

Lecture Notes: Disaster Vulnerability and Resilience

Session 2

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Vulnerability and Urbanization

Global Science and Policy Context

1. Language:

a. Discussion Questions on Risk and Vulnerability:

- What is disaster risk?
 - An event that overwhelms a system's capacity to absorb it
 - Exposure to hazard
 - Something infrequent / unusual

 - $Disaster\ risk = hazard \times vulnerability / capacity$
- What is a hazard?
 - A force of energy that is experienced in a negative way by humanity
 - It is measured by magnitude, frequency, probability
- What is vulnerability?
 - Susceptibility and exposure
- What is the difference between mitigating hazard and mitigating climate change?
 - Mitigating climate change is about mitigating a natural process to limit hazards (nation-state level)
 - Mitigating hazard is about mitigating physical conditions to limit the damage of a hazard (local level)
- What is the difference between coping and adapting?
 - Coping: term comes from Amartya Sen, disaster studies literature
 - Adaptation: term comes from climate change literature
 - The terms are contested, they may in fact cover the same elements. Distinctions that have been made include: adapting is a longer-term more fundamental change; coping is more short-term, reactive, and impermanent.

- PIR model: Crunch model (from Wisner, et. al. *At Risk*). When hazard and vulnerability come together, a disaster happens. There are root causes for vulnerability that can be traced. Institutions, regimes, economic structure, inequality, and access to education are all points become legitimate targets for policy to limit disaster. Root causes are as important as the policy agenda.
- What is Disaster Risk Management?

- There is a coarse dualism between the disaster risk reduction community and the humanitarian community (emergency response).
- There is also a gap between the disaster management community and the development community.

b. Impacts of Disaster

- Primary: direct, measurable losses (loss of a house or a crop)
- Secondary: indirect losses incurred (e.g. someone being out of business for a while)
- Tertiary: Flow losses or negative impacts due to shifts in the macro economy to respond to the disaster.

2. Challenges to Mainstreaming Disaster Risk Reduction into Development:

- a. Why do we choose to let disasters happen and then respond rather than try to reduce the disasters through development and risk reduction?
 - Development side claims that it is unable to accurately measure the impact of their development practices in order to develop in ways that might mitigate future disaster.
 - Current research is being done to compare cost of mitigation with the estimated losses from a hazard (e.g. reforestation mangroves in Vietnam to mitigate against hurricane damage).
- b. Moral hazards: when giving aid decreases self-generated risk reduction. E.g. if the IMF were to lend money to reduce disaster risk that would prevent the country itself from funding its own risk reduction encouraging countries to undertake risk-prone development as a means of attracting aid.
- c. MDGs (Millennium Development Goals, an internationally negotiated set of goals set by the United Nations): There is no MDG for disaster risk reduction. There are though many connections between disaster and the likelihood of reaching the MDGs (see the DFID report on <http://www.dfid.gov.uk/pubs/files/drr-scoping-study.pdf>).
- d. Assumptions about the risk-reducing capacity of development:
- e. Lack of exposure to disaster issues:
 - Many people think disasters aren't going to happen and believe that being overwhelmed by a disaster is inevitable.

3. UN World Conference on Disaster Reduction (The conference that set the international agenda over the next 10 years):

- a. Hyogo Framework for Action 2005-2015

- Three forums
 - Main conference (political debate; public cannot participate)
 - Scientific conference (disconnected from political debate)
 - Public forum (business meeting for engineering; disconnected from political debate)
- Negotiating rules:
 - International document has gone through three review processes called prep-coms.
 - Some countries have teams of negotiators that rotates, others have only one or two people
 - If countries disagree, they leave the room, come to an agreement and present it in the room. This process is difficult if you have a small negotiating team because you are limited in what you can negotiate about.
- Tsunami lobbying:
 - Engineering focus was made stronger with lots of jockeying for position among countries looking to implement early-warning systems
 - Some debate recognized that the countries affected have quite sizable scientific communities to do that work
 - Debate about the need to communicate warnings in a timely fashion to local communities. Was not about how to build community capacity.
- U.S. wants to take climate change out of the document to be consistent with earlier decisions (Kyoto)
- Targets and time frames for action removed.
 - Individual countries determine targets outside of international requirements
- Lots of good-will generated
- Civil society presence is international in nature

Urban Vulnerability

4. What is different about cities?
 - a. Why are urban risks underestimated?
 - Most development professionals are invested in rural development and perceive urban concerns as less important. Most international development programs are focused on rural development programs in academia.
 - Population and poverty data is inaccurate and tends to underestimate the sizes of urban population and poverty.

- Rapid urbanization is not as much a problem of demography as it is a problem of governance (though it is often portrayed in the opposite way).
 - Munich Re: Vulnerability of Megacities: No evidence that as megacities get larger, vulnerability increases

b. Manizales, Colombia:

Manizales is a relatively wealthy, small city in a relatively peaceful area that attracts migrants from some of the more violent areas.

- Biggest hazards:
 - Landslides
 - Flooding
 - Earthquakes
- Response to landslide:
 - Urbanization cleared,
 - Retaining wall built,
 - Slopes planted.
 - “Angels of the slopes”: Women given a livelihood maintaining and taking care of the slopes. Involved in policing construction. Fruit trees eventually grown on the slopes.
- People relocated to decent public housing within the city.

5. Adaptive potential and social capital

a. Vulnerability:

- Hazard specific (known threat):
 - Social organization
- Intrinsic (future, unknown threat):
 - Social capital: the ways in which individuals have relationships that support one another through trust.
- In times of stress, bridging links disappear; people retreat into their specific groups. Social links are fundamental to capacity of groups to respond.
- Scale: social capital appears differently for individuals, networks, or regimes.

b. There is tension between humanitarian organizations that claim to be apolitical and the need to solve some problems through new development strategies.

c. Los Manguitos, Santo Domingo (slides)

- People are living on steep slopes of ravines in squatter settlements.

- External NGO invited to come into community helps to build social capital (bridging and bonding) through waste management business program.
 - NGO thinks that if it withdraws to prevent dependency that the business will collapse.
- Children interested in community development go through the NGO rather than local CBOs.
- Drug gang gave NGO access and provides security through their presence, but such groups can have negative impacts on society.

Measuring Vulnerability

6. Group work: Given 6 household descriptions (see handout) For 15 minutes, work in groups of 4 to develop a framework for judging between these households in terms of their vulnerability.

7. Challenges to measuring vulnerability:
 - a. Bottom up
 - (Red Cross's work on vulnerability assessment <http://www.proventionconsortium.org/>): experiential assessment of hazards and vulnerability.
 - Process of doing this is an exercise of people coming together to build trust and social interaction
 - b. Top-down
 - Global institutions trying to determine where to invest their money.
 - Trying to determine where the risk is.
 - c. (UNDP) Disaster Risk Index:
 - Deductive approach.
 - Measures existing data on impact,
 - Maps where vulnerabilities are.
 - Produces 2 measures:
 - Relative vulnerability (number of people who died of a hazard over a number of years by the number of people exposed).
 - Socio-economic indicators of vulnerability
 - Identifies two or three indicators that best explain the reaction.
 - Provides evidence that links socio-economic factors to the magnitude of the disaster
 - Weaknesses:
 - Data sets are historical (CRED database is publicly available)
 - 20 year data span: very difficult to deal with less frequently occurring hazards (e.g. volcanoes and earthquakes)
 - Defining drought and mapping flood are difficult
 - Mortality is a partial indicator (in some hazards more than others)

- In drought, more important is the degradation of livelihood
 - How can you measure performance? How can you compare a country's performance if the baseline risk is changing? Hazards might be changing in their character, etc.
- d. (IDB/IDEA) Americas Indicators Programme:
 - Inductive approach.
 - Looks at generic characteristics in society as a way to identify vulnerability.
 - Four different indicators:
 - Disaster Deficit Index,
 - Local Disaster Index,
 - Prevalent Vulnerability Index:
 - Exposure and physical susceptibility, socio-economic fragility, and lack of resilience
 - For each indicator, 8 socio-economic variables,
 - Disaster Management Index.
 - Weaknesses:
 - Not hazard specific, measures intrinsic vulnerability
 - Strategically it is very clever because of its language
 - Comparative power is limited
 - Subjectivity in selection of input variables and weighting
 - Decision makers must understand the meaning of the data
 - For a review of the UNDP and IDB/IDEA methods and results see <http://www.undp.org/bcpr/disred/documents/publications/visionsof risk.pdf>