Resilient societies?

Stephane Hallegatte

Global Facility for Disaster Reduction and Recovery (GFDRR)

The World Bank

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GFDRR
Global Facility for Disaster Reduction and Recovery

LATINO

Puerto Rico lost $43 billion after Hurricane Maria, according to govt. report

"Given the magnitude of the natural disaster, the economic sectors will keep feeling the impact for an undetermined amount of time," the report says.

WORLD • HURRICANE IRMA

Hurricane Irma's Damage Could Cost Us $300 Million, Antigua and Barbuda PM Says

BY TARA JOHN / ANTIGUA SEPTEMBER 12, 2017

Increased flooding may cost the world $1 trillion by 2050

John Roach

Published 4:42 AM ET Mon, 19 Aug 2013

NBC NEWS

Getty Images

Reyes Garcia wades through floodwater to inspect flood damage to a building April 19, 2013 in Des Plaines, Illinois.

ASSET LOSSES

1. Hazard
2. Exposure
3. Vulnerability

Avoiding disasters/impacts

Managing residual risk/impacts

LIFELINES

The Resilient Infrastructure Opportunity

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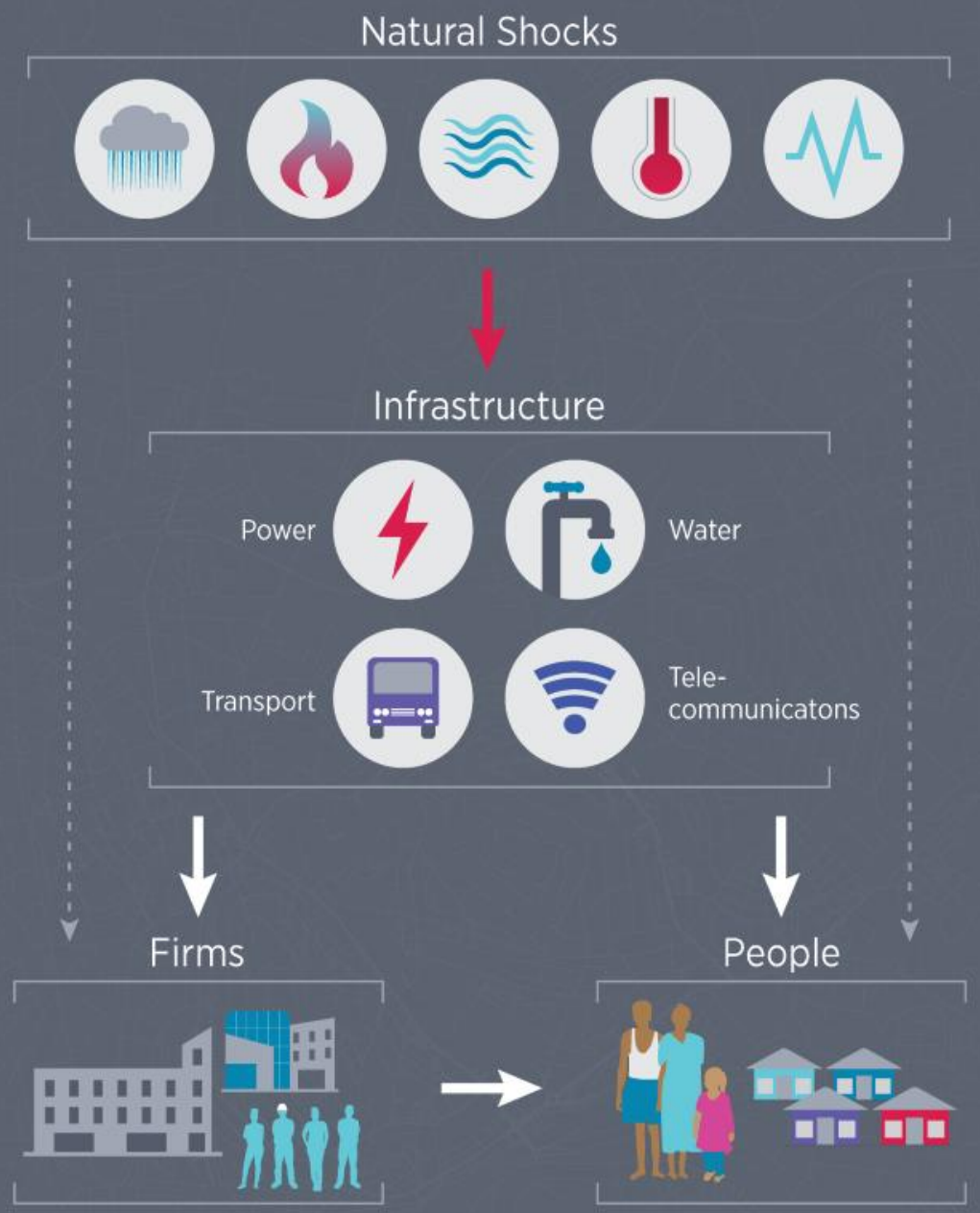
People wait in line for water after the 2010 earthquake in Port au Prince, Haiti.

A traffic jam after flooding
in Chiangrai, Thailand


Natural Shocks
Infrastructure
Power
Water
Transport
Tele-
communicatons
Firms
People

Diagnosis

Solutions

Recommendations

Diagnosis

Solutions

Recommendations

The lack of resilient infrastructure is harming people and firms

Repair costs matter, but they are only part of the problem.

$391–$647 billion

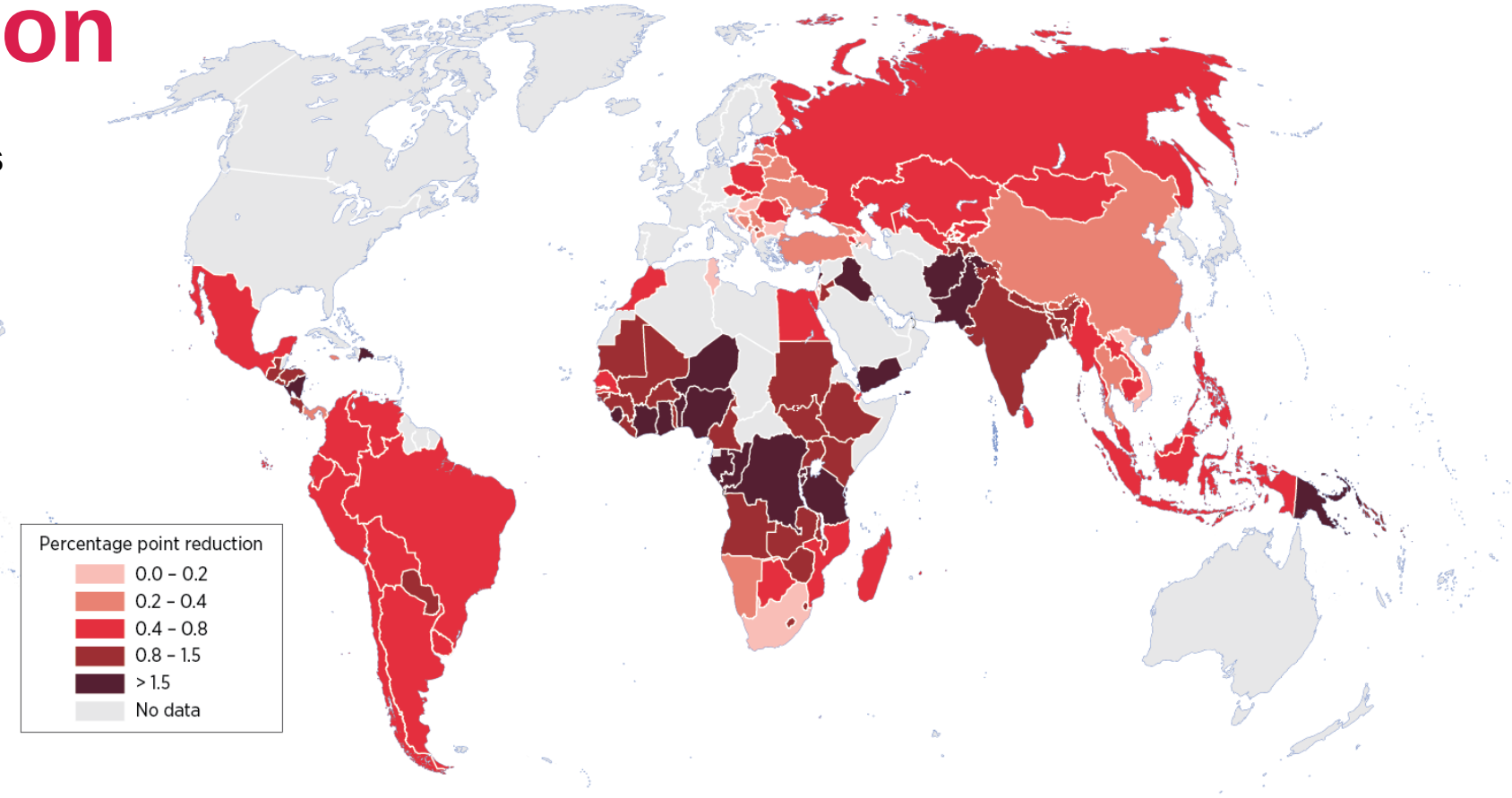
The annual cost of infrastructure disruptions on households and firms in developing countries.

Firms

- **Reduced utilization rate ($151 billion)**
- **Lost sales ($82 billion)**
- **Self-generation costs ($65 billion)**
- Increased inventories
- More expensive localization choices
- Higher barriers for entry of new firms
- Less competition and innovation
- Labor-biased technologies

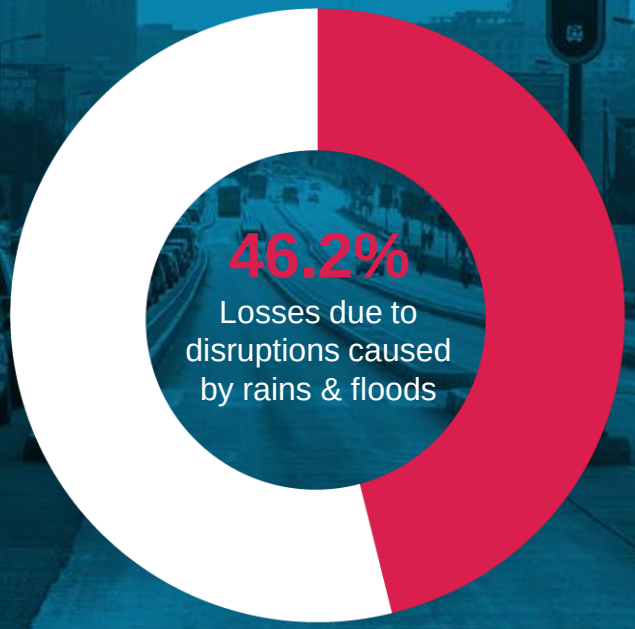
Household

- **Willingness-to-pay ($90–$343 billion)**
- **Health expenditures ($3–$6 billion)**
- Income impact and gender implications

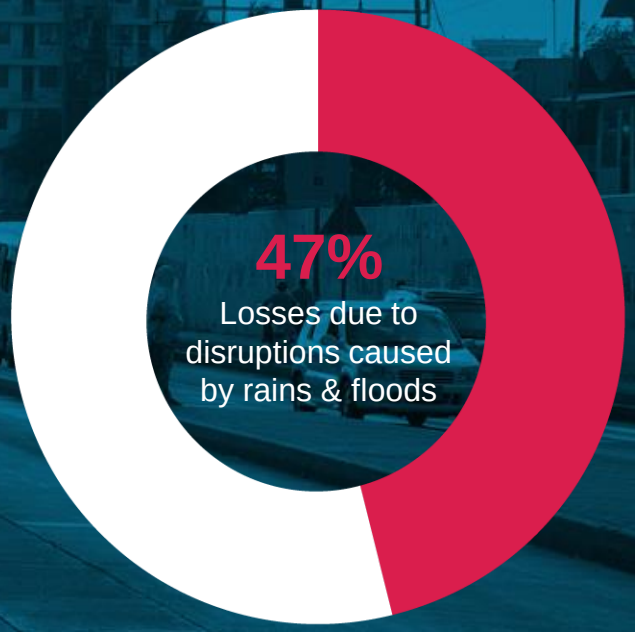


What fraction is caused by natural hazards?
Zoom on Tanzania.

Transport



Power



Total utilization losses per year:

$640 million

Or 1.8 percent of GDP

Weather-related losses per year:

$250 million

Or 0.7 percent of GDP

Diagnosis

Solutions

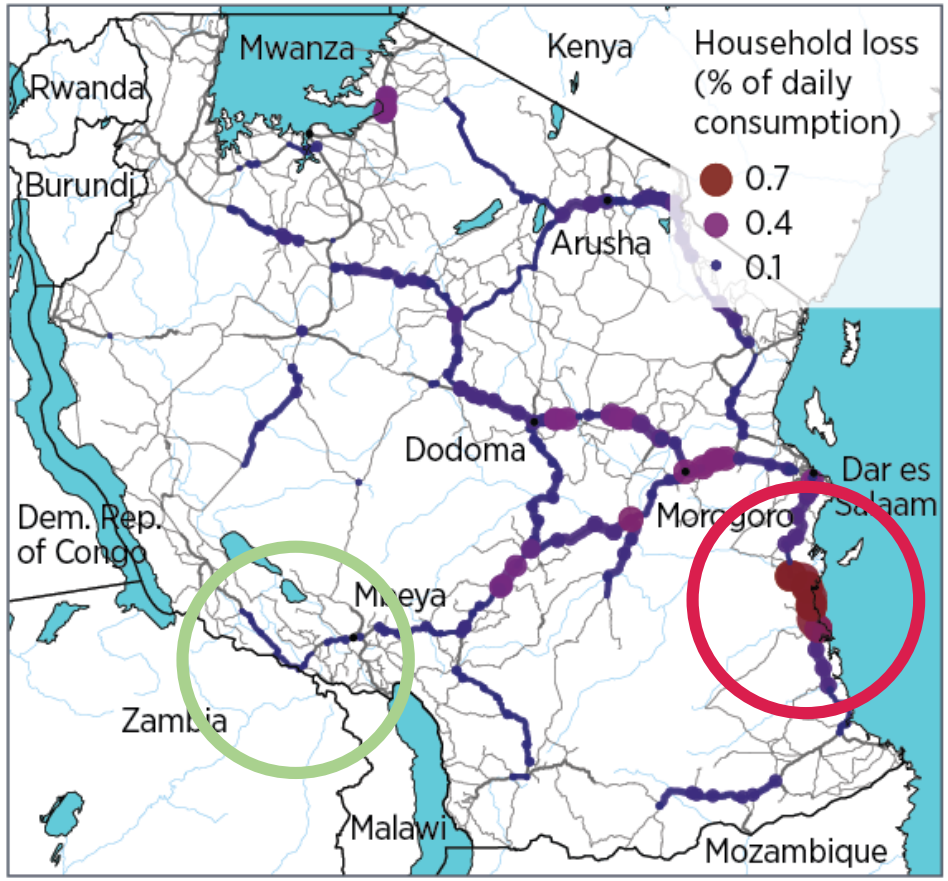
Recommendations

Investing in more resilient infrastructure is sound, profitable, and urgent

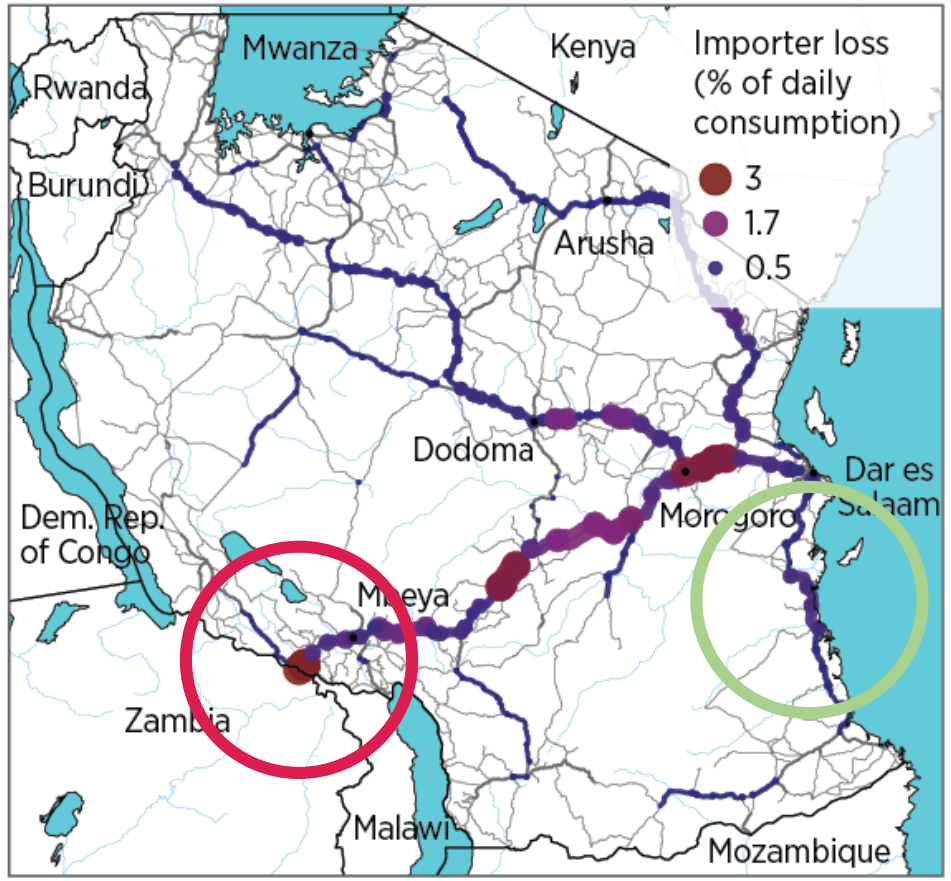
We start from engineering options

We use criticality analyses to identify where strengthening is most important and beneficial

a. Impacts of disruption on households



b. Impacts of disruption on international clients



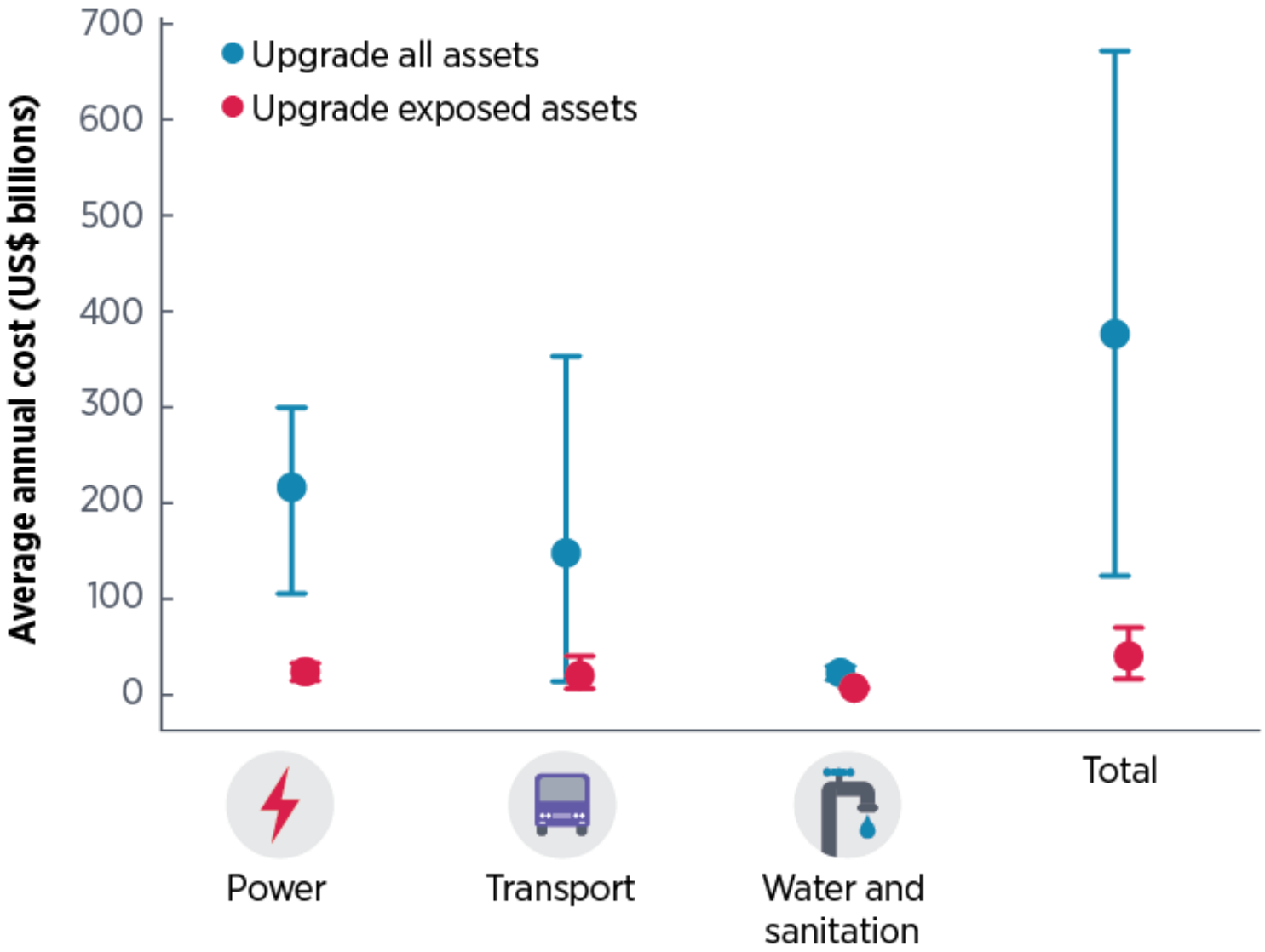
We consider opportunities for cheaper resilience by making users better able to manage disruptions

Critical services

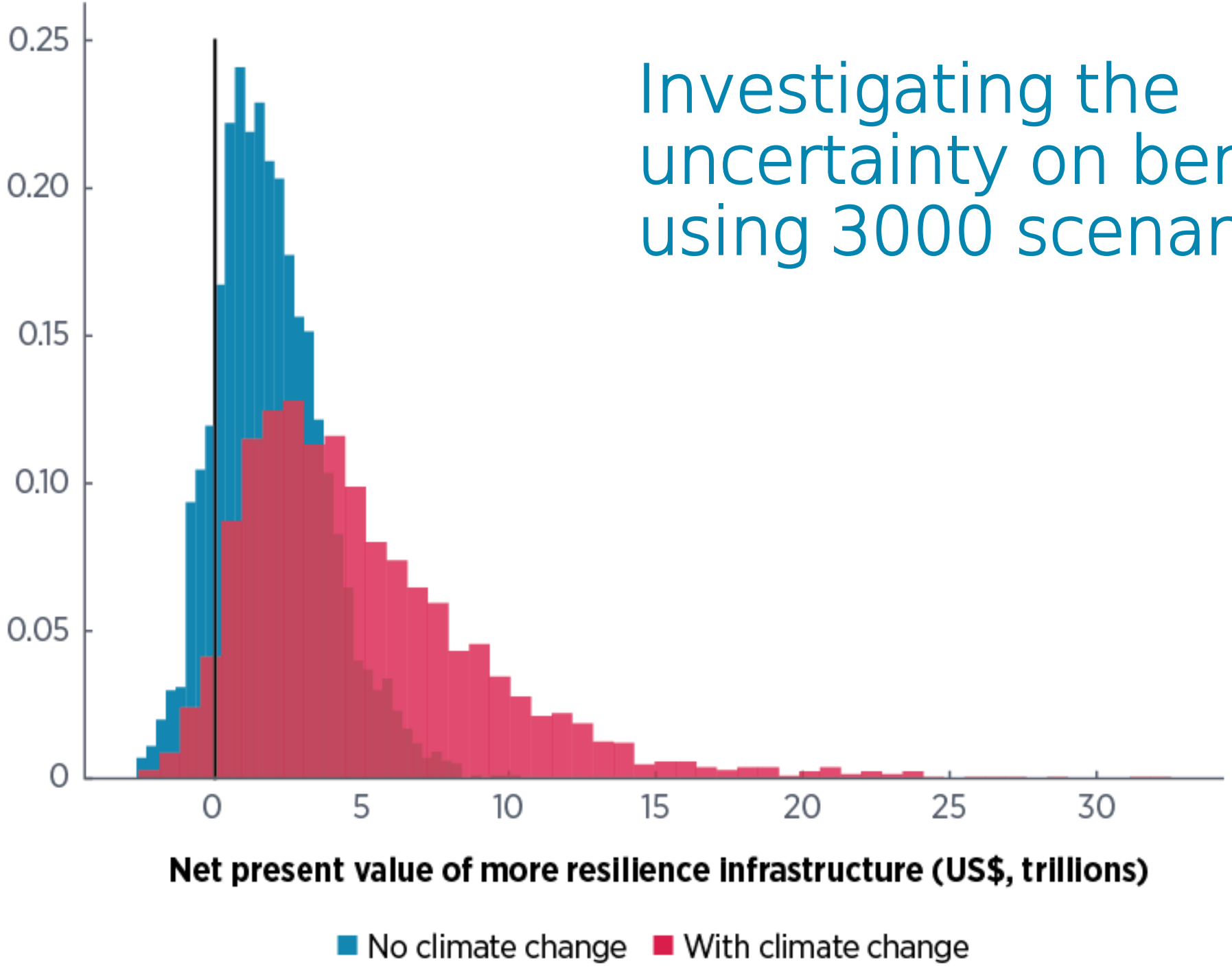
Business continuity plans

Home emergency supply

With the right data, strengthening assets would cost $11–$65 billion per year—3 percent of total needs



Investigating the uncertainty on benefits using 3000 scenarios



Altogether: Investing in resilience is sound, profitable, and urgent

$4

In net benefit for each $1 invested in infrastructure resilience

$4.2 trillion

Net benefit from building new infrastructure to higher resilience standards

$100 billion

Cost of delaying action by one year

Diagnosis

Solutions

Recommendations

Good infrastructure management is the necessary basis for resilient infrastructure—but targeted actions are also needed.

Priority areas for financial support—how can we spend better?

FULL INFRASTRUCTURE COSTS

COST TO REGULATORS AND GOVERNMENT

- Master planning, regulation design, and enforcement
- Data and model development, research, training, education

LIFECYCLE COST TO (PUBLIC OR PRIVATE) INFRASTRUCTURE SERVICE PROVIDERS

- Project design and preparation
- Upfront investment cost
- Operational costs
- Maintenance and repair costs (and decommissioning)

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For instance, $1 invested in maintenance is worth $1.5 in new investment

Team members

- The report has been prepared by a team led by Stephane Hallegatte, with Jun Rentschler and Julie Rozenberg.
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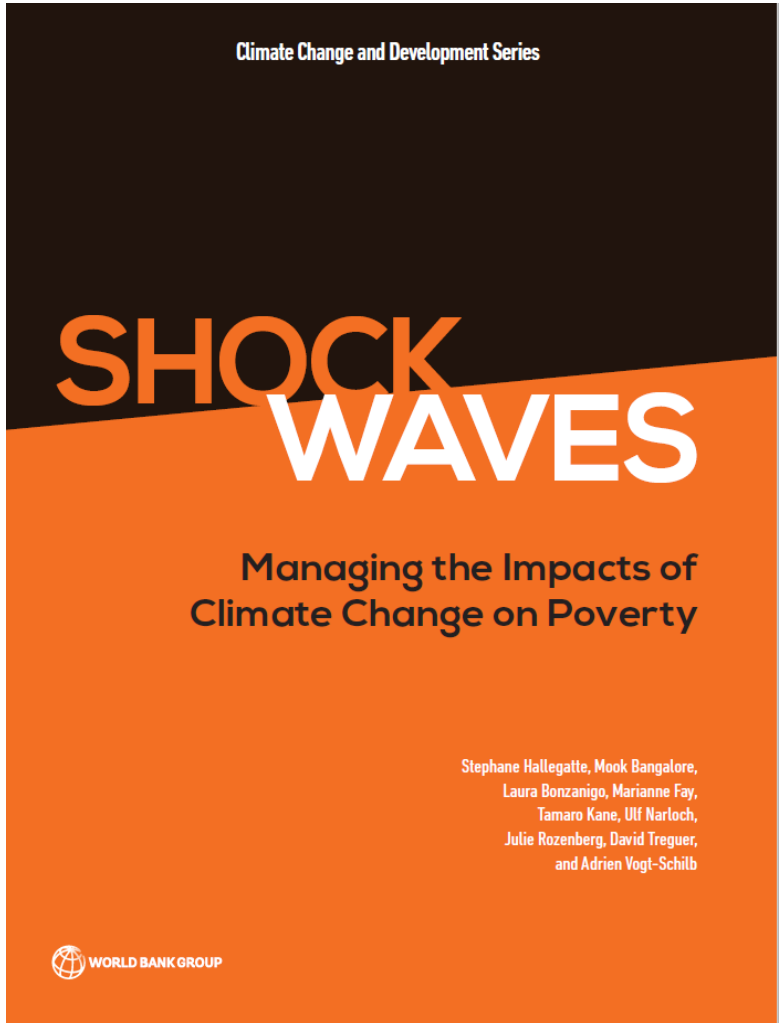
- **Sponsored by the Japan—World Bank Program for Mainstreaming Disaster Risk Management in Developing Countries and the Global Facility for Disaster Reduction and Recovery (GFDRR).**



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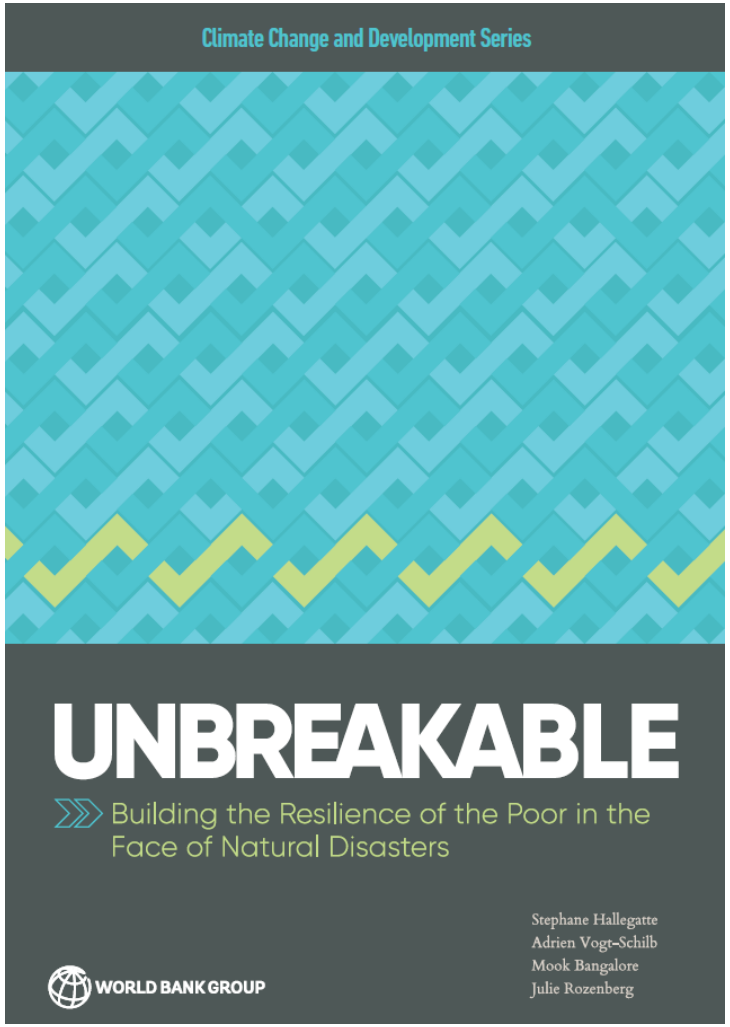

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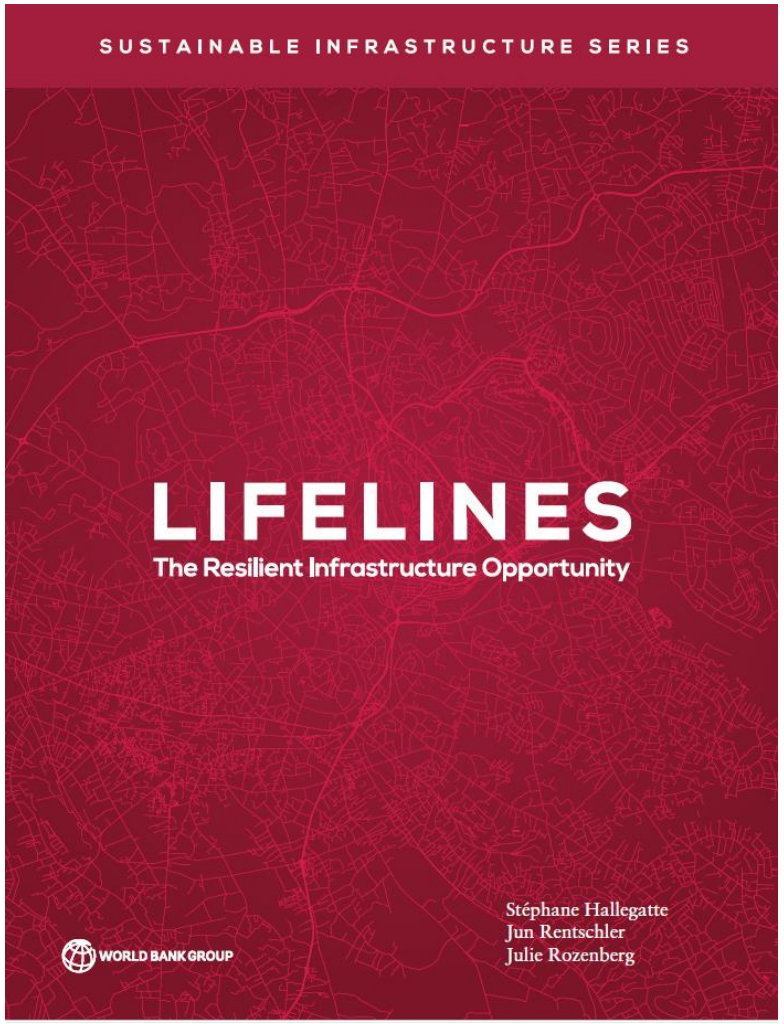

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Climate Change

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