

Built-In-Resilience:

Understanding Coping Strategies of the Urban Poor

Dhaka, Bangladesh

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The research

Climate change will **disproportionately increase the vulnerability** of the **urban poor**

Lessons can be drawn from examining how the urban poor are **already coping with conditions of increased vulnerability** to existing environmental hazards (floods, heavy rains, landslides, heat and drought)

Knowledge of these existing coping capacities for disaster risk reduction can **help to strengthen planning strategies** for adaptation to climate change in cities because they draw on **existing grassroots governance mechanisms and support the knowledge systems** of the urban poor



Defining the concepts

Cutter , S L (2006) summarizes various conceptual definitions of vulnerability:

- Vulnerability as a **pre-existing condition** is characterised by:
 - the distribution of hazardous conditions (environmental justice);
 - the occupancy of a hazardous zone (e.g. flood plains, coastal areas, seismic zone) and
 - the distribution of structural losses in the built environment associated with the disaster events

- Vulnerability as **tempered response** focuses on:
 - coping responses including societal resistance and resilience to hazards as hazard events can be viewed as a social construct rather than a biophysical condition,
 - a condition that is rooted in historical, cultural, social and economic processes that impinges on individual and collective ability to cope with the disasters and adequately responds to them.



Defining the concepts

- Vulnerability as **hazard of place** combines the concepts of both bio physical as well as social response but within a specific aerial or geographical domain. This can be a geographic space, where vulnerable people and places are located, or social place, who in those places are most vulnerable.

coping capacity and adaptive capacity

both ‘coping capacity’ (disasters) and ‘adaptive capacity’ (climate change) are determined by a

community’s or a system’s abilities to take actions that will help them to withstand hazardous events



Defining the concepts

Coping strategies are often **complex** depend on the assumption that ***an event will follow a familiar pattern***, and that ***actions taken before to cope are a reasonable guide for similar events***

They operate within different scales: individual (e.g. household), community (e.g. neighbourhood) and institutional (e.g. city-wide or beyond):

- > Preventative strategies
- > Impact minimising strategies
- > Asset accumulations
- > Economic strategies
- > Development of social support networks

In the physical and built environment coping strategies can be identified at different scales:

- > Arrangements within the house
- > Modifications to the house structure
- > Modifications around the house
- > Improvements at the neighbourhood level



Reframing the questions for 'risk perception'

- How do people perceive environmental changes happening around them?
- Based on these perceptions ('realities'), how do people prepare for and respond to climate-related events (coping capacities)?
- Why must coping strategies be considered in DRM as built-in resilience?



Dhaka, experiencing natural disasters

- Urban population of Bangladesh grew by **38% compared to 10%** in rural areas in the last decade.
- Cities like Dhaka experience flooding from **overflow of surrounding rivers as well as excessive rainfall** due to drainage congestion and inadequate pumping facilities.
- Flooding affects **infrastructures including water systems, housing and settlements, transport networks, utilities and industry.**
- In addition urban dwellers experience **'heat island'** problems - temperature higher by a few degrees than the surrounding areas.
- In July 28, 2009 Dhaka experienced 333 ml rainfall in 24 hours and **290 ml in 6 hours**, highest record in 53 years.



Research study area, methodology

Korail, Dhaka Bangladesh

- > considered being the biggest slum
- > area: approximate 90 acres
- > estimated population: over 100,000
- > experienced major floods of
1988, 1998 & 2004
- > mostly self employed & in service jobs

qualitative survey of 30 households
chosen randomly based on criteria of location,
condition of houses, ownership and period of
tenancy

interview with pre structured questionnaire of 2
household members (male/ female) in two different
times

documentation through notes, pictures & sketches

Limitations: Small sample size comparing to the
population and time of year

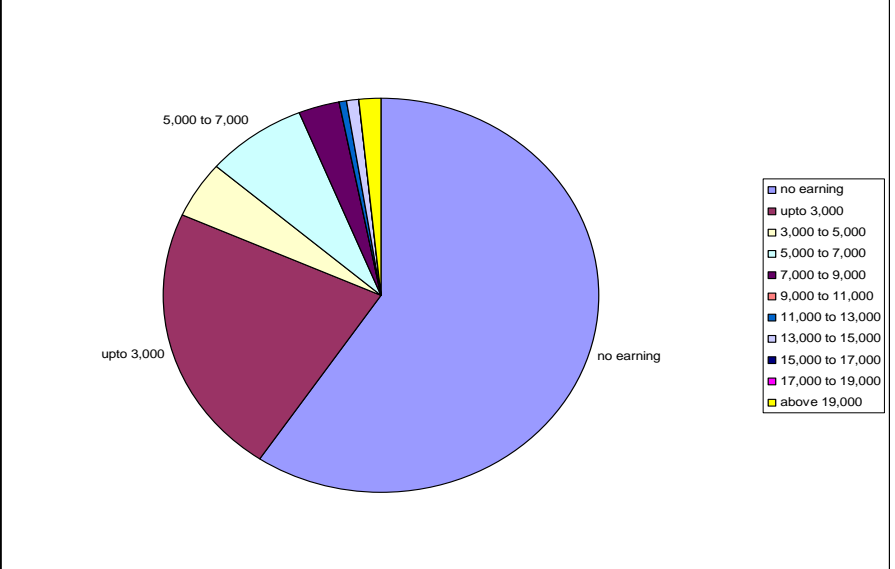
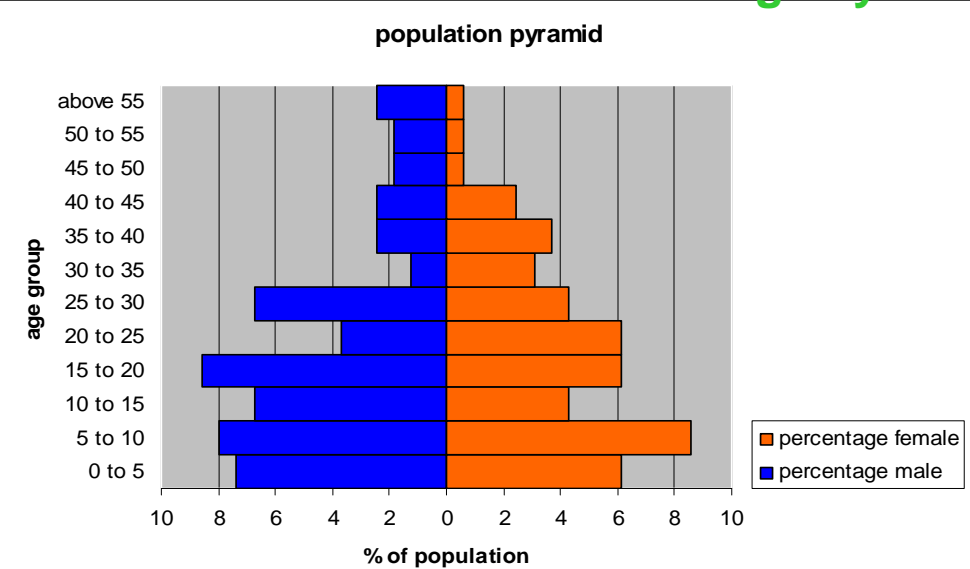




Contributors to vulnerability

Out of surveyed 30 households of 163 members

- > 40% population are **under the age of 10**
- > 60% are **dependent** on 40%'s income
- > No one has legal **security of tenure**
- > Pay as high as **30% of income as rent**
- > 73% experienced **water clogging** from excessive rainfall and flooding
- > 73% households suffered from **water borne diseases**
- > 87% households needed to **repair houses** after climatic disasters
- > 86% recognized increased **heat as a problem**
- > 63% **lost working days** during disaster





Perception of environmental risk

Environmental changes (what changes have you recognized in the last 5 years related to climate?)

Increased heat	26	86.7
Increased rainfall in shorter time period	13	43.3
Untimely rainfall	12	40.0
Elongated flooding	11	36.7
Less rainfall	10	33.3
Flash flooding	8	26.7
Air pollution	8	26.7

Impacts (how do the above changes have had an impact on your household and neighborhood?)

Damage of home	26	86.7
Damage of infrastructure	23	76.7
Water clogging	22	73.3
Increased waterborne disease	22	73.3
Damage of possessions	20	66.7
Loss of working days	19	63.3
Increased health related expenditure	19	63.3
Damage of access facilities	18	60.0
Loss of livelihood/ business capital	17	56.7
New disease (ex. malaria/ dengue/ tuberculosis)	12	40.0

Actions taken before/ during/ after

Action taken **Before** disaster

1	Increase height of furniture	16	53.3
2	Make barriers at the door	13	43.3
3	Make higher plinth	9	30.0
4	Make higher storage facilities	9	30.0
5	Store food and water	5	16.7
6	Change building materials	5	16.7
7	Construct drainage	3	10.0
8	Improve drainage system	2	6.7
9	Move family to safer areas	1	3.3
10	Remove or relocate service lines higher	0	0.0

Action taken **After** disaster

1	Rebuild structure	18	60.0
2	Increase height of plinth/ sill level/ door	11	36.7
3	Take loan for rebuilding	9	30.0
4	Help community members to rebuild	7	23.3
5	Change building materials	7	23.3
6	Link drainage to main system	5	16.7
7	Share resources with neighbours	4	13.3
8	Move to new location	1	3.3

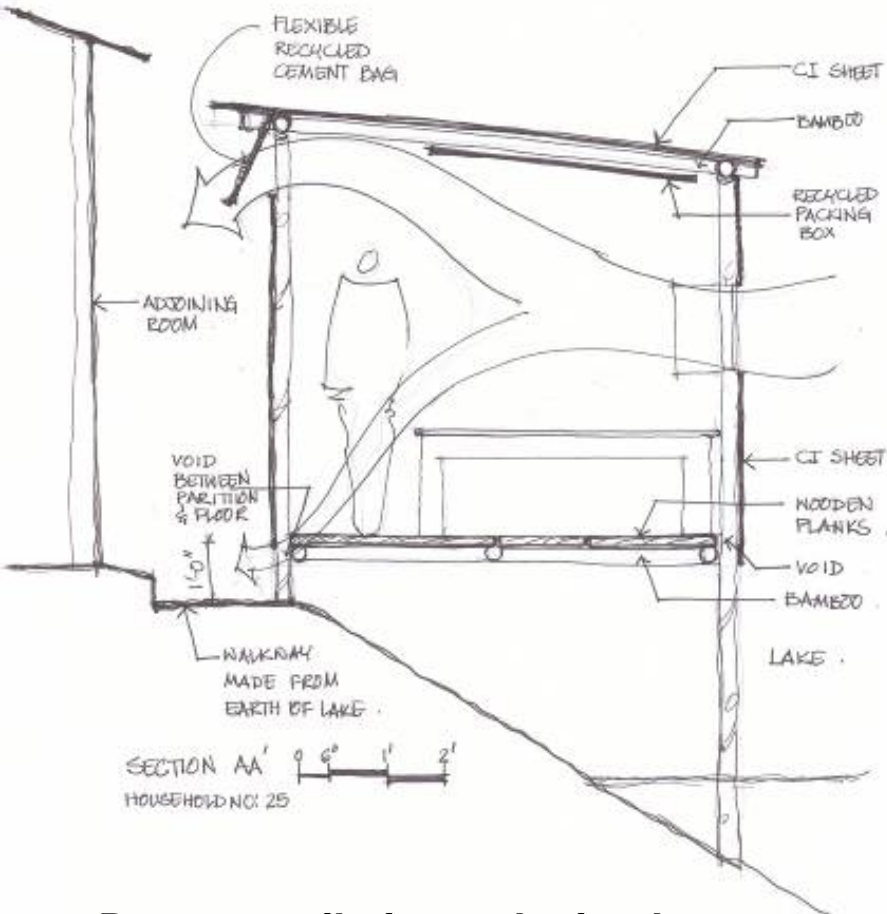
Action taken **During** disaster

1	Sleep on the furniture above flood level	14	46.7
2	Use movable cooker	11	36.7
3	Share services of unaffected neighbours	9	30.0
4	Suffer from food shortage	9	30.0
5	Borrow money to tackle hardship	8	26.7
6	Outlet at houses for easy flow of water	6	20.0
7	Move family to safer areas	6	20
8	Make barriers at the door	6	20.0
9	Move assets	5	16.7
10	Clear drainage	5	16.7
11	Food sharing	5	16.7
12	Organize community efforts	5	16.7
13	Build stilt	5	16.7
14	Build/ arrange emergency shelter	4	13.3
15	Develop alternate means of access	3	10.0

Responses to perception of risk

01 Physical modifications

Higher storage



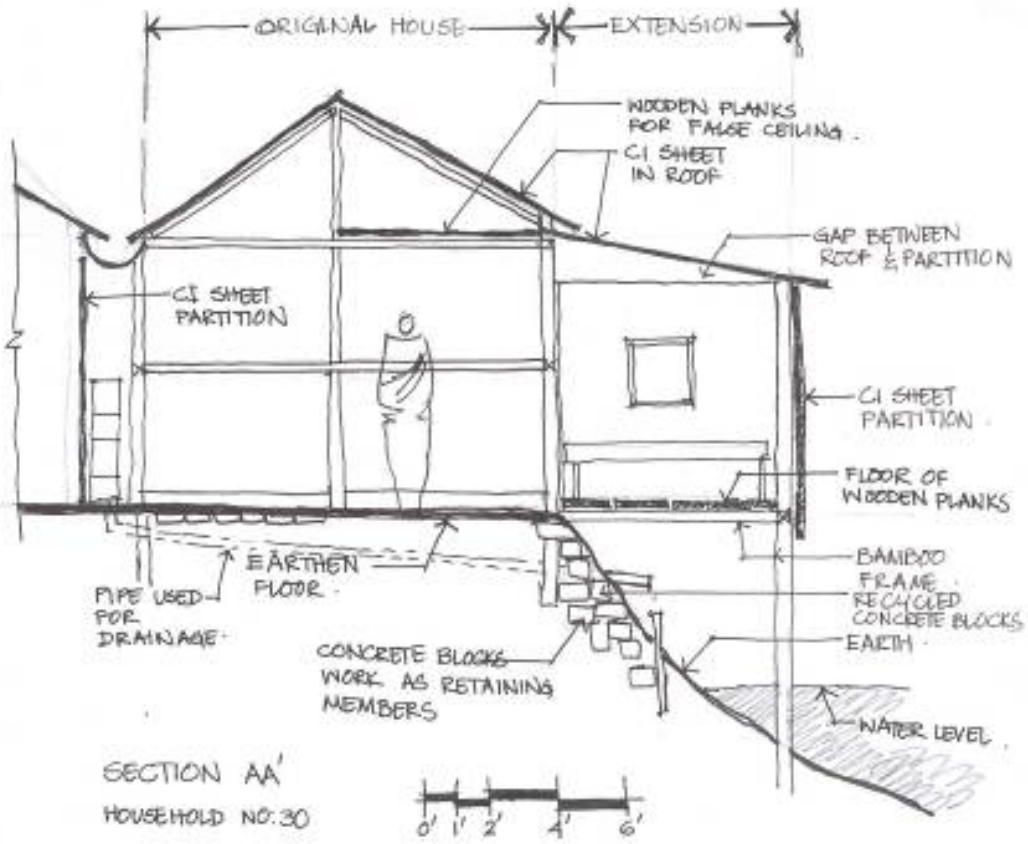
Better ventilation reducing heat

Window at bed level



Responses to perception of risk

01 Physical modifications



Weather resistant column base

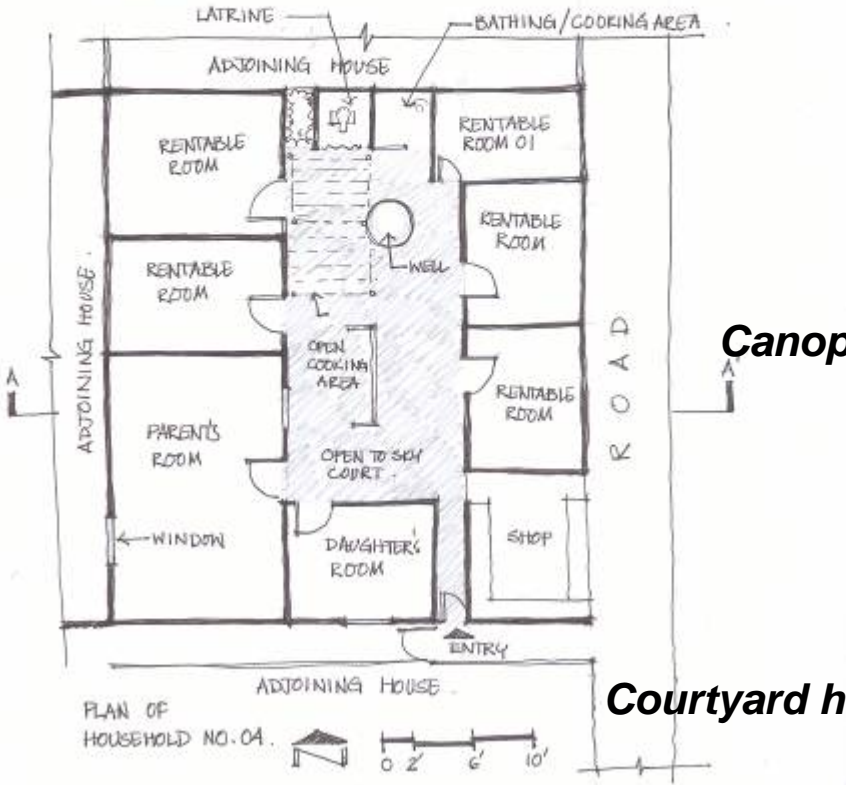
Barrier at door

Responses to perception of risk

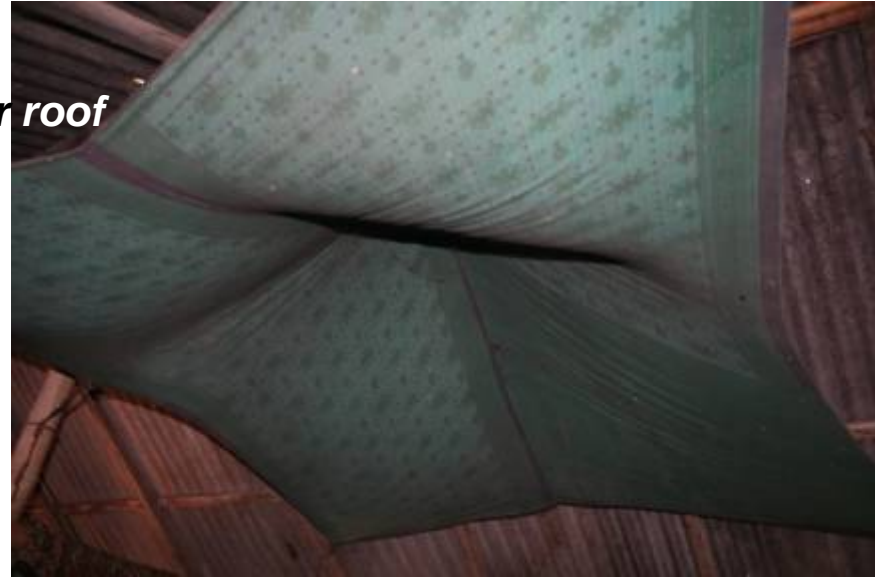
01 Physical modifications



Creepers in roof



Canopy under roof



Courtyard houses

Responses to perception of risk

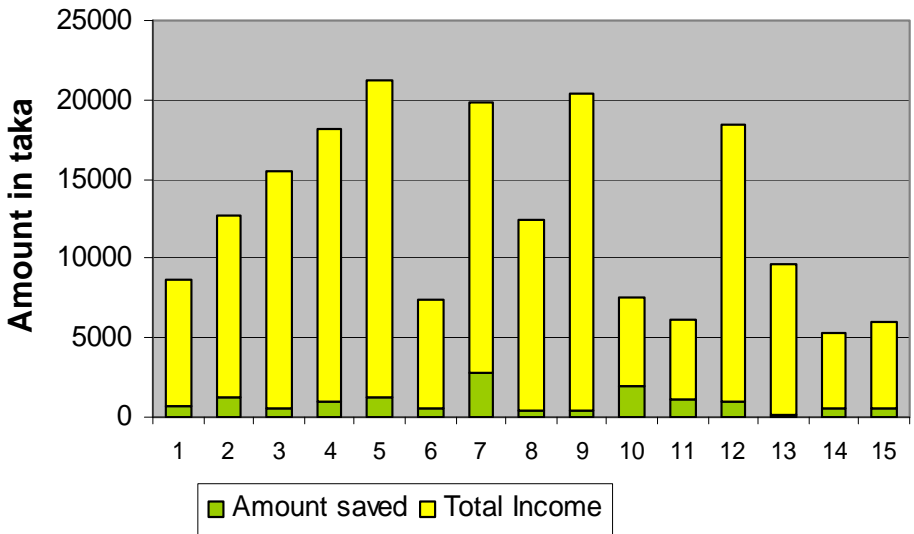
02 Savings and access to credits

50% of the households are member of monthly savings groups and have access to credit from savings

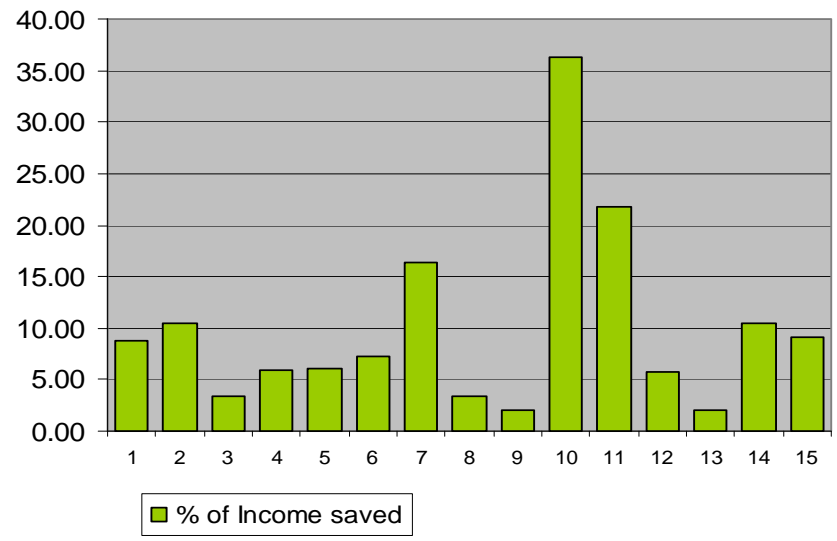
16% households have personal savings (may or may not access to credits)

Savings on average form 5-10% of the household income

Income and Savings pattern



Savings pattern



Responses to perception of risk

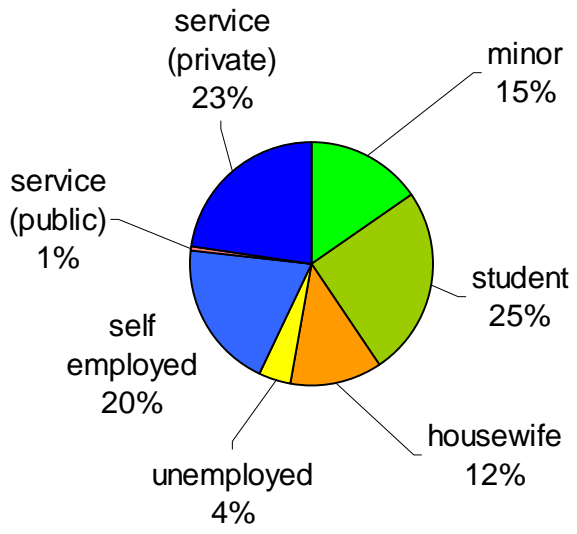
03 Diversified income sources

Households seek to diversify income sources to reduce vulnerability

Examples include

Renting rooms/ Small shop owners/ Ready made Garments worker/ Household help/ Guard/ Vendors/ Rickshaw pullers/ Motor mechanics

Occupation pattern



Responses to perception of risk

04 Social networks to provide support

37% households are part of some form of social network and can seek assistance in case of emergency

16% shared food with neighbours to tackle hardship

30% shared services of the unaffected neighbours during disasters



Pattern of social asset present among households

Aspects	hh that have		can seek assistance in case of emergency	
	number	percentage	number	percentage
Relatives/ friends living in the city	23	76.67	14	46.67
Relatives/ friends from original location	17	56.67	14	46.67
Member of social group	12	40.00	11	36.67
Member of professional group	14	46.67	11	36.67
Relatives/ friends living in the area	13	43.33	7	23.33
Member of political group	7	23.33	7	23.33

Responses to perception of risk

05 Accumulation of Assets

Most of the households accumulates assets in some form, for example:

- > Saleable household assets
- > Building materials
- > Investing in children's education



Building up stores of saleable assets

Key gaps

- As this research has shown, the urban poor have certain level of built-in-resilience based on their existing coping capacities. However, the question remains: How to **establish the linkages between formal planning/institutions and built-in resilience of the communities** to work for a comprehensive disaster risk management?
- Our research has highlighted that people are responding to multiple perceived risks at the same time – possible flooding, possible job loss, future health problems, etc. **Our conception of disaster risk needs to be expanded beyond just disasters, to include multiple dimensions of risk at the same time.**
- Urban poor perception is based on their direct experience and knowledge accumulated in responding to the double exposure to climate variability and poverty. Until **municipal adaptation planning responses understand that poverty and the impact of climate variability are deeply articulated**, the poor are likely to continue to be unsupported.
- **Considering ‘climate variability’ rather than ‘climate change’ as major risk changes people’s perception and their responses to this risk.** i.e. climate variability is real and is becoming a regular event. Climate change is in the future, not well understood.

Thank you

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Cutter, S L (2006) Vulnerability to Environmental Hazards in Cutter S L (eds) *Hazards, Vulnerability and Environmental Justice*, Eathscan

Wisner, B., et al., 2004. *At risk: Natural Hazards, People's Vulnerability and Disasters*. 2nd ed. Routledge, London

Wamsler, C. (2007). "Bridging the gaps: stakeholder-based strategies for risk reduction and financing for the urban poor." *Environment and Urbanization*, 19(1), 115–142

Satterthwaite, D, Huq, S, Reid, H, Pelling, M and Romero Lankao, P (2007). "Adapting to Climate Change in Urban Areas: The Possibilities and Constraints in Low- and Middle-Income Nations," *Human Settlements Discussion Paper Series: Climate Change and Cities 1*, IIED, London

