Score</b>	+0.17	-0.60
<b>Population below poverty line</b>	28%	64%
<b>HDI Rank (2007)</b>	82 / 177	115 / 177
<b>IFC Rank for Registering Property</b>	145	78

## Grenada

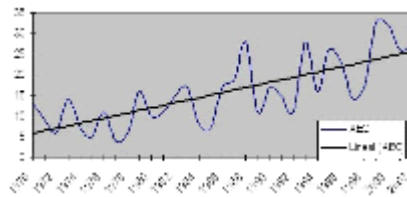
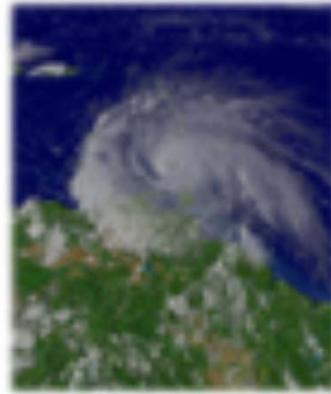
- Southeastern Caribbean
- Second-smallest nation in hemisphere (344 sq. kms)
- Capital: St. George's
- Economy: tourism, services, agriculture, remittances



Solomon Islands ... 28,450 Km<sup>2</sup>  
 Fiji ..... 18,270 Km<sup>2</sup>  
 Tonga ..... 748 Km<sup>2</sup>

## Hurricane Ivan in Grenada

- September 2004
- Primarily a wind event
- Devastated housing stock
- Major impacts to agricultural sector
- Losses 2 x GDP



Increase in Natural Disasters in the Caribbean  
(ACS/CIESA 2003)

## Grenada: Contributors to Vulnerability

- Aging rural population
- Dependence on two main cash crops – **nutmeg** and cocoa
- Informal settlements
- **'Family land' tenure**
- **Tenure insecurity** (re. donors)



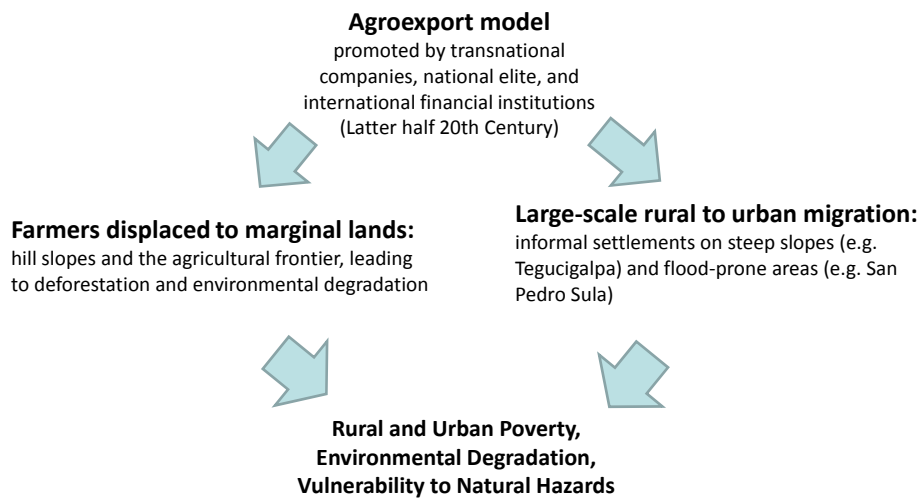
*Donors insisted that that all recipients of aid for new houses hold a valid land title.... but majority of the most vulnerable people do not have title.*

# Honduras

- Second-largest nation in Central America (112,000 sq. km)
- GDP \$7 million
- Second poorest country in hemisphere
- Major exports: coffee, bananas



## Honduras: Social-ecological Vulnerability and the Agroexport Development Model



## Hurricane Mitch in Honduras

- October 26 – November 1, 1998
- Worst disaster in W. hemisphere in 200 yrs
- Intense rainfall event: floods, landslides
- 14,000 dead/missing in Honduras
- 220,000 houses damaged or destroyed
- Devastated infrastructure (e.g. 33 bridges destroyed 75 bridges damaged)
- >\$3 billion in losses

*Mitch truly exposed the pervasive social and environmental vulnerability in the region.*



## Resettlement projects

- Tens of thousands displaced in Tegucigalpa by flooding and mudslides
- Spent up to 4yrs in shelters
- Shortage of urban land outside hazard zones
- Large-scale projects (e.g. Ciudad España)
- Livelihood scarcity, long travel times
- Some return to hazard areas



The Ciudad España project

### Lessons learned:

- Need to consider livelihoods
- 10 yrs conditional ownership too long
- Need room for expansion/extended family

Source: IFRCRC (2002). Rebuilding after Hurricane Mitch: Housing reconstruction in Honduras and Nicaragua



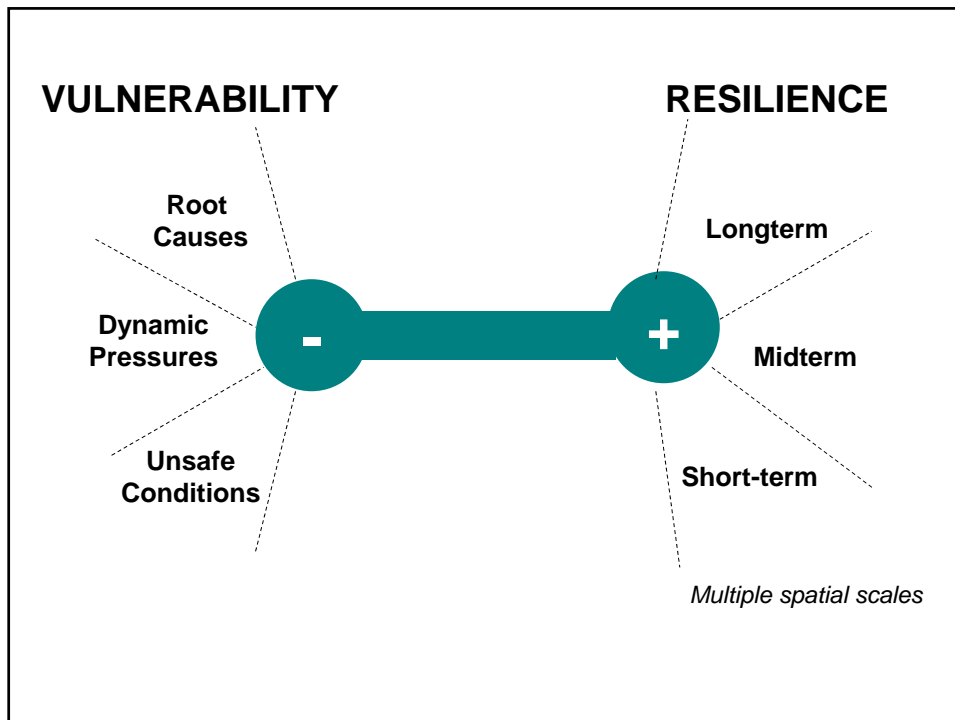
## Land distribution pre- and post-Mitch/AML

- Based on a panel data set from four Honduran departments (1994-2001):
- Gini coefficient changed from 0.71 to 0.76
- *Small farms got smaller*
- *Large farms got bigger*

### Land market activity:

- Land sales did not appear to increase post-Mitch.
- Land rentals increased 10-fold

From Barham, B., S. Boucher, P. Useche (2002)



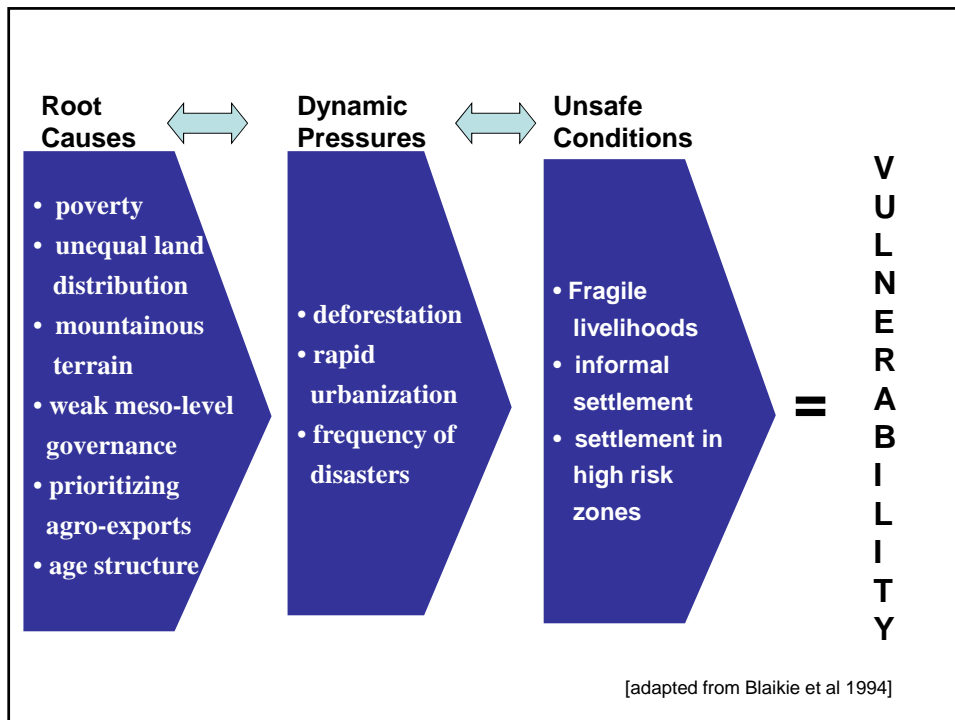
## Natural Disasters and Vulnerability

- **Natural disaster = hazard + vulnerability**
- Vulnerability = the level of **difficulty to “anticipate, cope with, resist, and recover from the impact of natural hazard”** (Blaikie *et al*, 1994)
- A product of: **concentrated wealth and power, unsound development models, poverty, uncontrolled land-use and urbanization, environmental degradation, and population growth**
- root causes of vulnerability and risk are fundamentally tied to **pre-existing social, economic and environmental states**



*Natural disasters are best understood not merely as the outcome of climatic, biological, or geological hazards, but as a coupling of natural hazards with human vulnerability.....*

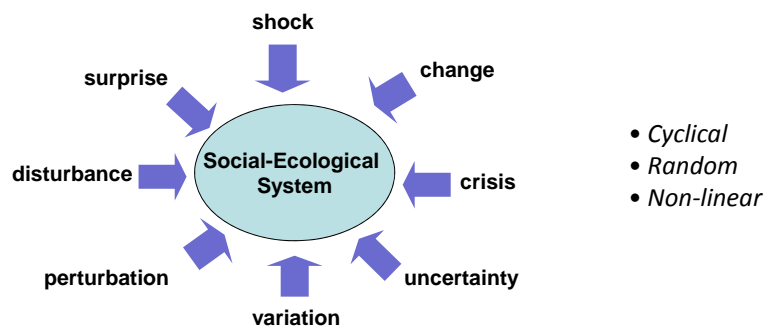




## Resilience - Focus on Change

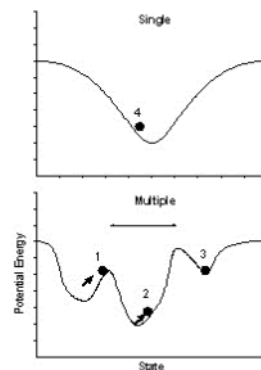
- Emerging research focus on **change** (e.g. Land Use/Land Cover Change; Climate Change Science)
- Sustainability = assumes stability and explains change
- **Resilience = assumes change and explains stability**

(Folke, Colding & Berkes 2003)

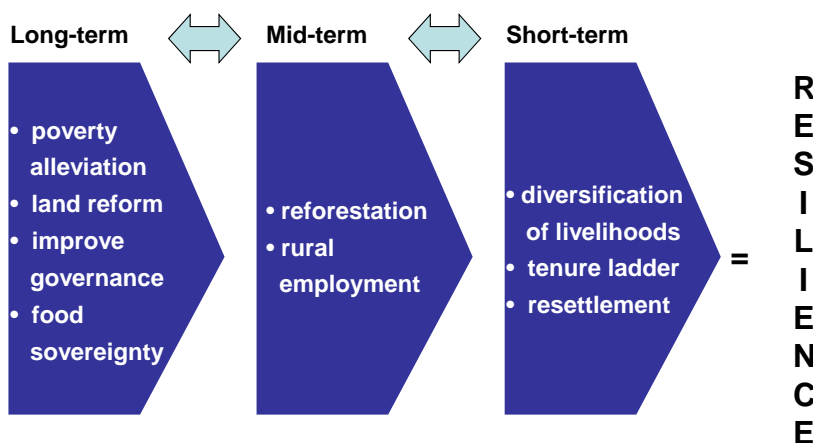


## Measuring Resilience

- **Amount of change** that a system can undergo while still **maintaining** the same fundamental **structure and function**
- System's ability to **self-organize**
- Degree to which the system is capable of **learning and adapting** (Carpenter et al 2001)
- **Definition** of social-ecological system
  - components
  - relationships
  - innovation
 (Cumming et al 2005)



## Toward Greater Resilience



**\*\* Key elements: Adaptation, Innovation, Persistence, Feedbacks**

## What Role can Land Professionals Play?

- Understand the underlying tenure and property situation (tenure pluralism)
- Map vulnerability and resilience (not just post-disaster)
- Provide innovative options for developing a tenure ladder
- Provide information on factors contributing to vulnerability, e.g. land distribution, tenure status, infrastructure
- Address sources of vulnerability .... land inequities, property formalization...
- Assess communities and assign vulnerability or resilience index
- Analyze land governance – macro, meso, micro – implement changes

