

SHOCK WAVES

Managing the Impacts of Climate Change on Poverty

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David Treguer, Adrien Vogt-Schilb

Climate Change Cross-Cutting Solutions Area
The World Bank Group

Under embargo until
November 4, at 4pm DC time !!



WORLD BANK GROUP



GFDRR

Global Facility for Disaster Reduction and Recovery

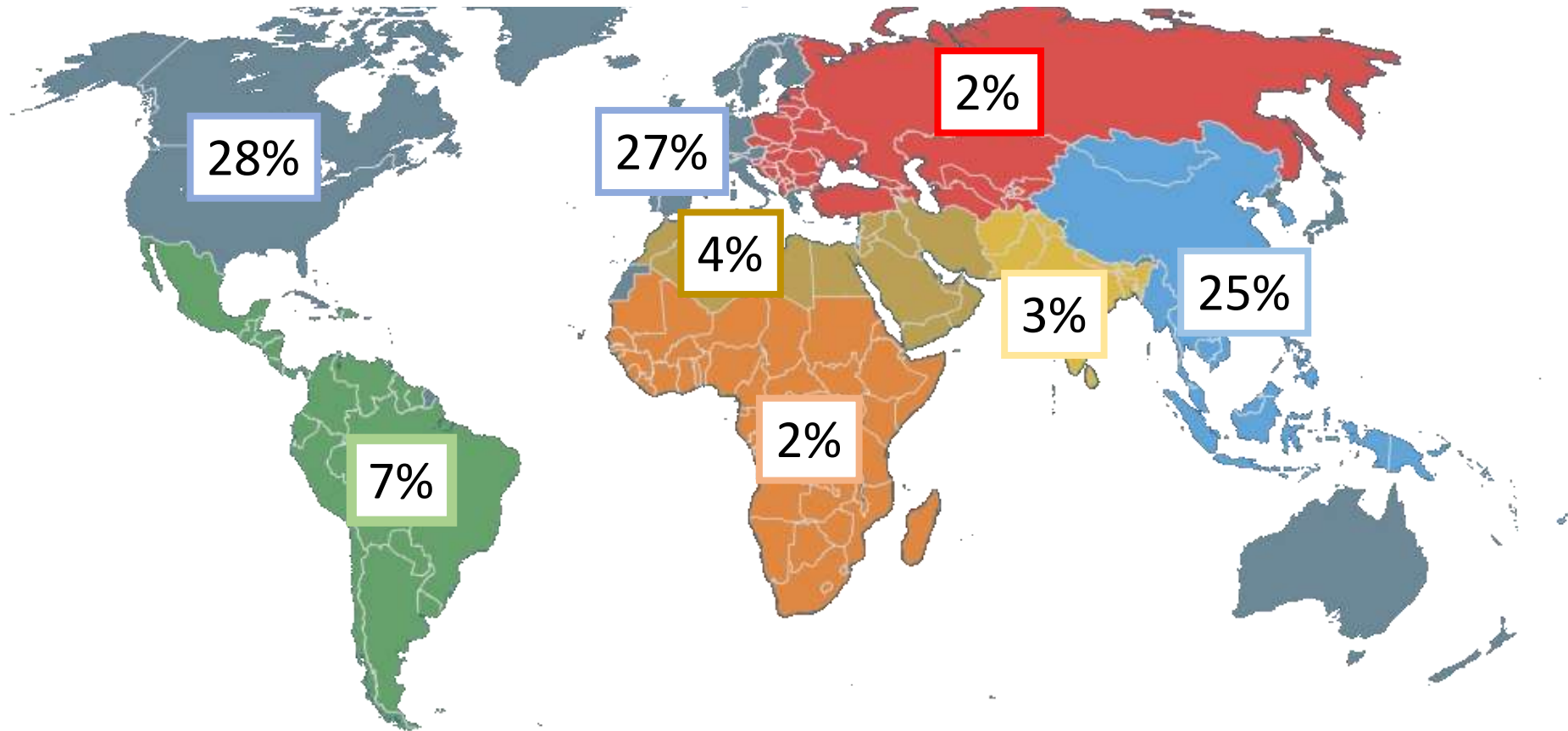
DFID

Department for
International
Development

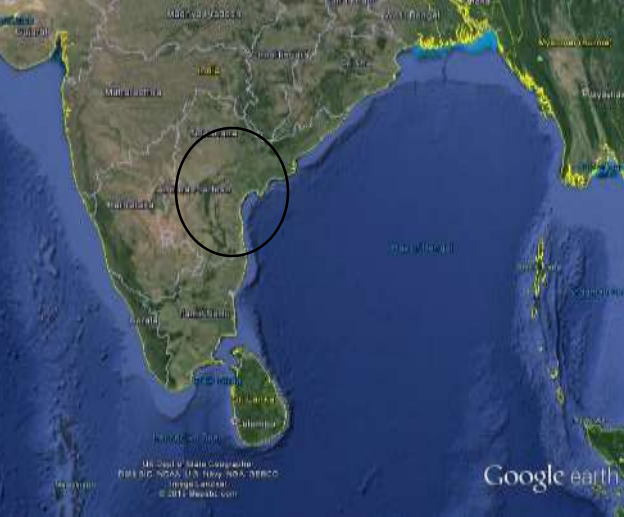
*“the incomplete
estimates of global annual
economic losses for additional
temperature increases of $\sim 2^{\circ}\text{C}$ are
between 0.2 and 2.0% of income”*

Intergovernmental Panel on Climate Change,
Working Group II, Summary for Policymakers, 2014

Is global income (or GDP) the right metrics?



What if the real question is not the impact on GDP?
What if it is the impact on poverty?



Poverty dynamics

An example in India (Andhra Pradesh)

Flows out of poverty
14% per year



Decreasing the flow from 14% to 13% would halve poverty reduction



Weather events keep people poor through asset and human capital destruction



Drought, irrigation failure, or crop disease involved in 44% of the cases



Increasing the flow from 12% to 13% would halve poverty reduction



Flows into poverty
12% per year

Net flows
2% per year



Non-poor

Poor

Three sectors where shocks push people into poverty...



Spikes in food prices and shocks on agricultural or ecosystem-based income



Natural disasters such as droughts, floods, and storms



Disease and health shocks, such as malaria, diarrhea, stunting, and mental disorders

... three sectors that will be affected by climate change

Here, let's focus on natural hazards



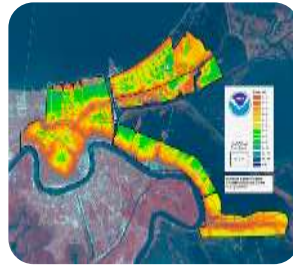


RISK =



Hazard

RISK =



Hazard

X

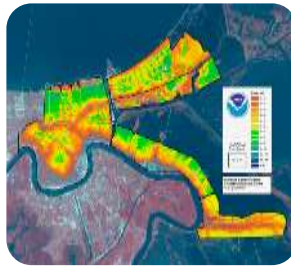
Exposure

RISK =



RISK =





RISK =

Hazard

x

Exposure

x

Vulnerability

/

Support
received

Are poor people more exposed to natural hazards?

Rich and poor people are exposed to natural hazards

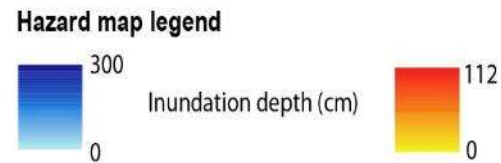
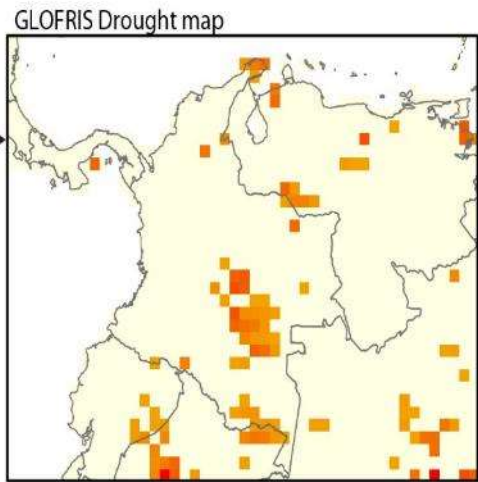
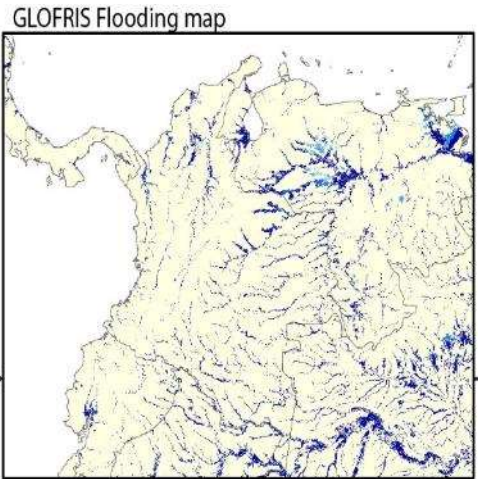
At-risk areas can attract both poor and rich people because they offer opportunities and access to jobs and services (health, education)

But within a city or a community, land and housing markets tend to push poor people towards more at-risk areas



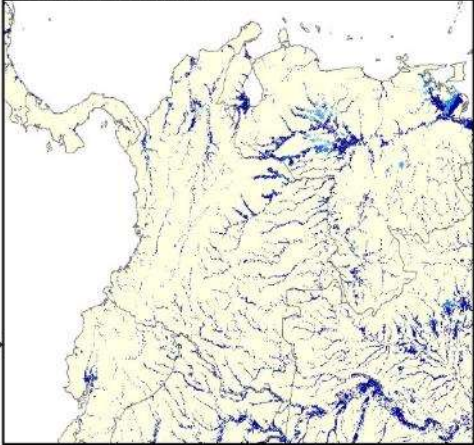
based on Winsemius et al., forthcoming

PCR-GLOBWB DynRout

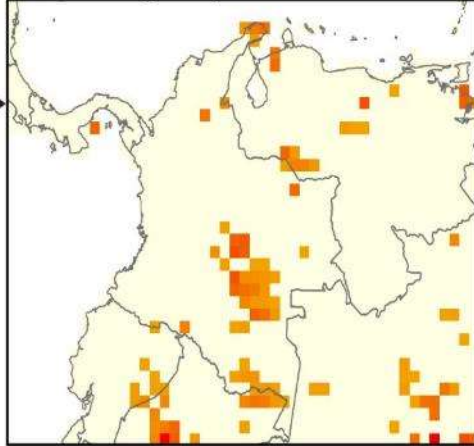


PCR-GLOBWB DynRout

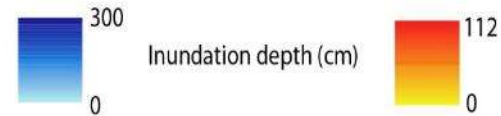
GLOFRIS Flooding map



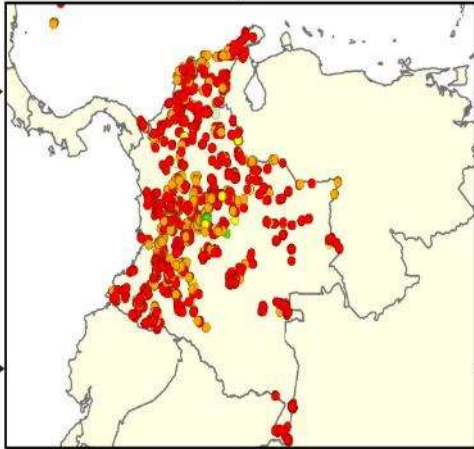
GLOFRIS Drought map



Hazard map legend

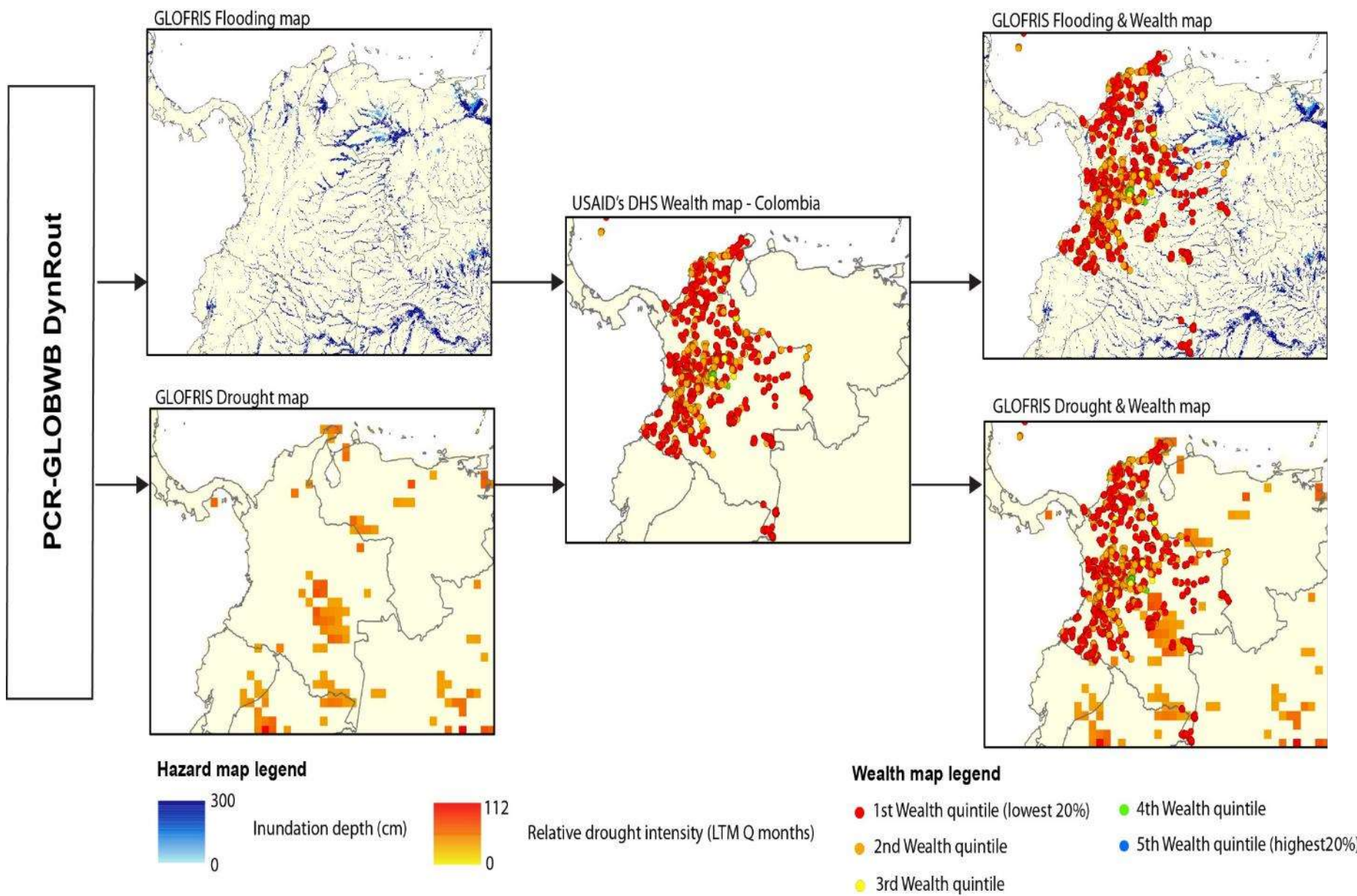


USAID's DHS Wealth map - Colombia



Wealth map legend





Poor people are often more exposed to natural hazards – for urban floods

In most (but not all) countries, poorer urban dwellers are more likely to live in flood zones

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Over-exposure of poor people is more visible at local scale



In the Mithi River Basin in Mumbai

Income (Rs. / month)	% of all HH (Greater Mumbai)	% Exposed to floods
<5,000	27%	44%
>20,000	6%	1%

Poor people are 10 times more likely to be exposed to floods

The richest do not live in flood zones

Poor people are often more exposed to natural hazards – for droughts

In most (but not all) countries, poorer households are more likely to be affected by droughts

a. Latin America and the Caribbean



b. Africa and Europe



c. Asia



Poor people are often more exposed to natural hazards – for high temperature

In most (but not all) countries, poorer households are more likely to be affected by high temperatures and heat waves

a. Latin America and the Caribbean



b. Africa and Europe

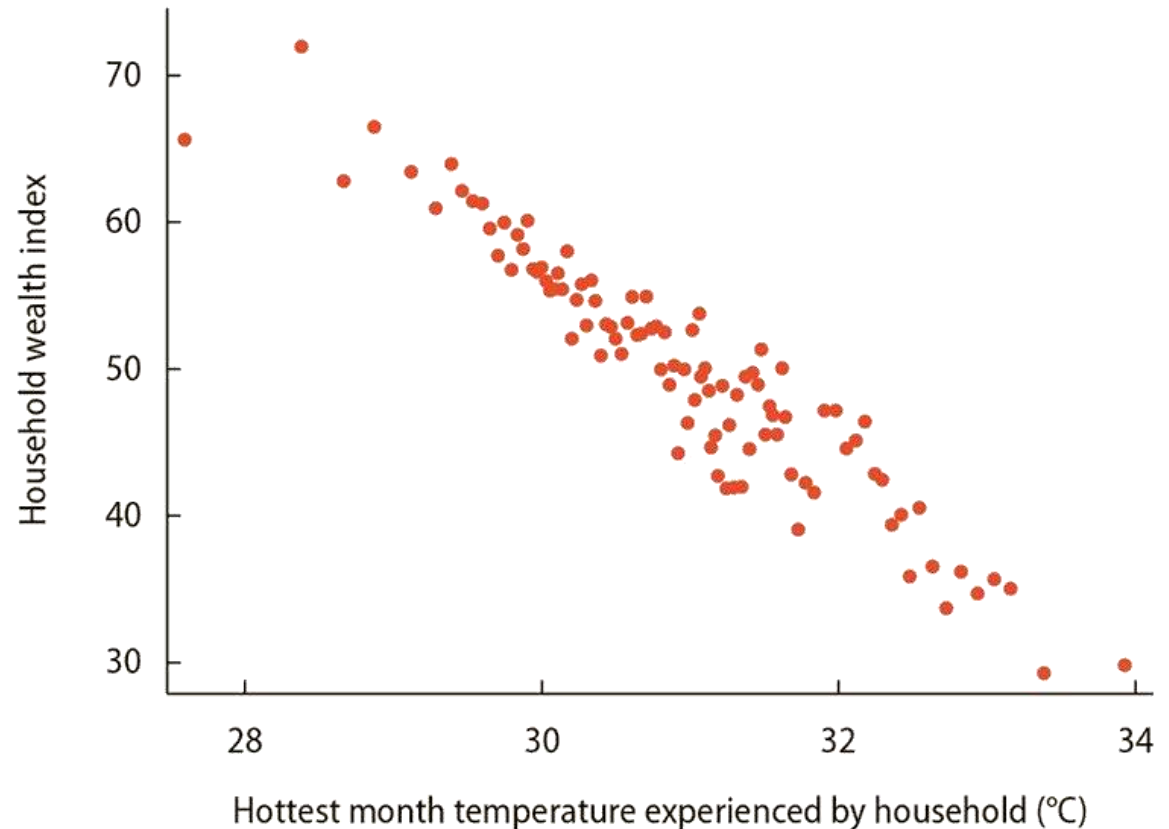


c. Asia



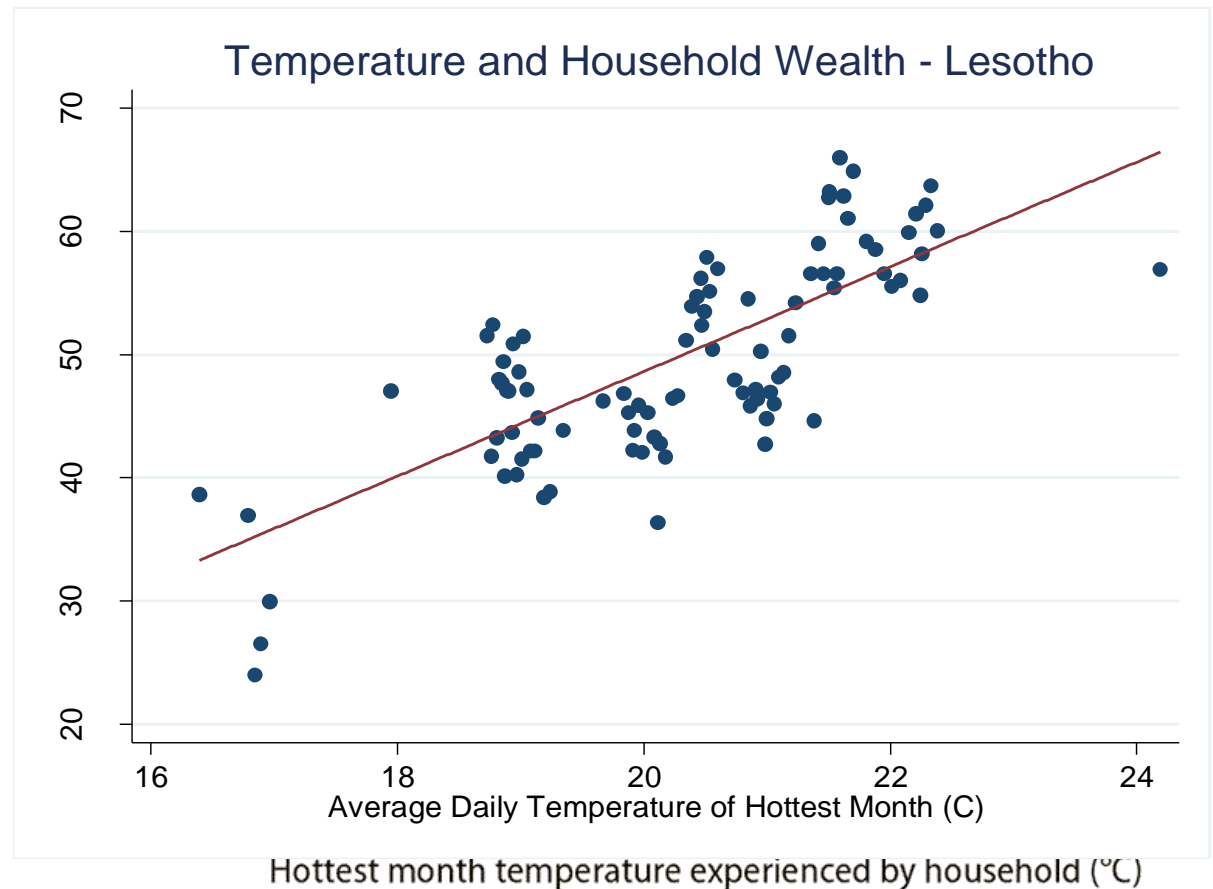
Poor people are often more exposed to natural hazards

Poorer people live in the warmer regions of warm countries... as in Nigeria

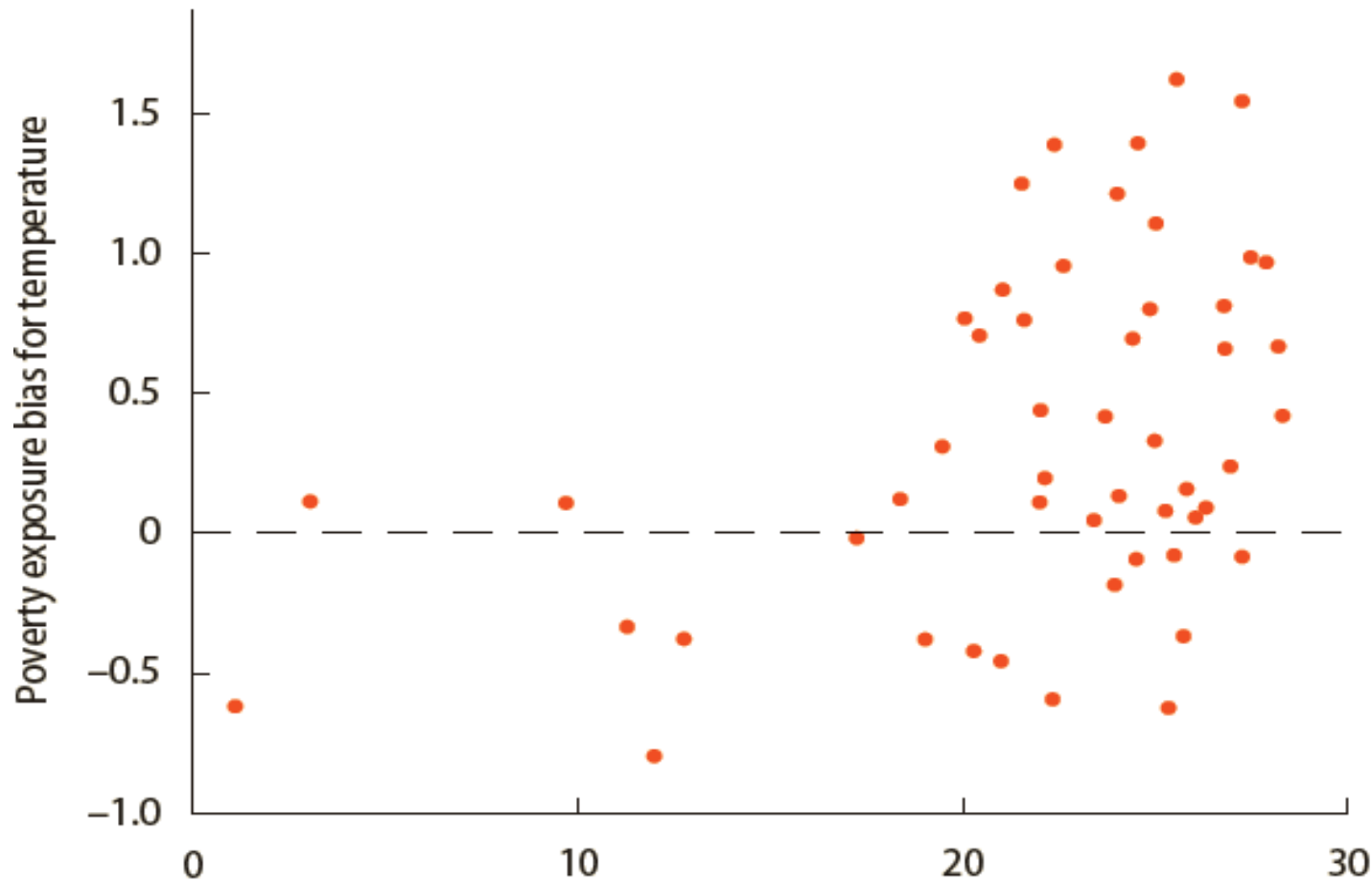


Poor people are often more exposed to natural hazards

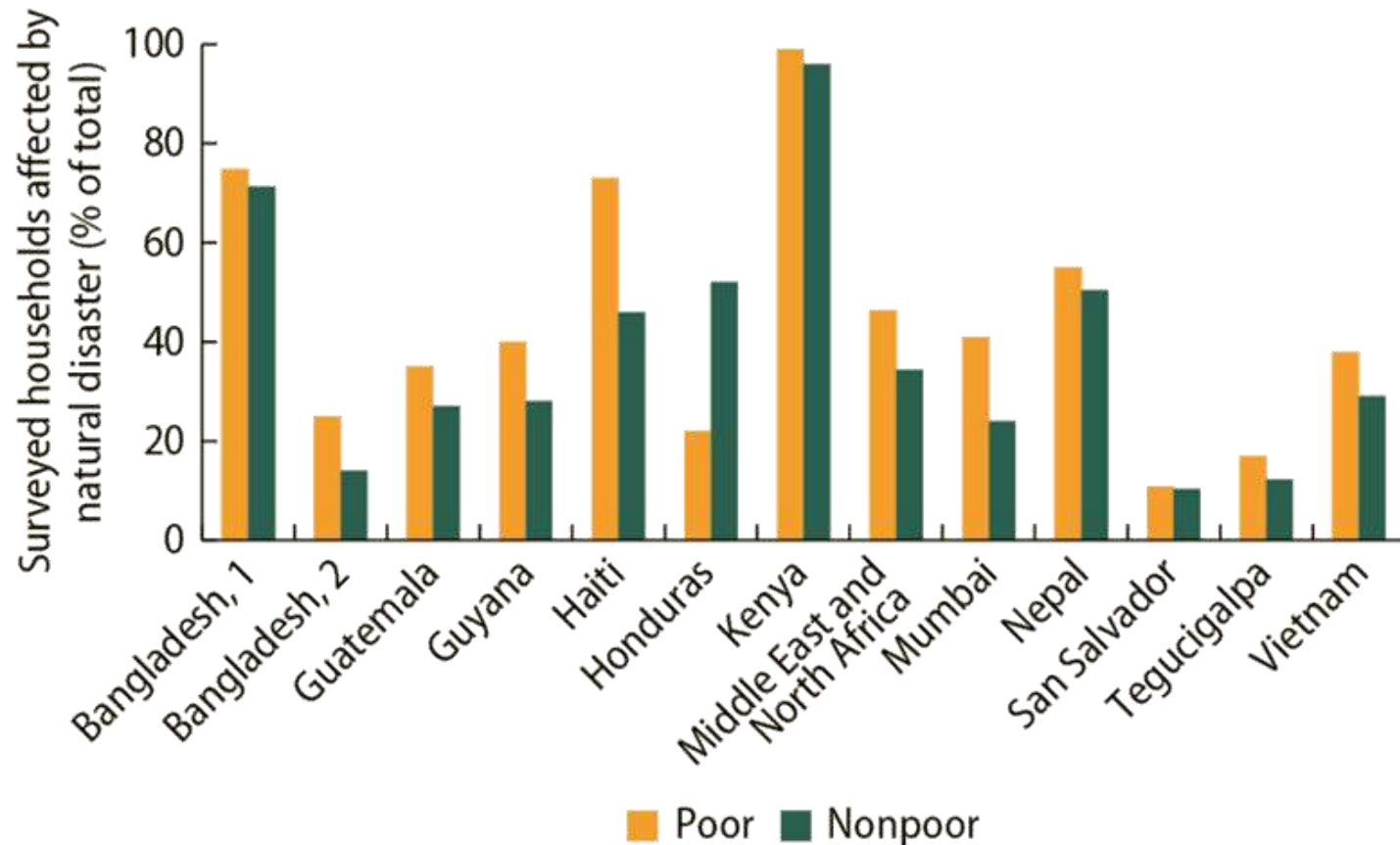
Poorer people live in the colder regions of cold countries... as in Lesotho

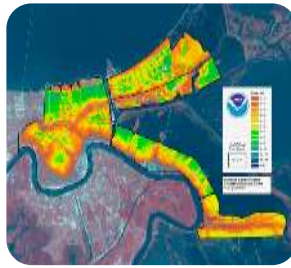


Poor people are more exposed to heat... in hot countries



When disasters hit in the past, poor people were (slightly) more likely to be affected





RISK =

Hazard

x

Exposure

x

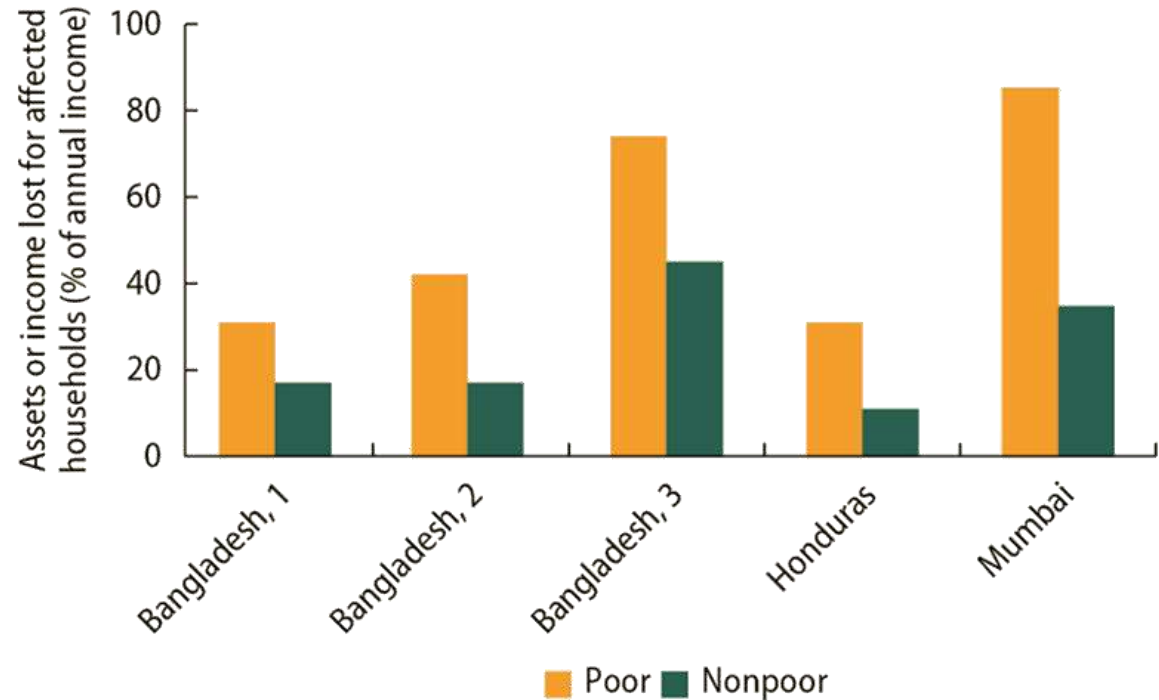
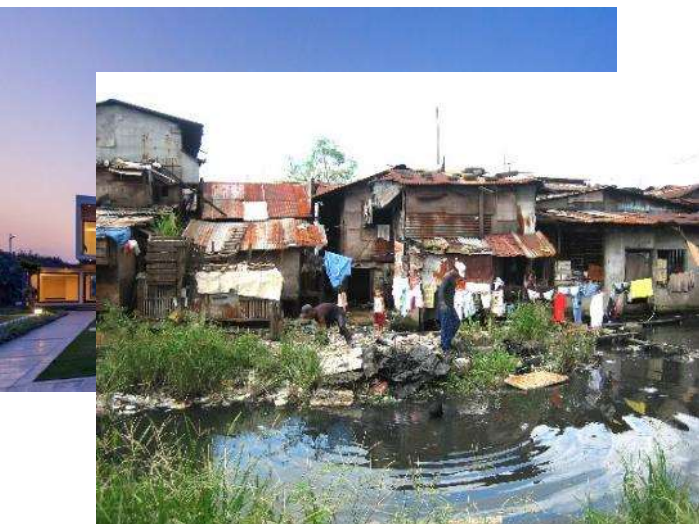
Vulnerability

/

Support
received

Are poor people more vulnerable to natural hazards?
Are they losing more when they are affected?

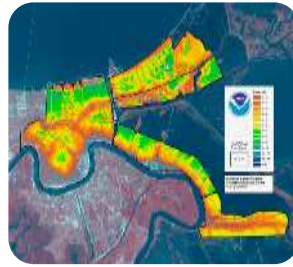
Poor people are (always) (much) more vulnerable to natural hazards in relative terms



Poor people are more vulnerable to heat-related productivity (and wage) losses



RISK =



Hazard

x

Exposure

x

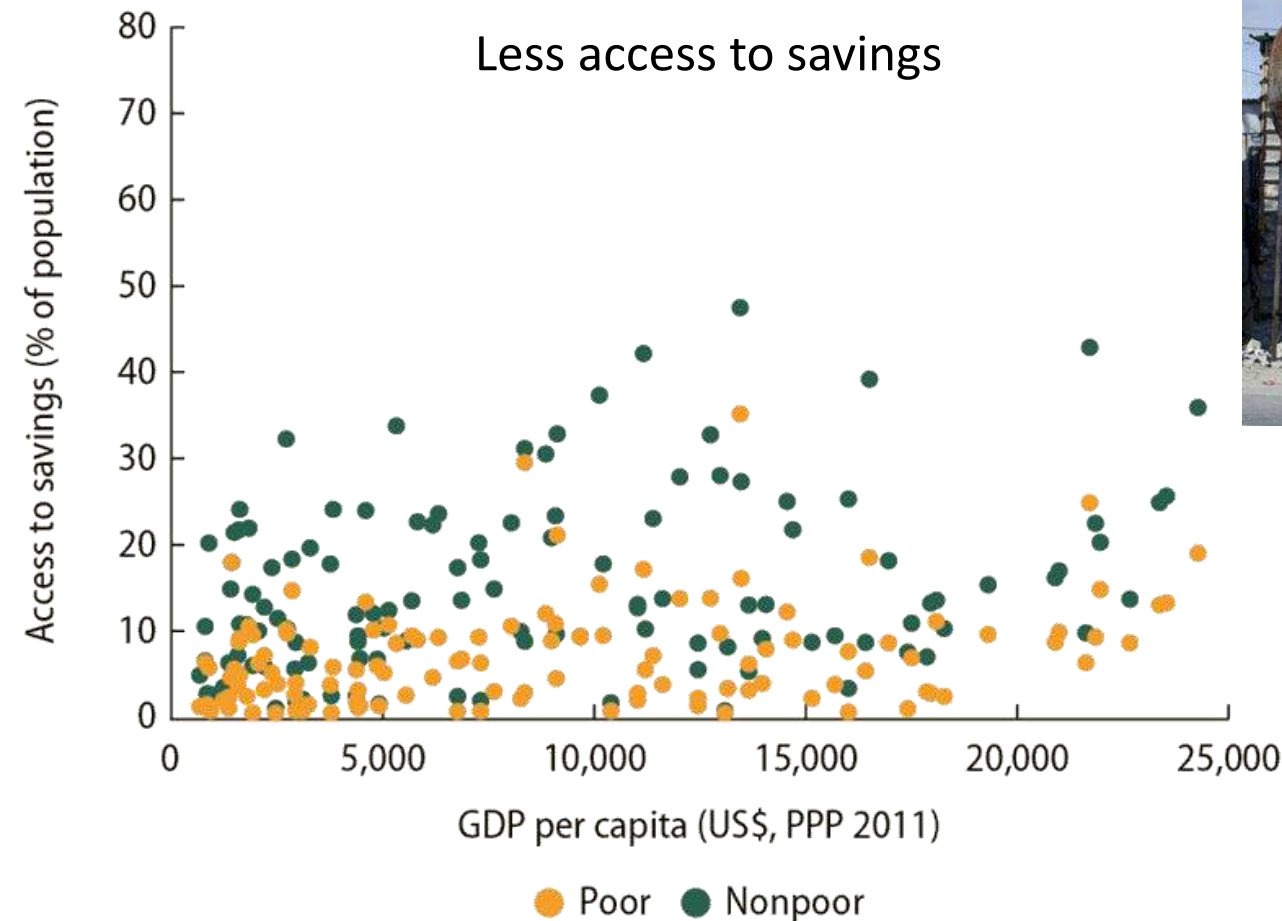
Vulnerability

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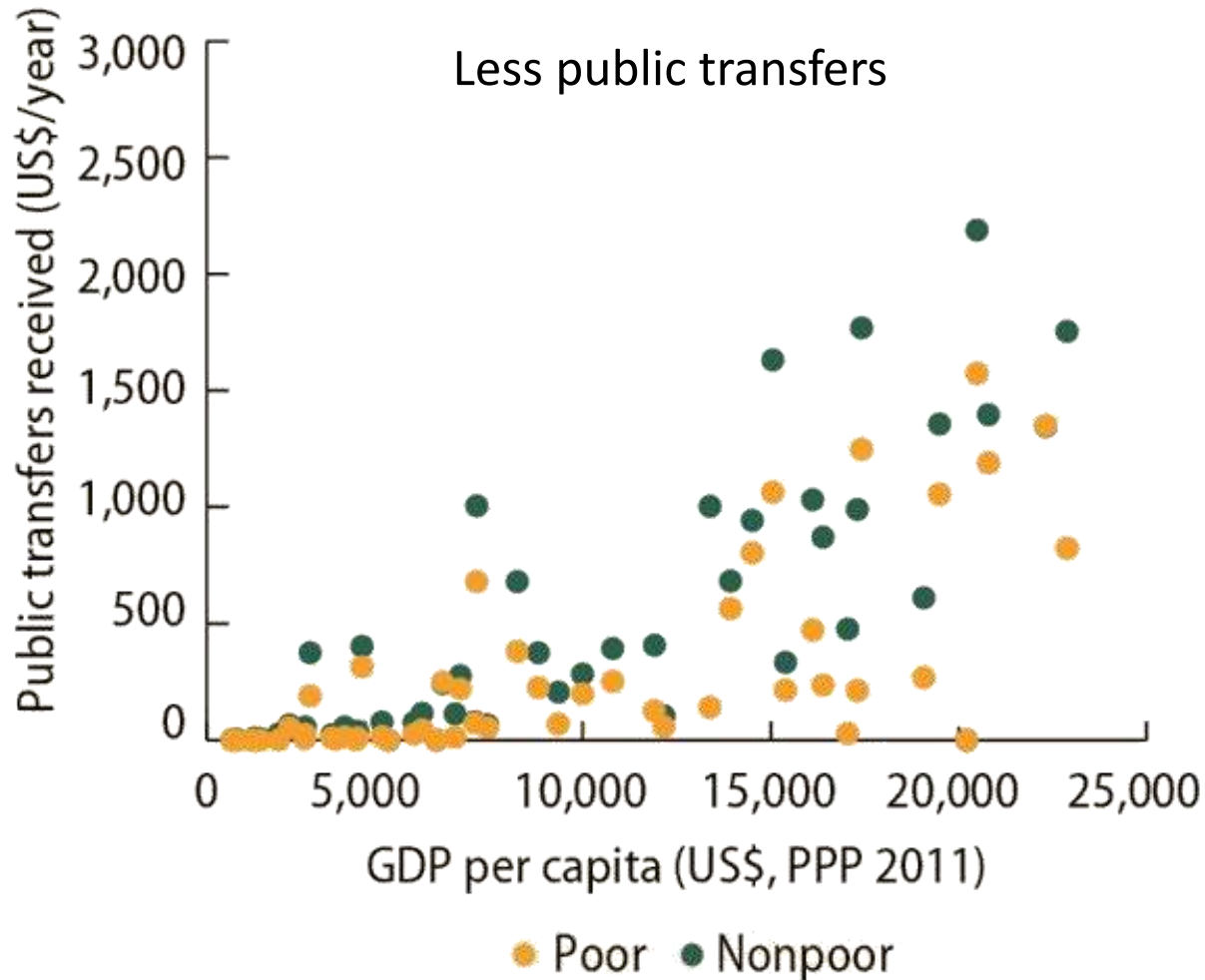
**Support
received**

Are poor people less supported after a shock?

Poor people have less support from family, friends, the financial system, and social protection

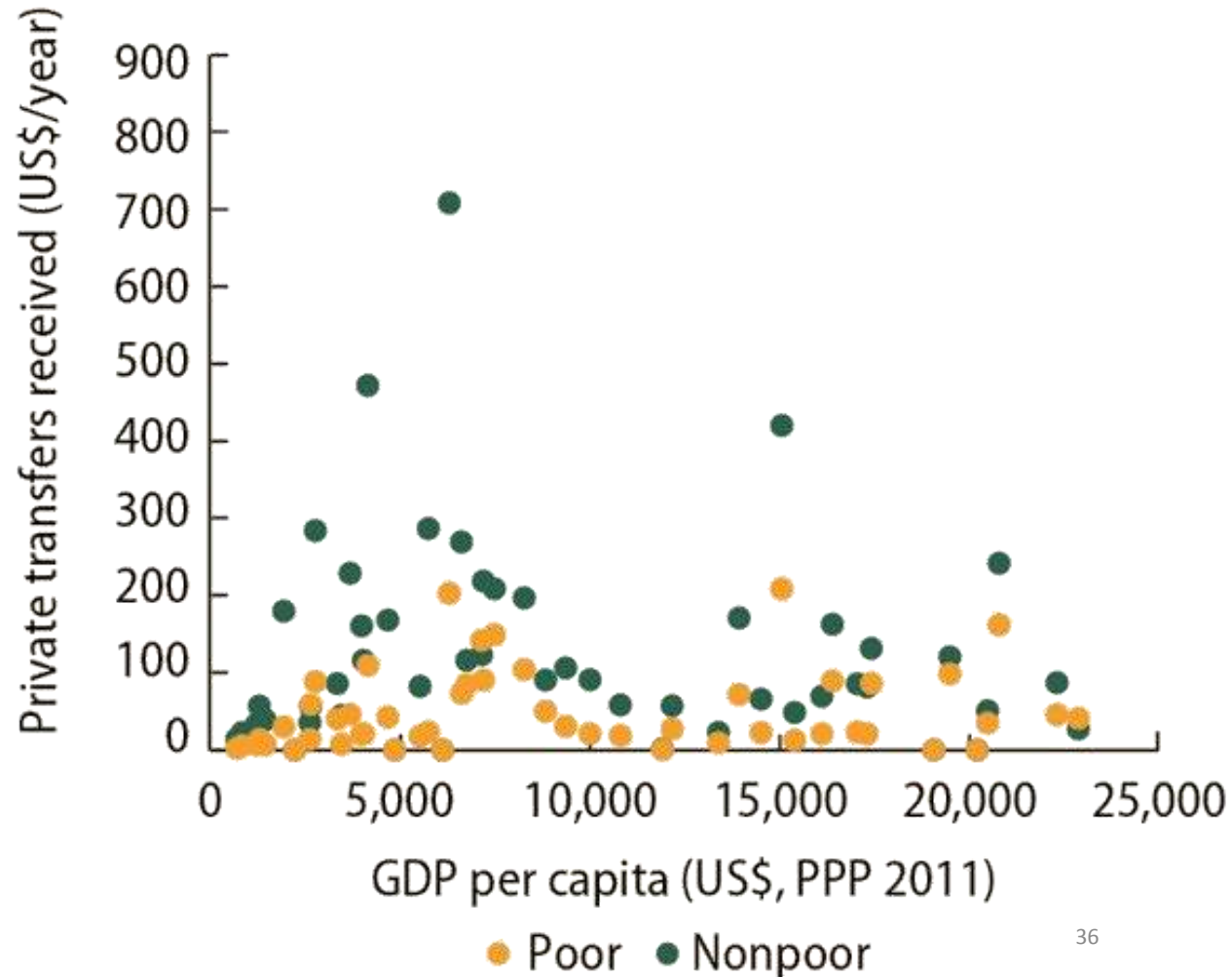


Poor people have less support from family, friends, the financial system, and social protection

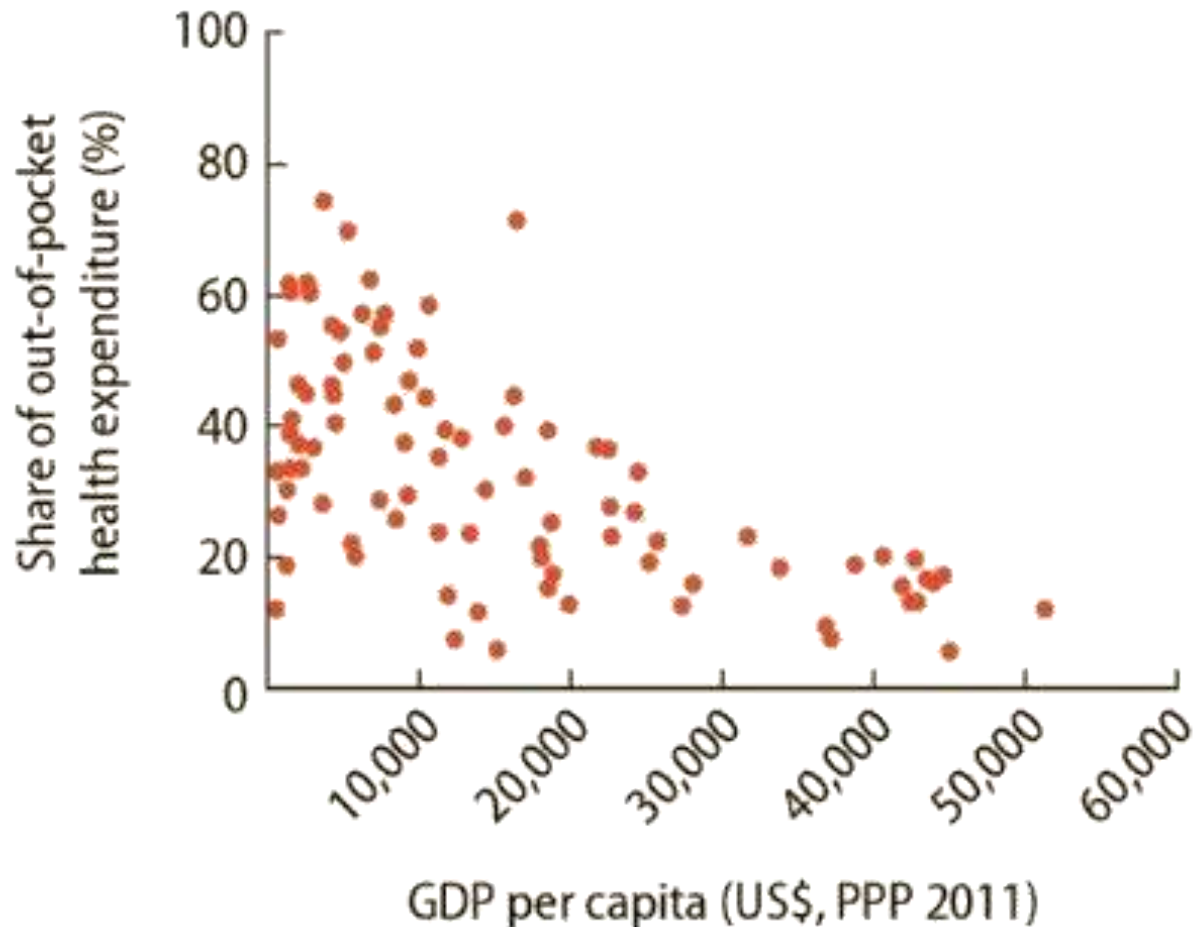


Poor people have less support from family, friends,
the financial system, and social protection

Less transfers from friends and family (remittances)



In poor countries, people have to pay more of their health care out of pocket



Poor people have less access to support to cope and adapt

		Saved at a financial institution	Average transfer from social protection
Indonesia	Poor	8%	\$0.5/day
	Non-poor	21%	\$2/day



Poor people have less access to support to cope and adapt

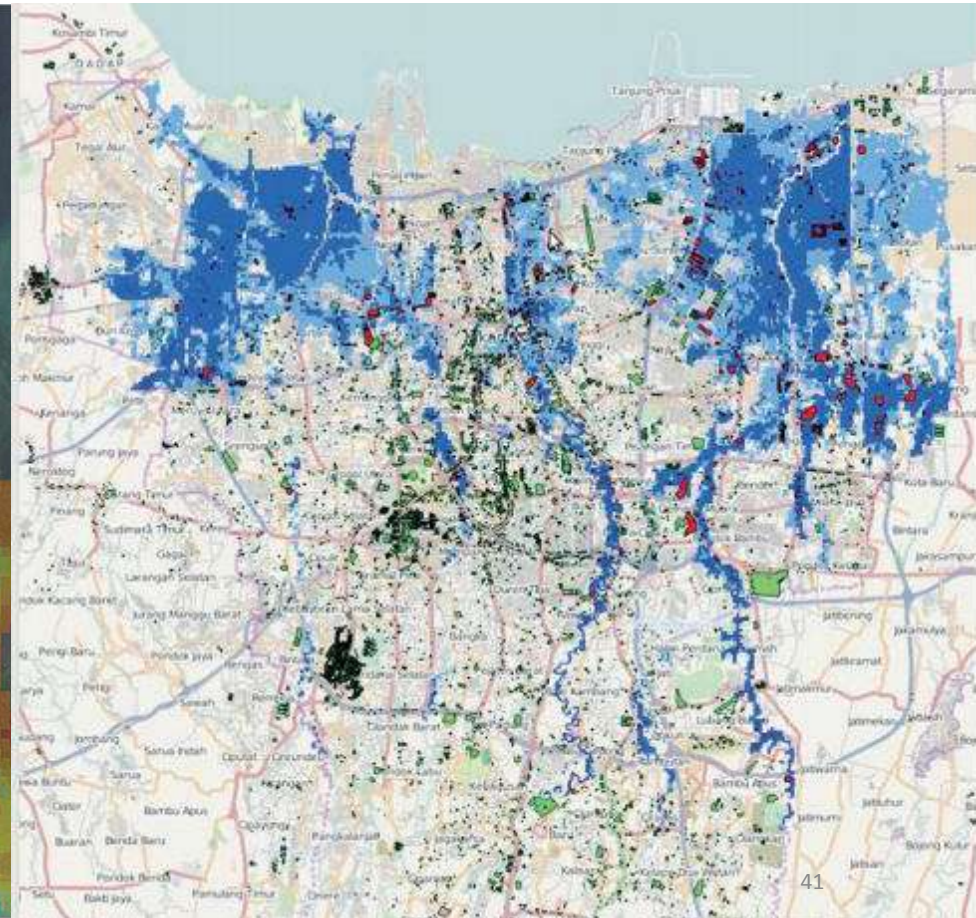
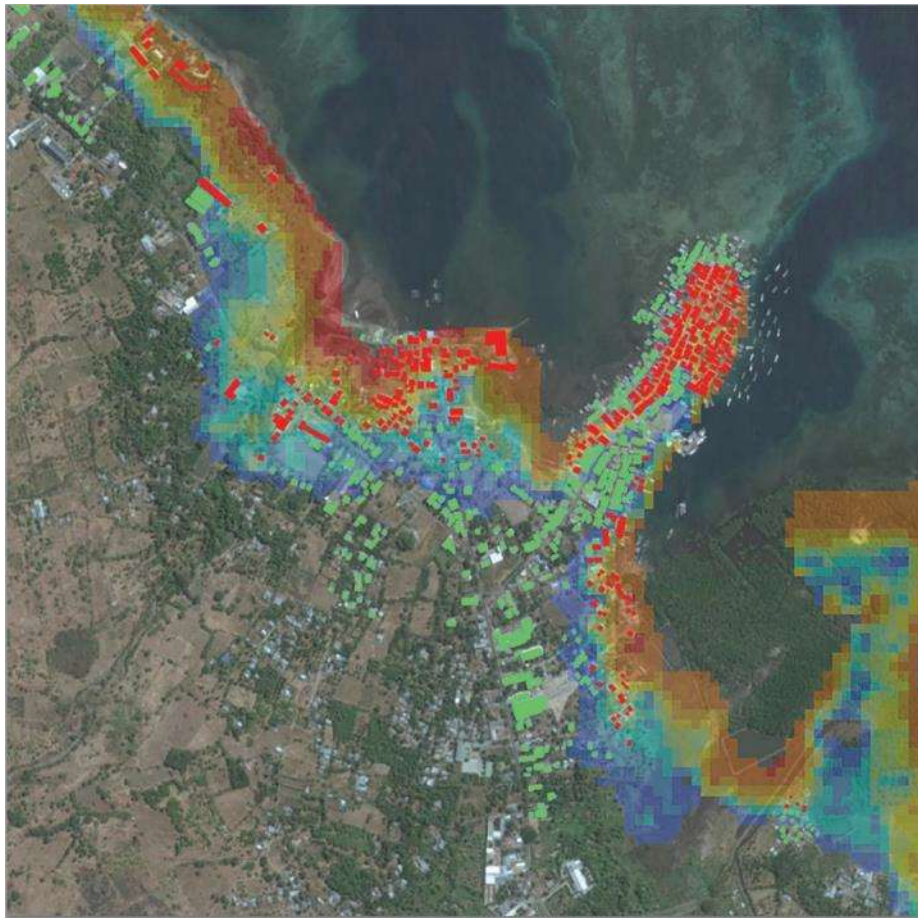
		Saved at a financial institution	Average transfer from social protection
Indonesia	Poor	8%	\$0.5/day
	Non-poor	21%	\$2/day
Malawi	Poor	4%	\$0.05/day
	Non-poor	11%	\$0.17/day



So what can we do?

Solutions in risk management

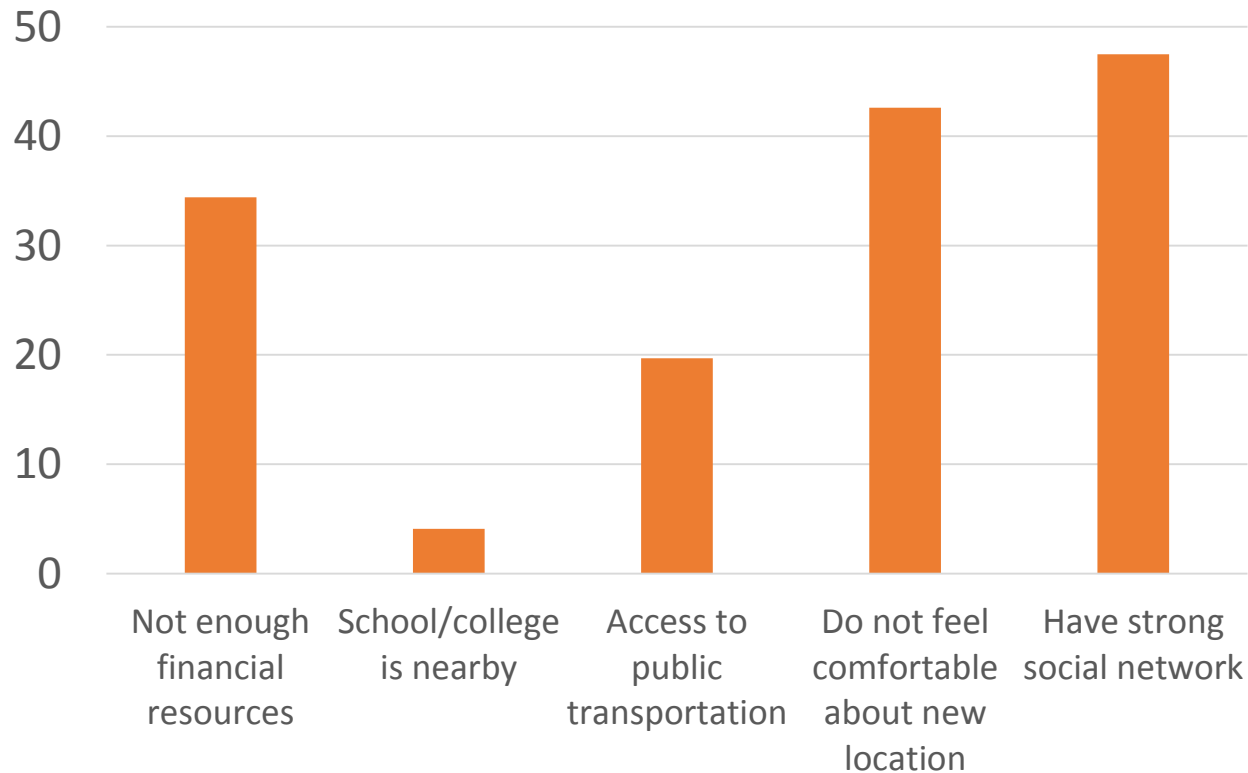
Risk-sensitive land-use planning, more and better accessible risk data, more and robust infrastructure, financial inclusion, and early warning systems can reduce climate change impacts through natural disasters



Solutions in risk management

Risk-sensitive land-use planning, more and better accessible risk data, more and robust infrastructure, financial inclusion, and early warning systems can reduce climate change impacts through natural disasters

Reasons why poor people are not moving to safer places in Mumbai



Early warning systems are efficient, low-cost options

- 1970 cyclone claimed over 300,000 lives in Bangladesh
- Cyclone of similar magnitude resulted in about 4,000 fatalities in 2007 thanks to:
 - A **nationwide program to build shelters** —from 12 shelters in 1970 to 2,500 in 2007
 - An improved **forecasting** capacity and a simple but effective system for **warning** the population
 - Early warning systems have a **benefit-cost ratio larger than 4**



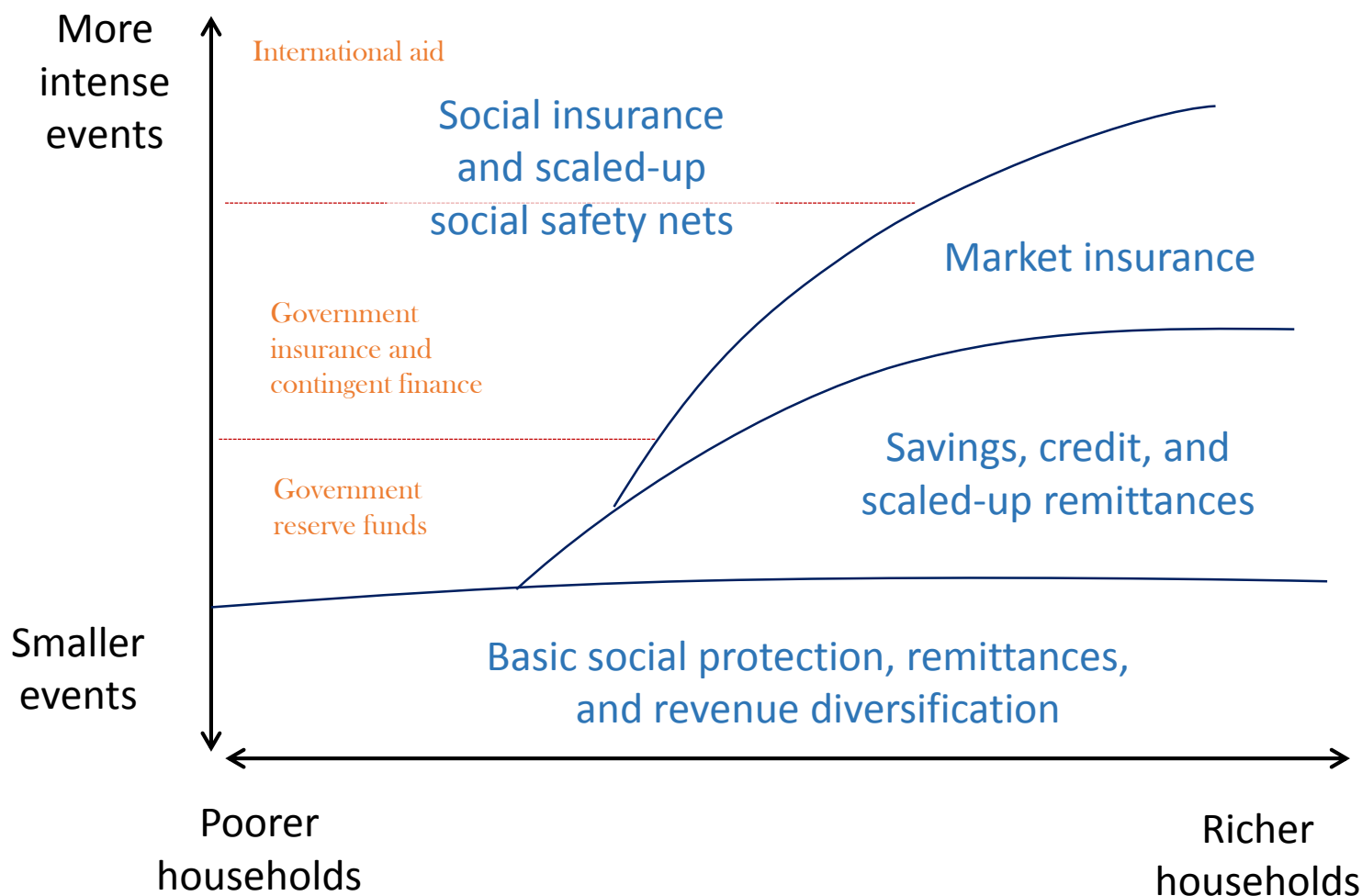
Source: World Development Report 2014

Improve financial inclusion



- Mobile banking will help.
- But bank account must be design for the poor...
- ... and they need consumer protection.

Social protection can protect the population – and especially the poorest – against climate shocks



Scaled-up social protection to help households cope with shocks and avoid detrimental secondary effects



- In Mexico, beneficiaries of Prospera are less likely to withdraw their children from school when hit by shocks.
- In Kenya, the Hunger Safety Net Program prevented a 5 percent increase in poverty among beneficiaries following the 2011 drought.

- In the report we discuss how to scale up social protection after a shock:
 - Increase coverage (Ethiopia PNSP)
 - Increase amounts (Philippine 4Ps)
 - Create a new program (Pakistan *Citizen's Damage Compensation Program*)
- And we discuss how to finance this scale up:
 - Reserve funds
 - Insurance and risk sharing facilities
 - Contingent finance (CatDDOs)

Main Message

Climate-related shocks and stresses are already a major obstacle to poverty reduction

They affect poor people more than the rest of the population

They will worsen with climate change, making it even more important to improve risk management.

Ill-designed adaptation policies can go against poverty reduction

Distributional impacts will depend on power relationship, governance, and the voice of poor people



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