

Managing the impacts of climate change

Stéphane Hallegatte

The World Bank – Global Facility for Disaster Reduction and Recovery

**MESSAGE 1 – CLIMATE IS
CHANGING AND THIS
CHANGE WILL NEGATIVELY
AFFECT ECONOMIC ACTIVITY
AND PRODUCTIVITY**

ipcc

INTERGOVERNMENTAL PANEL ON climate change

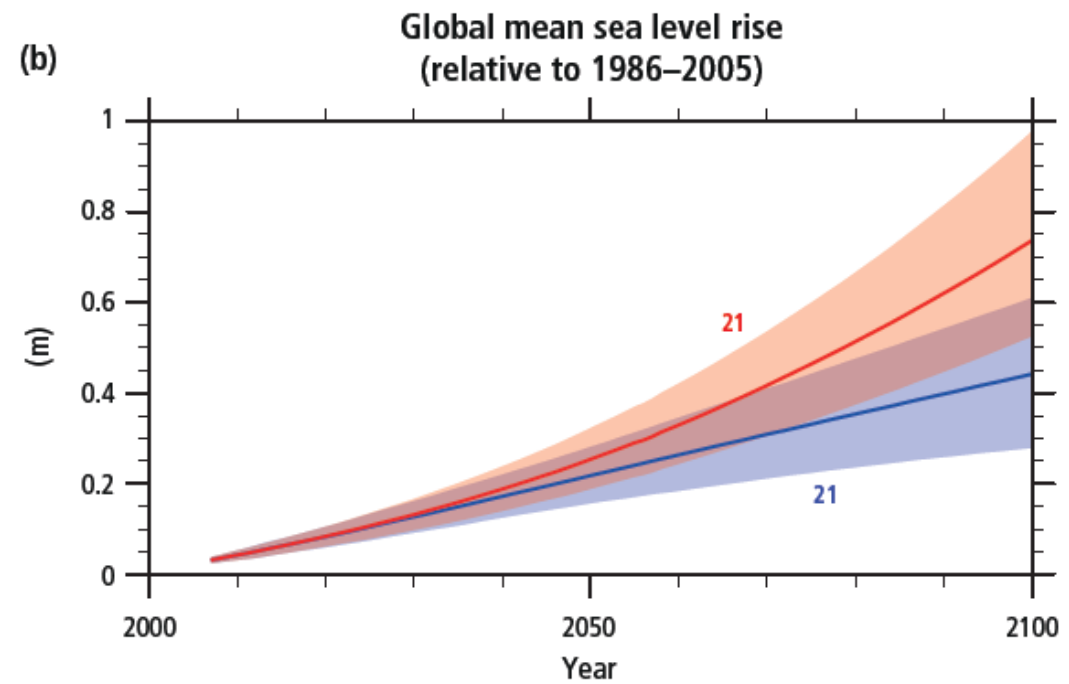
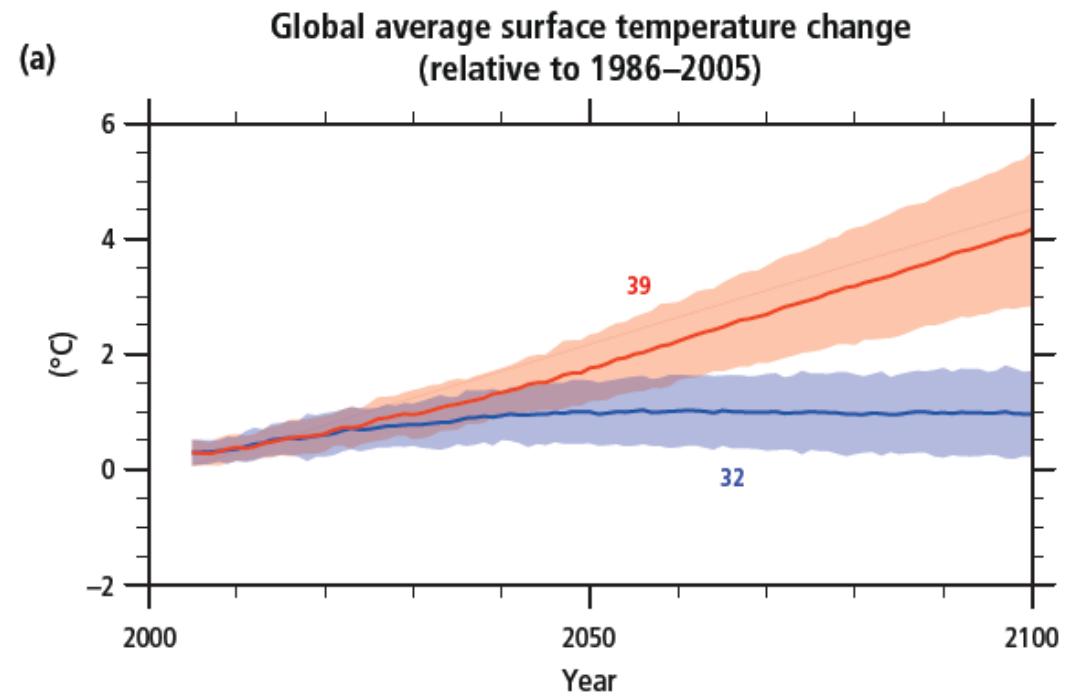
CLIMATE CHANGE 2014

Synthesis Report

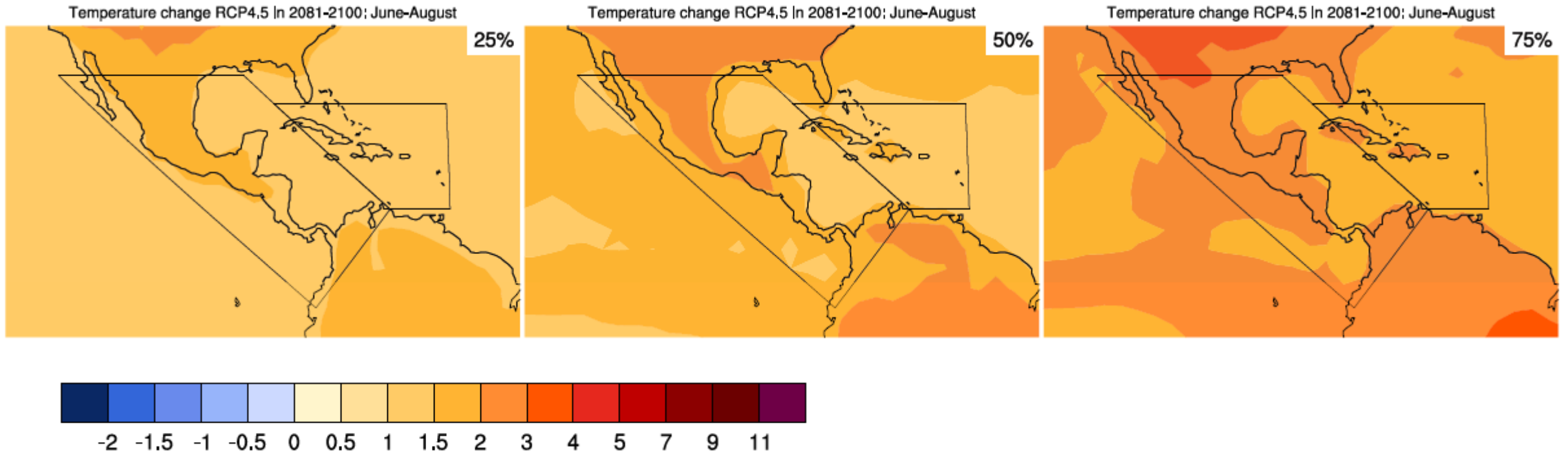


A REPORT OF THE
INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

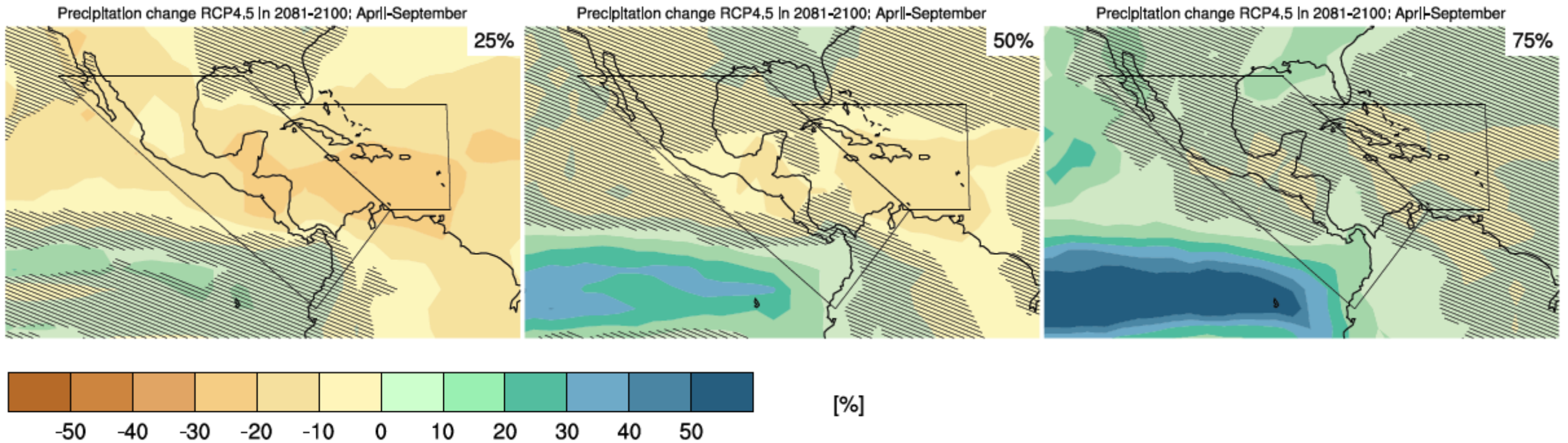




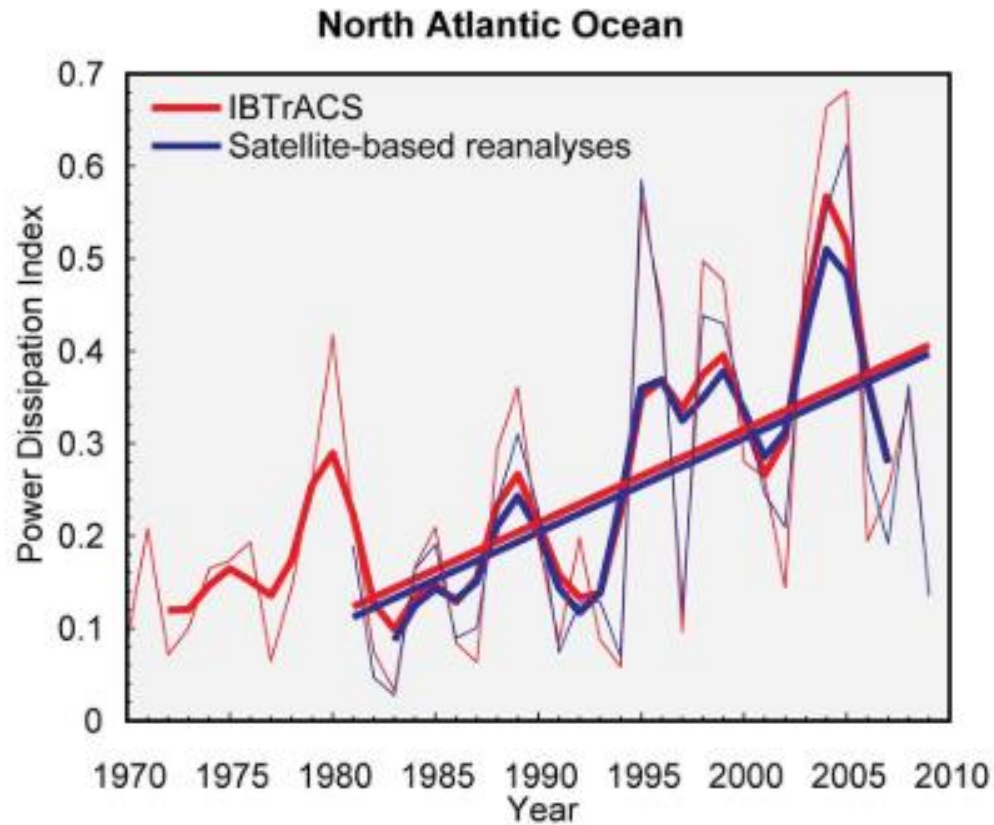
Things we know: temperatures will increase and sea level will rise



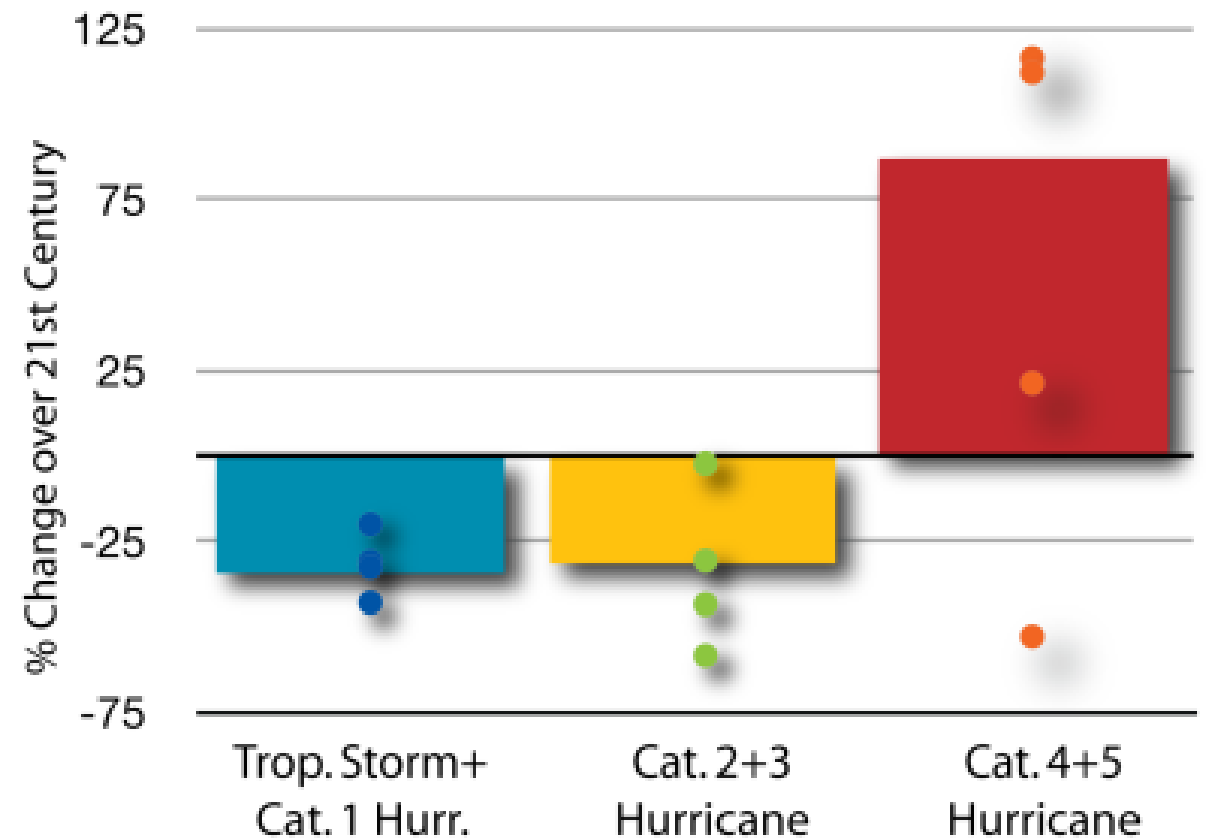
Things we suspect: rainfall will probably decrease...



Things we do not know: how will El Niño and hurricanes change?

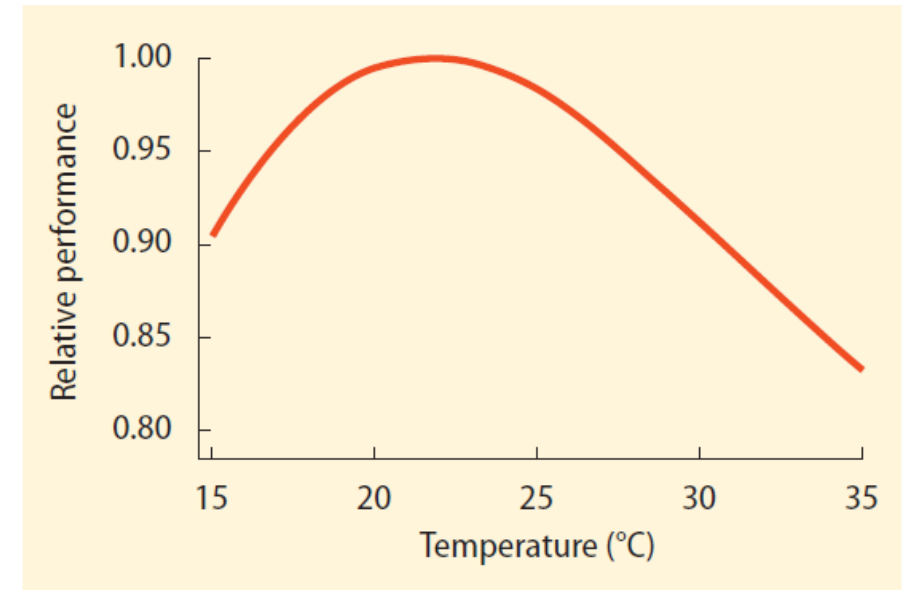


Projected Changes in Atlantic Hurricane Frequency over 21st Century
bars indicate "best" estimate, dots indicate alternative estimates.



These changes will have widespread impacts on ecosystems, economic activities, and livelihoods.

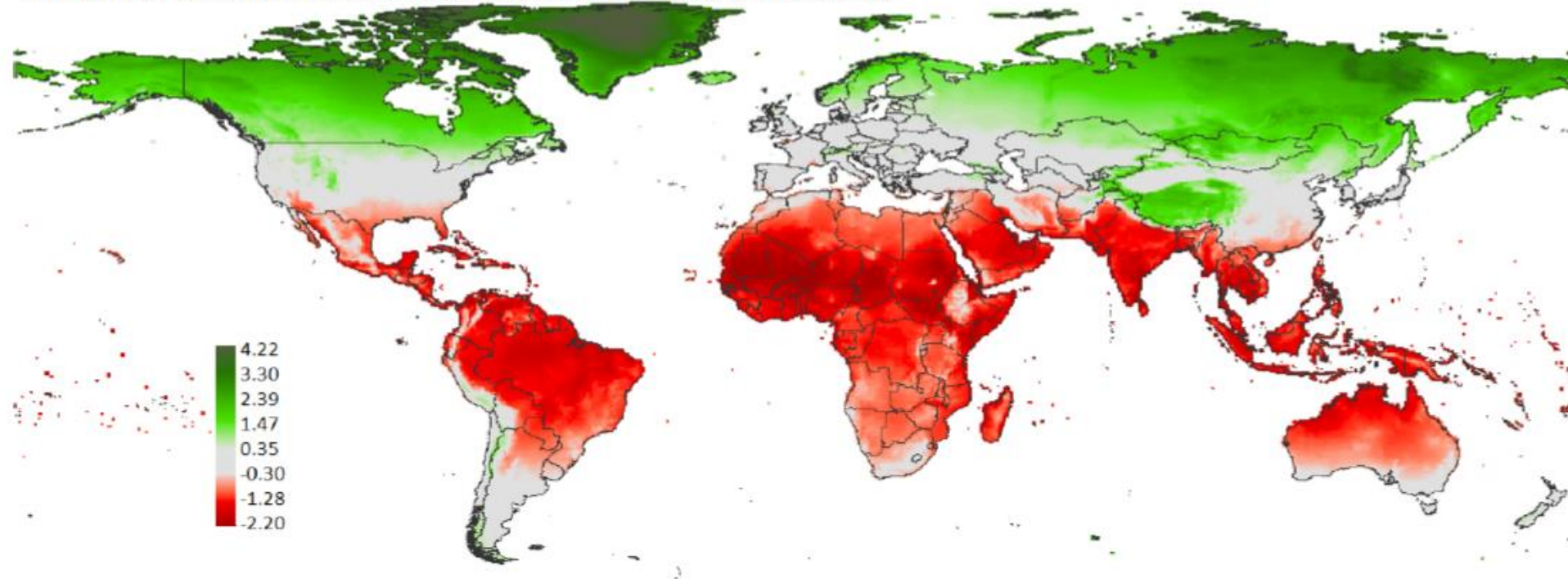
- Biodiversity and **ecosystems** services
- **Agriculture** productivity and **food prices**
- **Natural disasters** frequency and intensity (floods, hurricanes, etc.)
- **Health** (stunting, malaria, dengue, diarrhea, etc.)
- Direct impact on **labor productivity** and human capital
- And many other impacts...



Source: Seppanen, Fisk, and Lei 2006.

Changes in temperatures will affect productivity and aggregate economic output... especially in tropical countries

1. Effect of a 1°C Increase in Temperature on Real per Capita Output at the Grid Level



World Economic and Financial Surveys

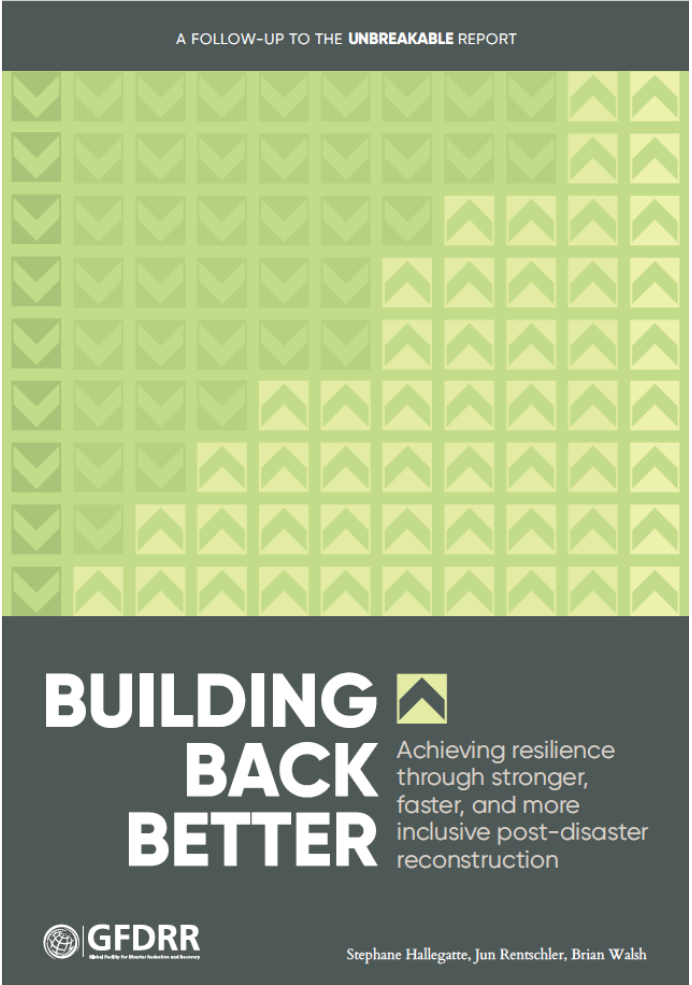
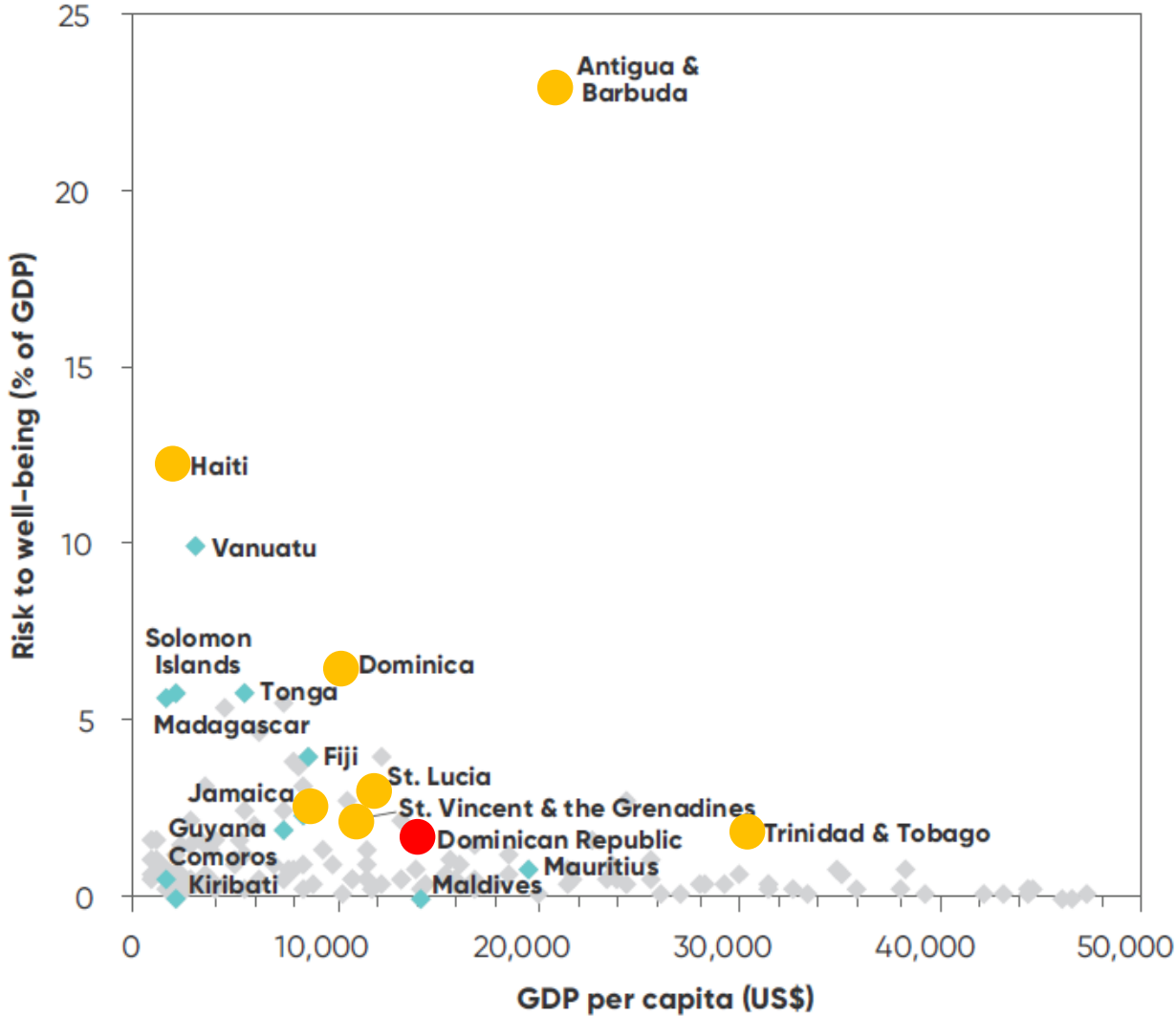
World Economic Outlook
October 2017

Seeking Sustainable Growth
Short-Term Recovery, Long-Term Challenges

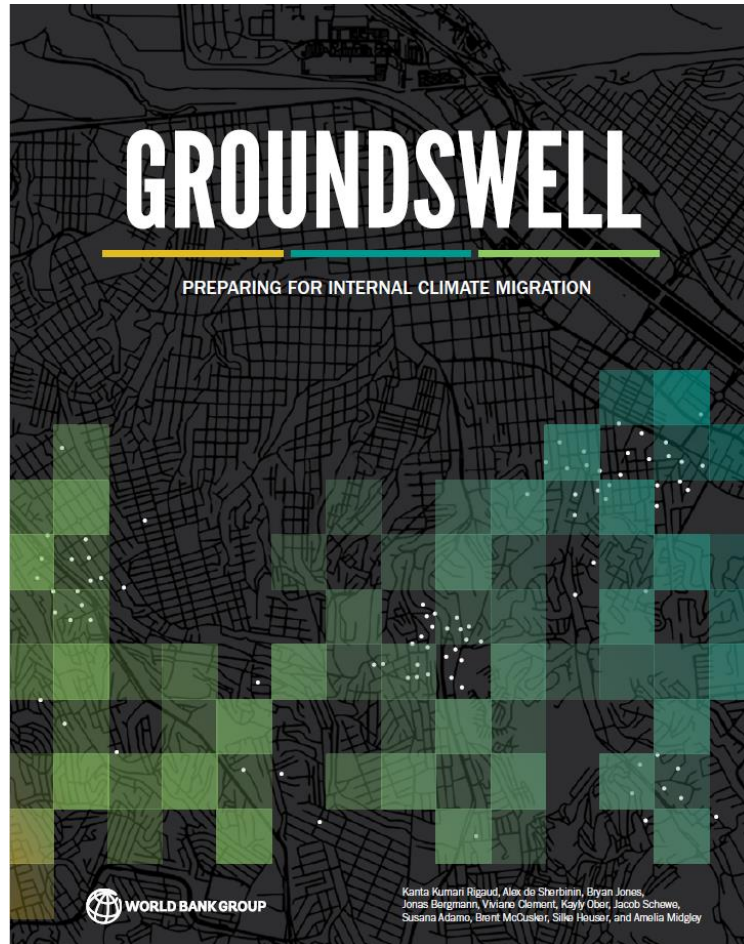


Source: IMF WEO (2017)

Caribbean small islands are exposed to very high risks and are very vulnerable to changes in hurricane intensity



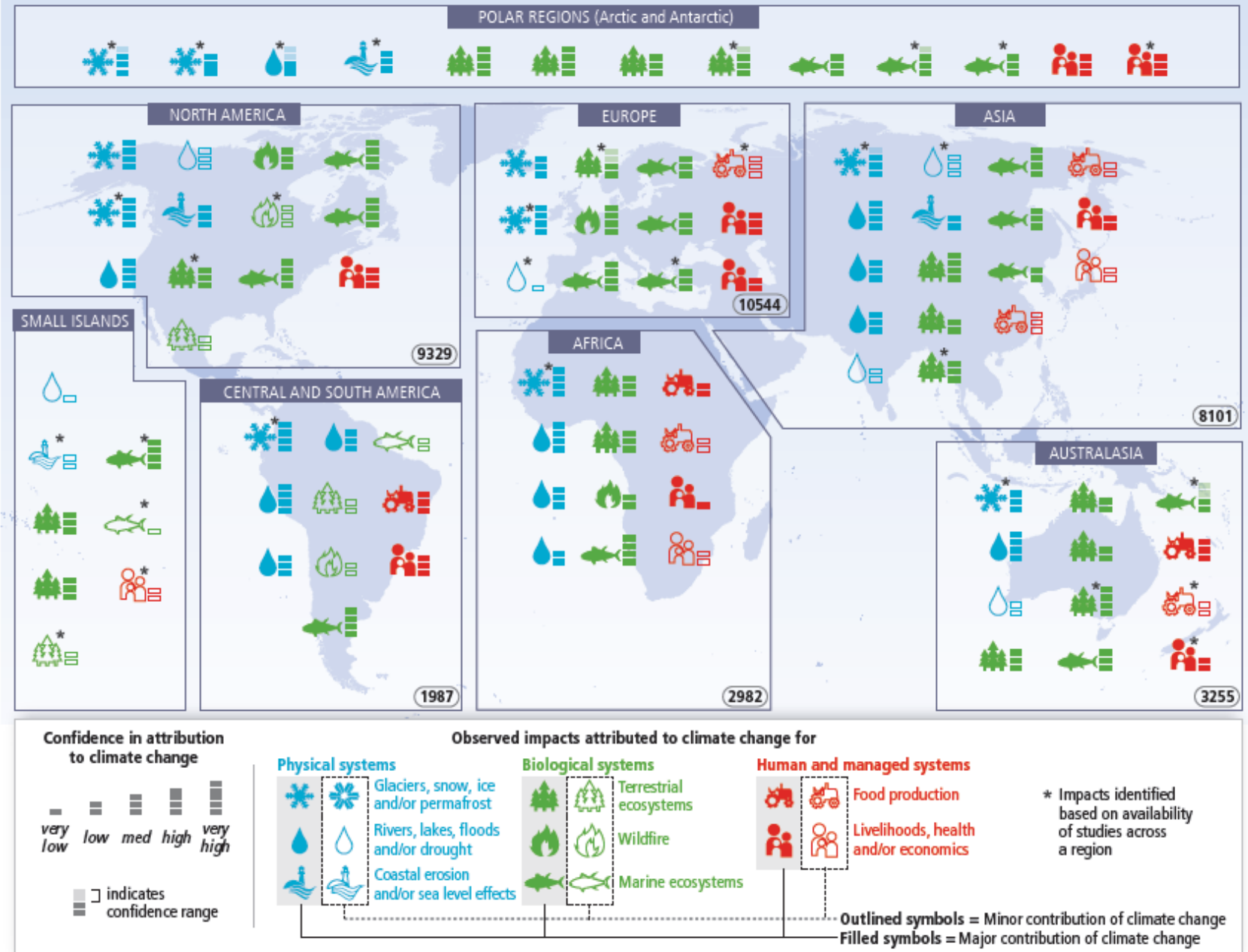
And significant migrations...



Up to 17 million people would move to different locations in Central America due to climate change by 2050

FAQ: Do we already see climate change impacts?

Widespread impacts attributed to climate change based on the available scientific literature since the AR4



**FAQ: Do we already
see climate change
impacts?**



MESSAGE 2 – POOR PEOPLE WILL BE AFFECTED THE MOST

SHOCK WAVES

Managing the Impacts of
Climate Change on Poverty

Stephane Hallegatte, Mook Bangalore,
Laura Bonzanigo, Marianne Fay,
Tamaro Kane, Ulf Narloch,
Julie Rozenberg, David Treguer,
and Adrien Vogt-Schilb

Poor people are more exposed to natural hazards. Take the case of Nigeria



Poor people are 50% more likely to be flooded

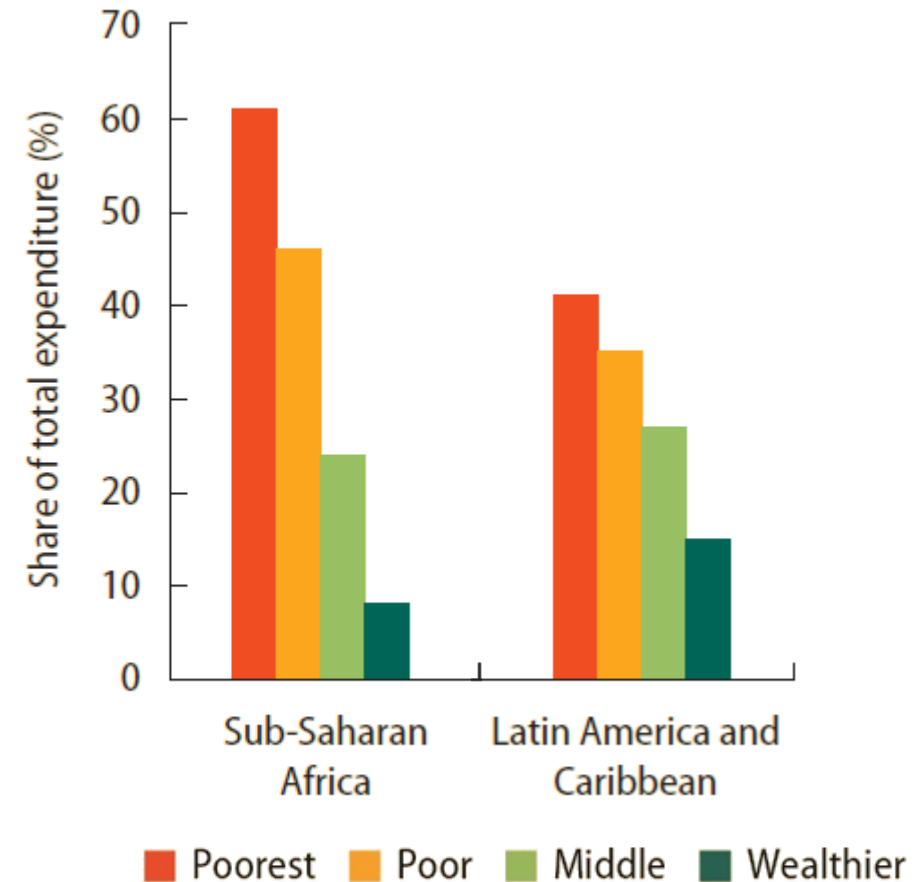


Poor people are 130% more likely to be affected by a drought



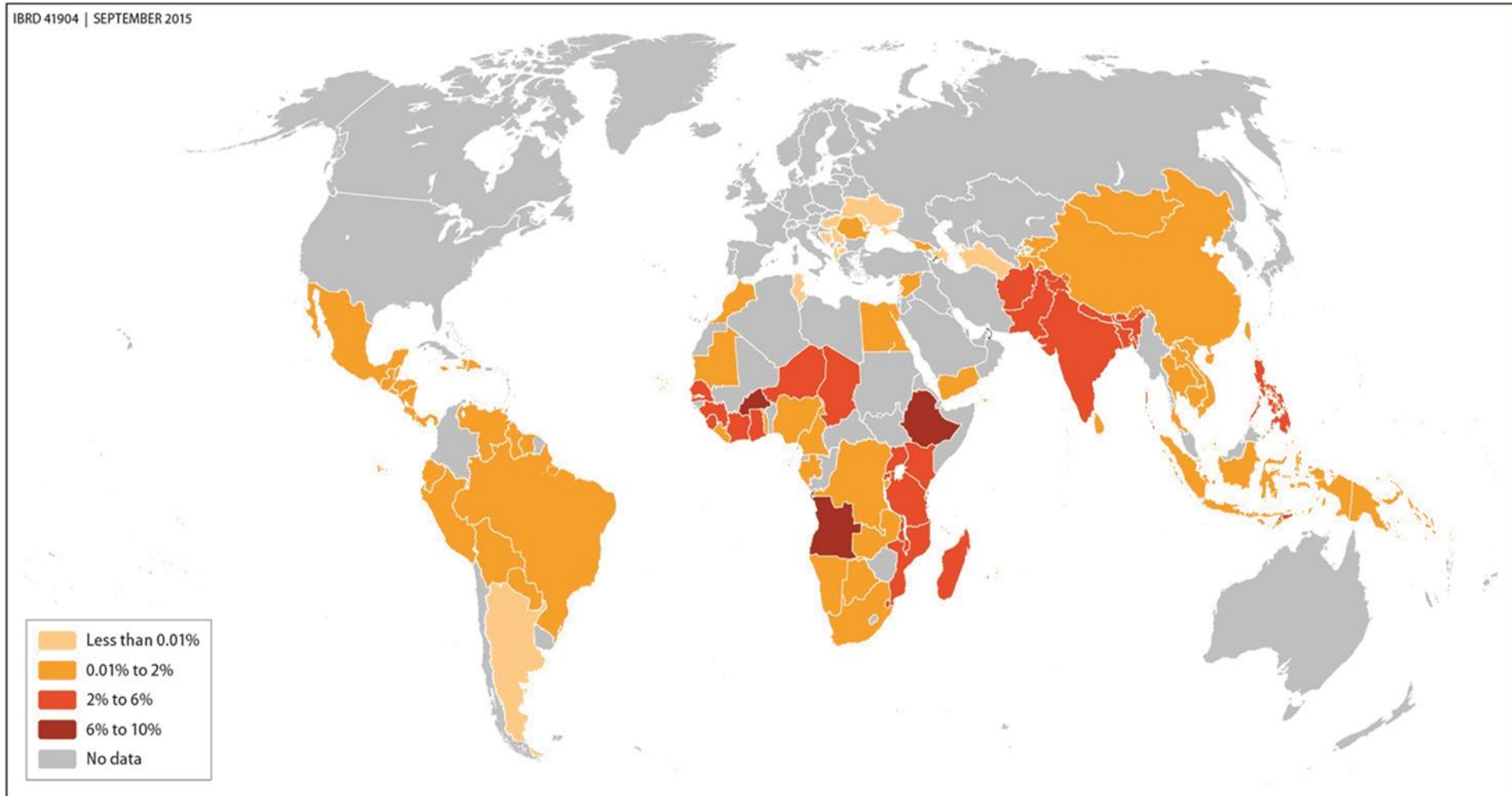
Poor people are 80% more likely to be affected by extreme heat

Poor people spend more on food



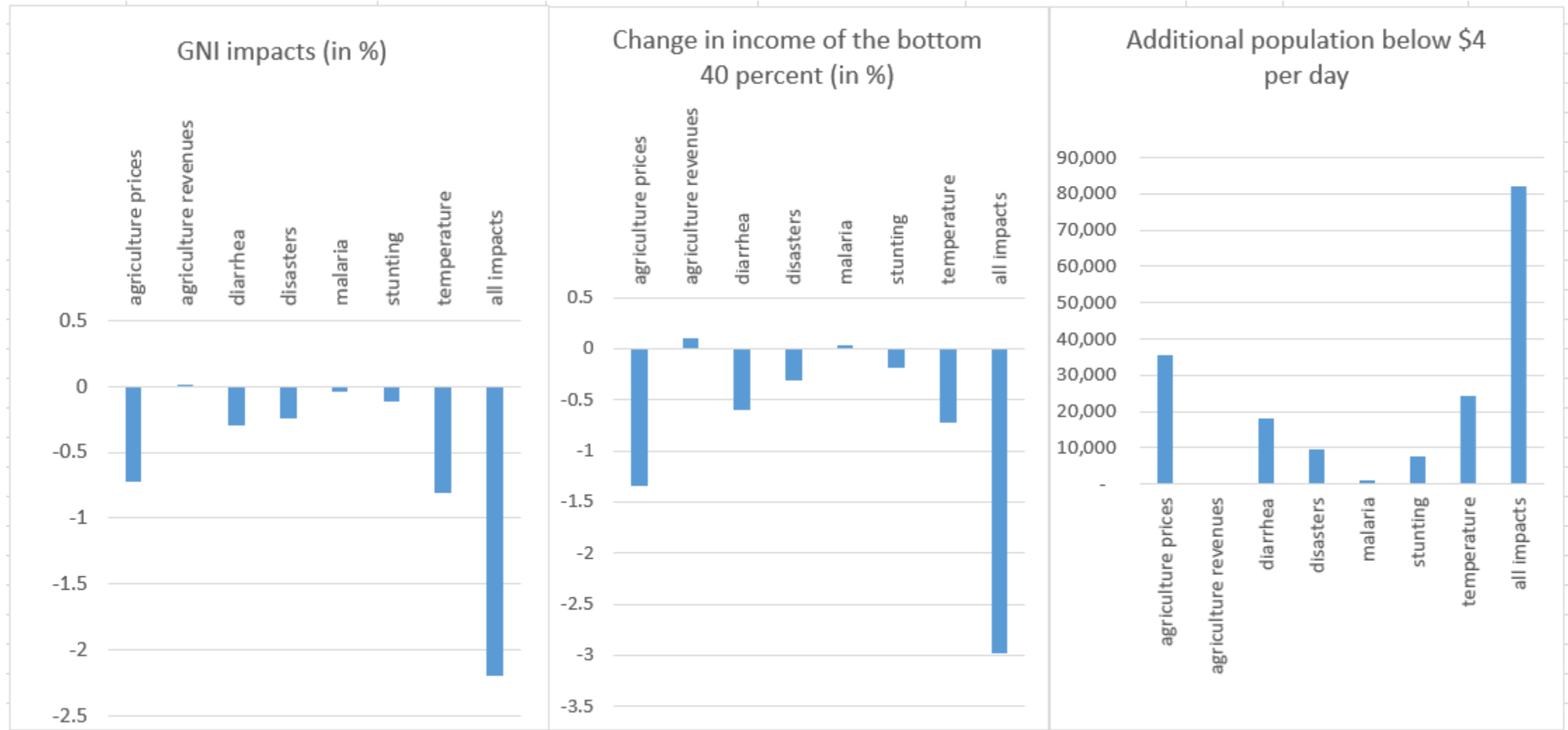
Climate change could keep more than 100 million people in poverty, especially in Sub-Saharan Africa and South Asia

Poverty Scenario

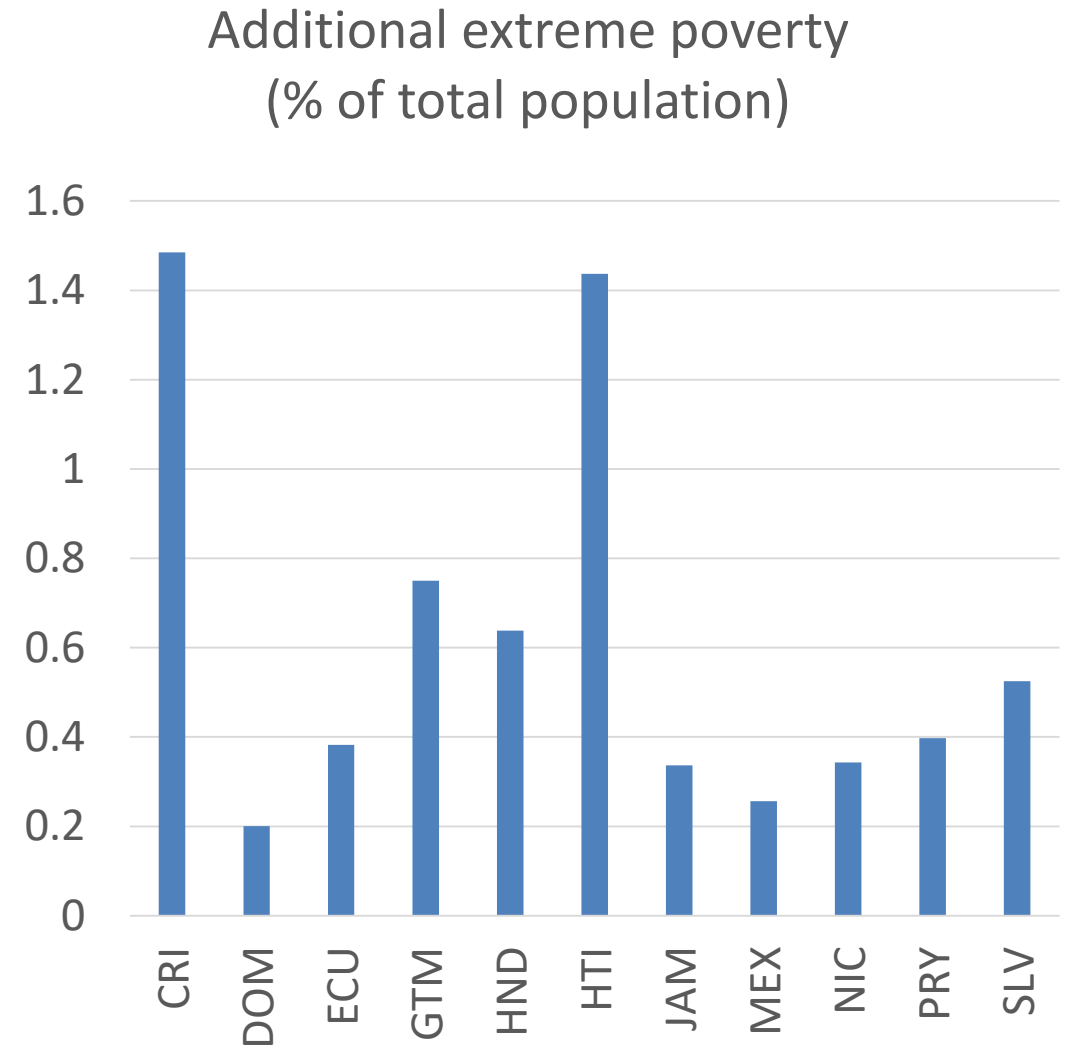
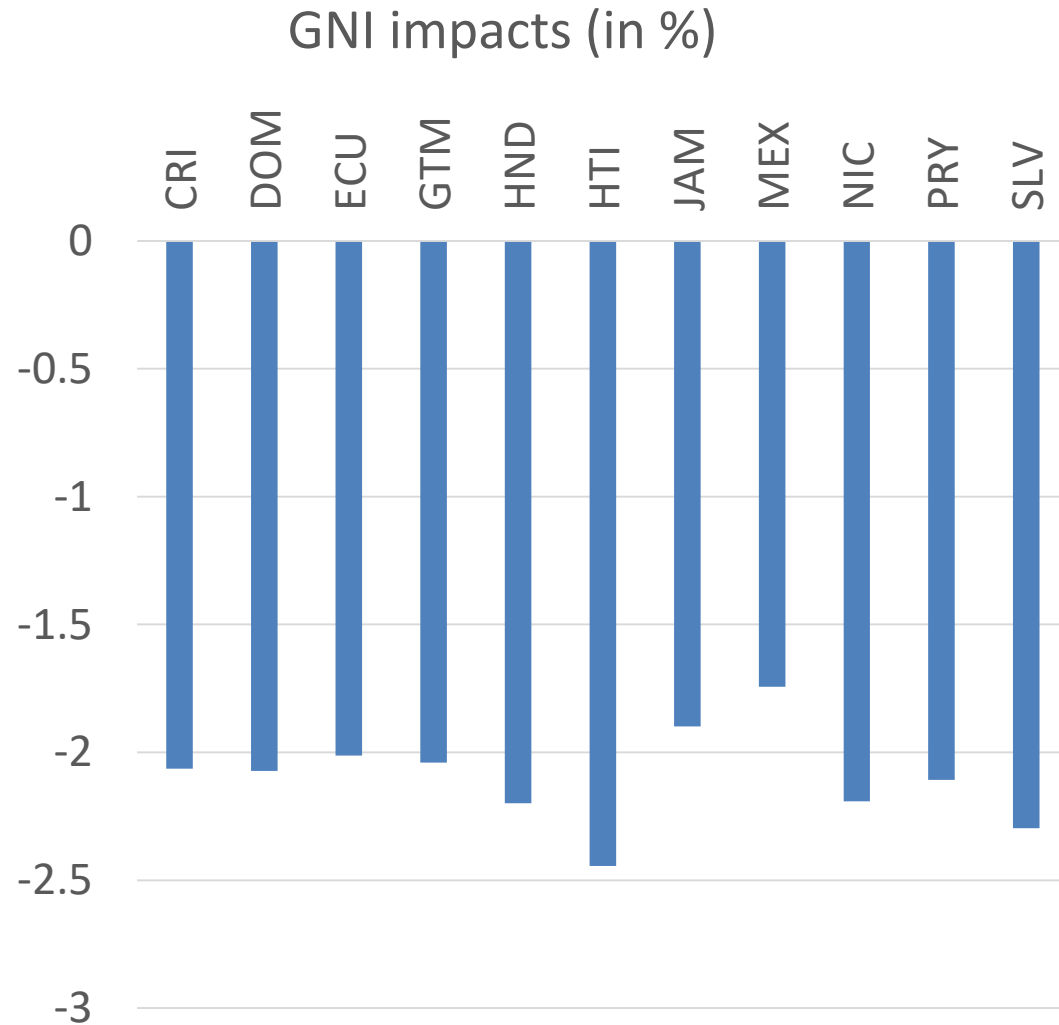


Up to 122 million more people below the poverty line in 2030 due to climate change

Illustration on Honduras, for 2030



Results for a few countries in the region, for 2030



MESSAGE 3 – MANAGING CLIMATE CHANGE IMPACTS IS A DEVELOPMENT CHALLENGE

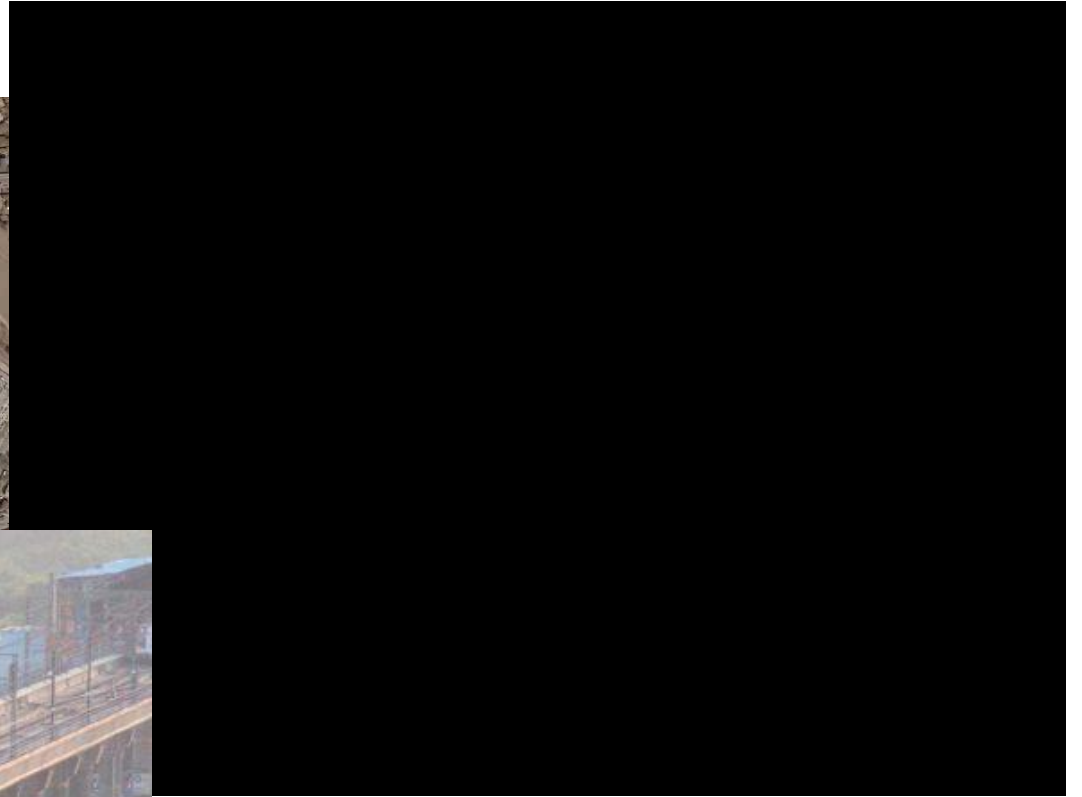


We need development: less poverty, and universal access to basic services



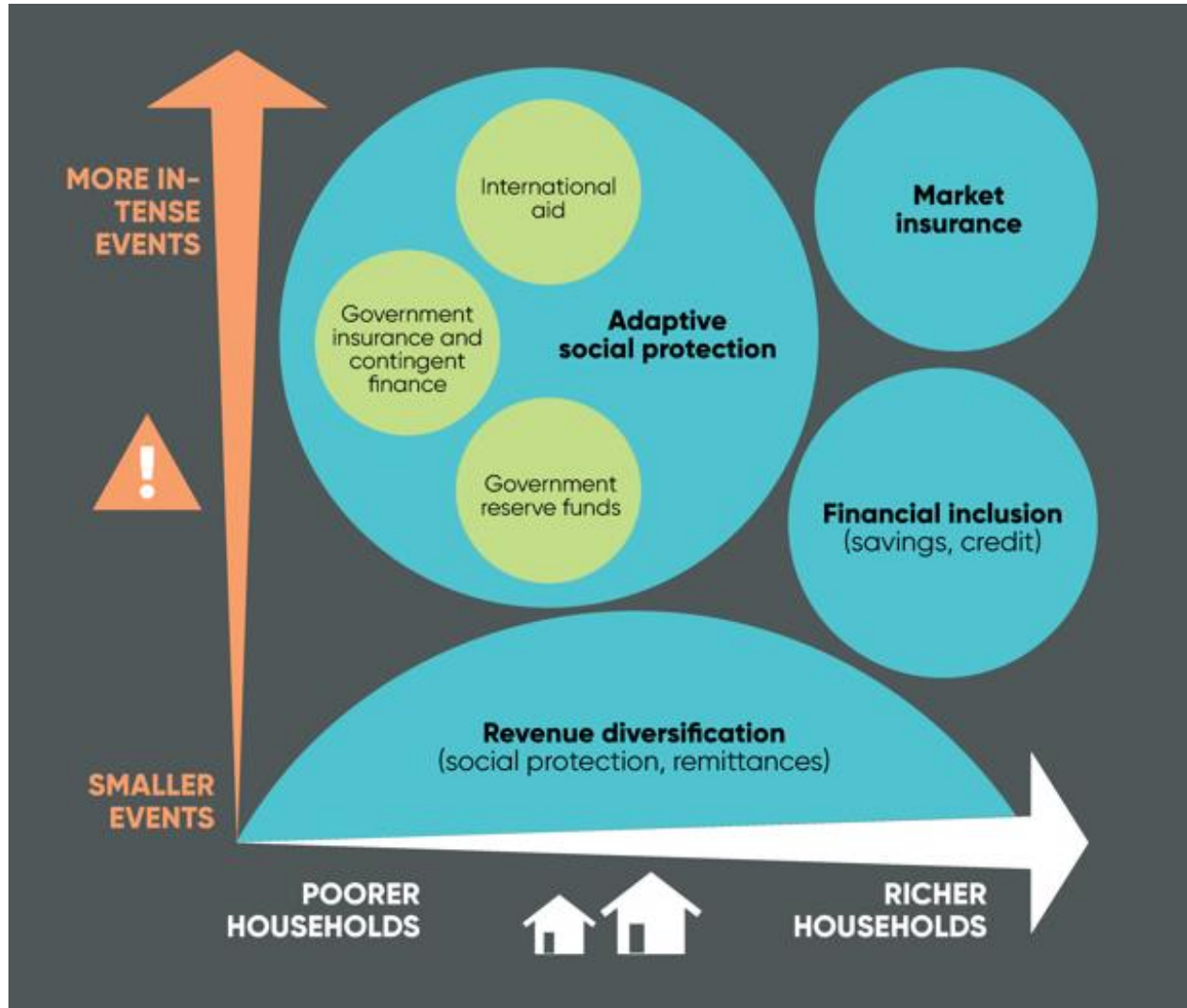
Poverty reduction is adaptation to climate change

We need robust infrastructure, and risk-informed land-use planning...

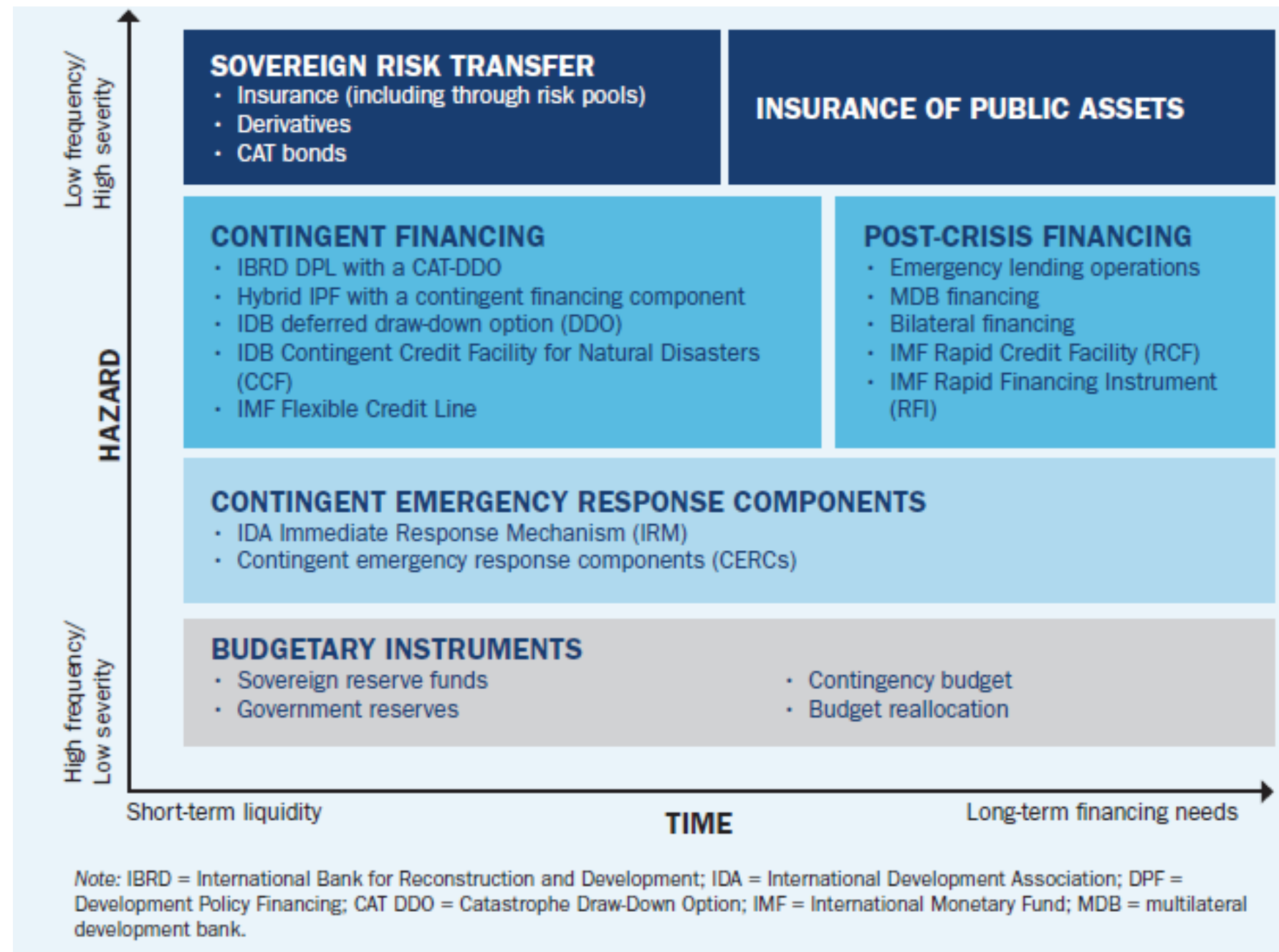


... which is made really difficult by the uncertainty on future climates

We need robust public finances, strong social protection systems, financial inclusion, and access to health care

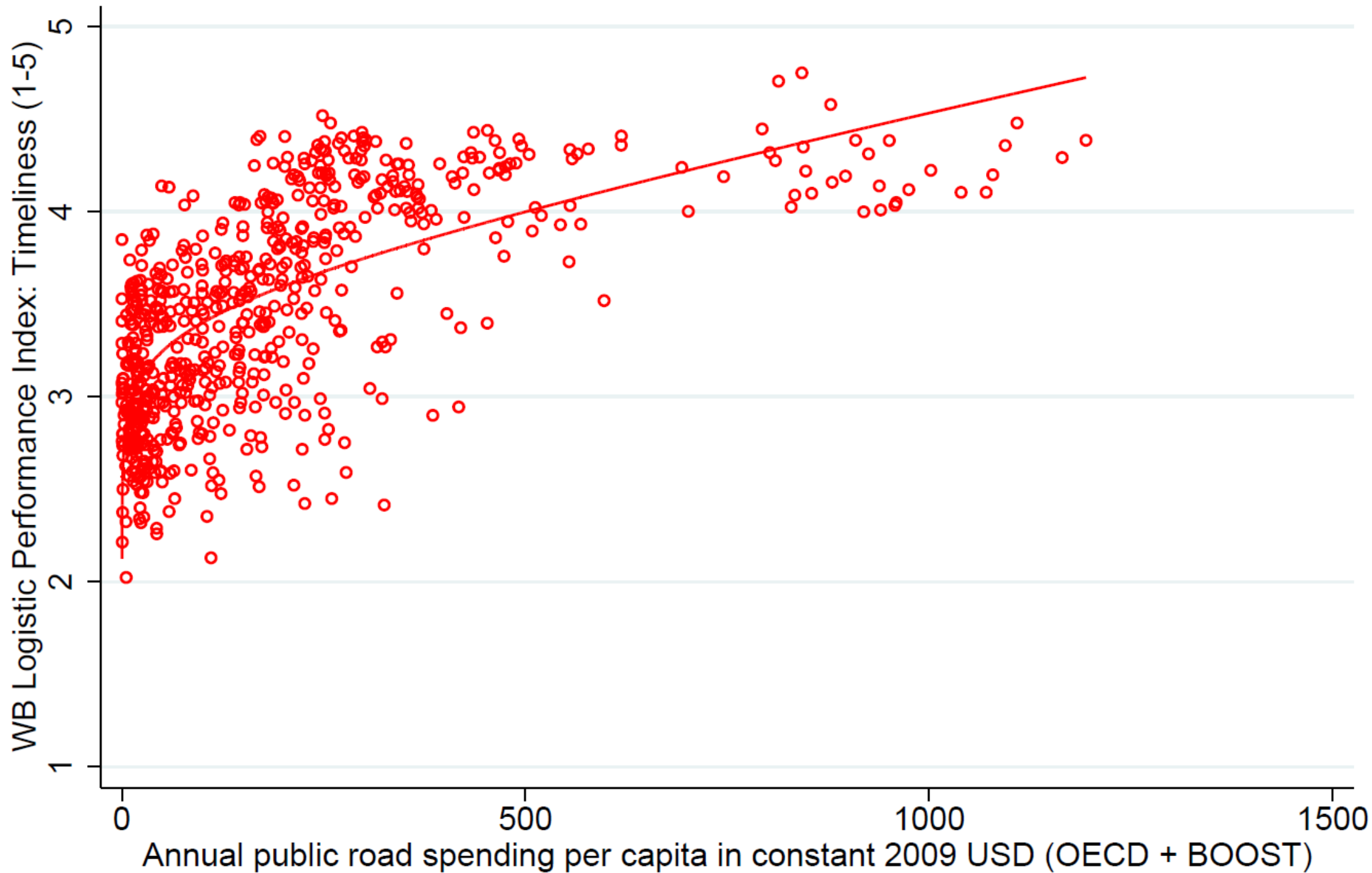


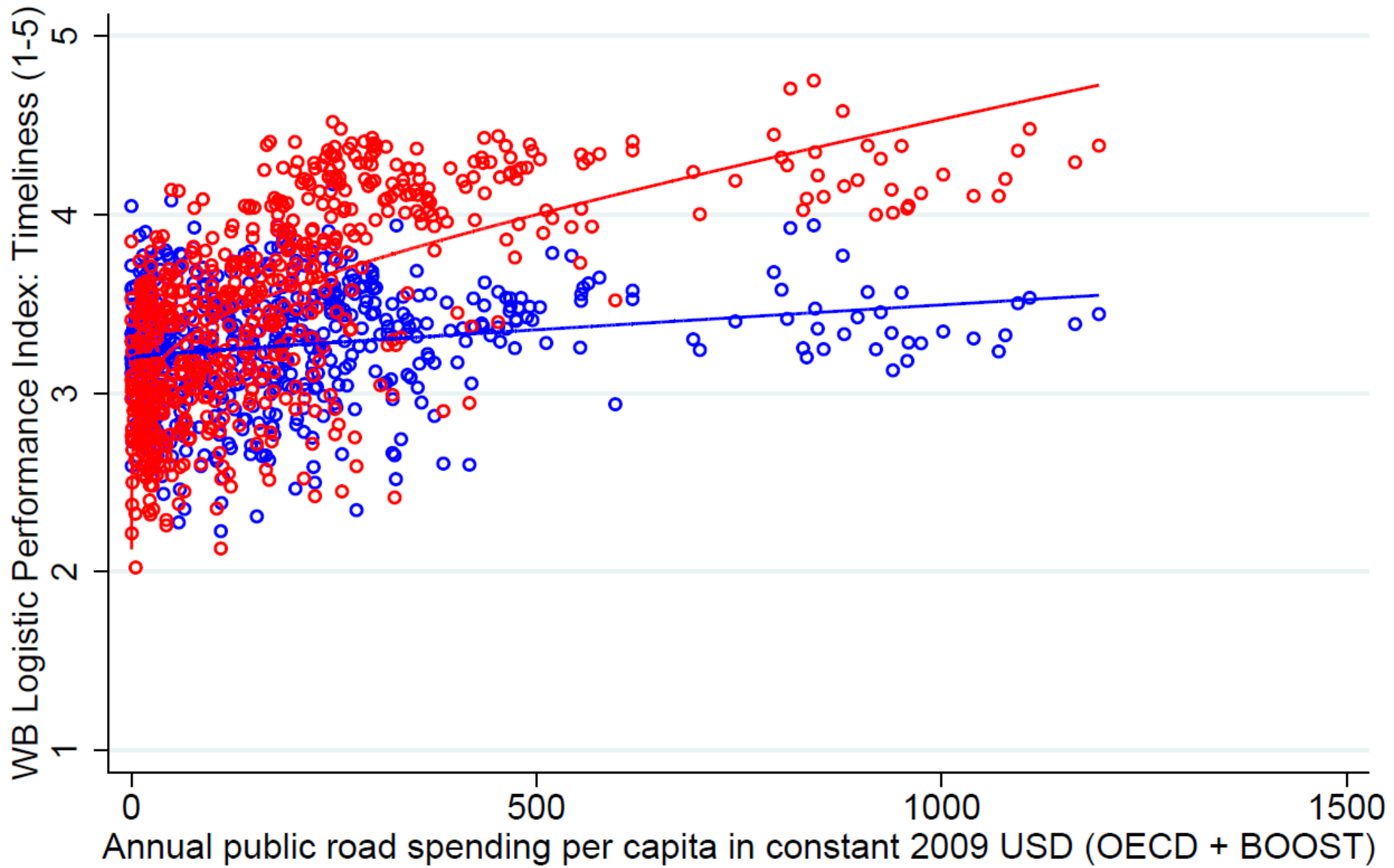
Disaster risk finance with a combination of reserves funds, contingent credit lines, insurance, cat bonds, and regional risk pools.



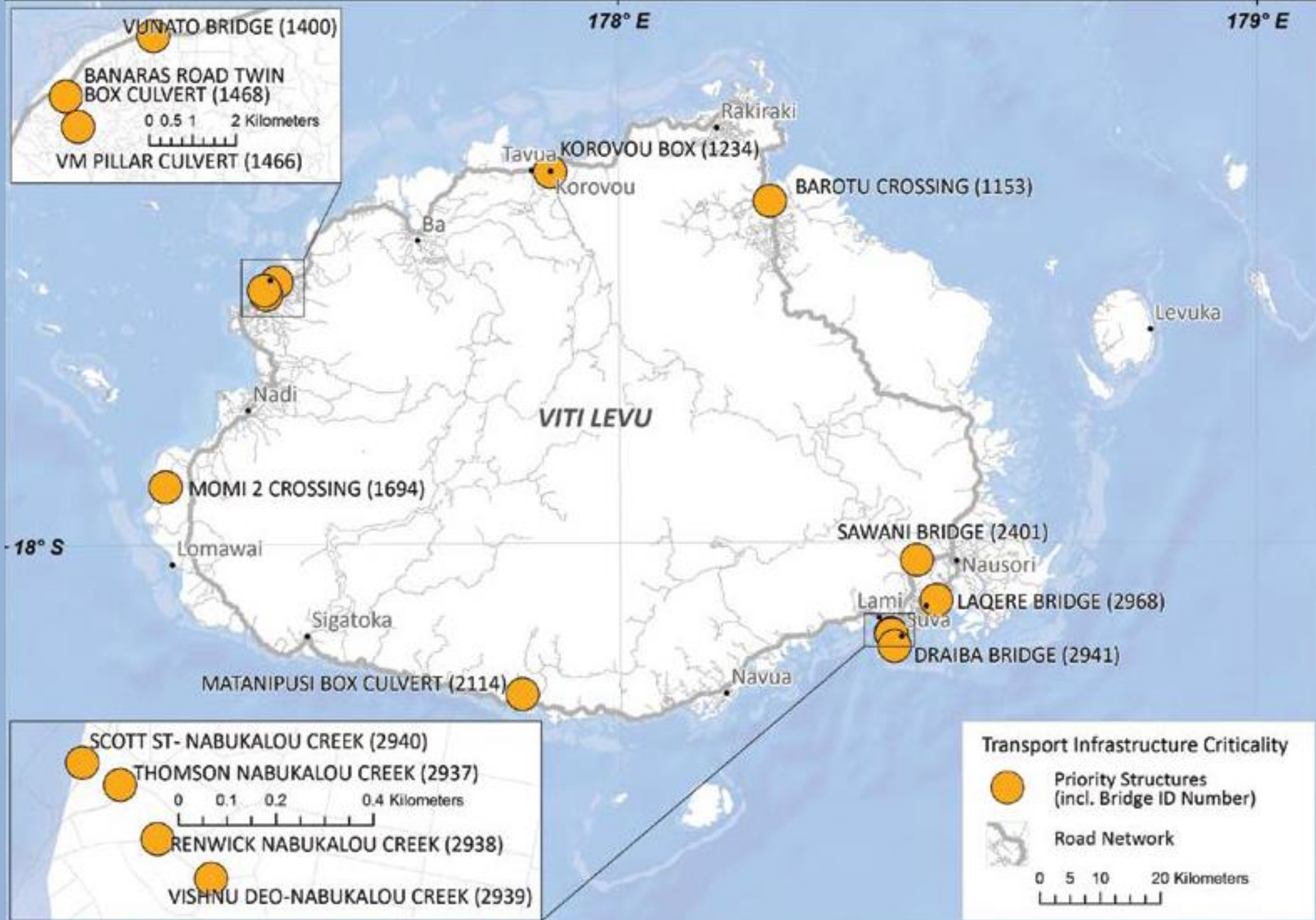
MESSAGE 4 – IT IS NOT (ONLY) ABOUT SPENDING MORE, IT IS (MOSTLY) ABOUT SPENDING BETTER







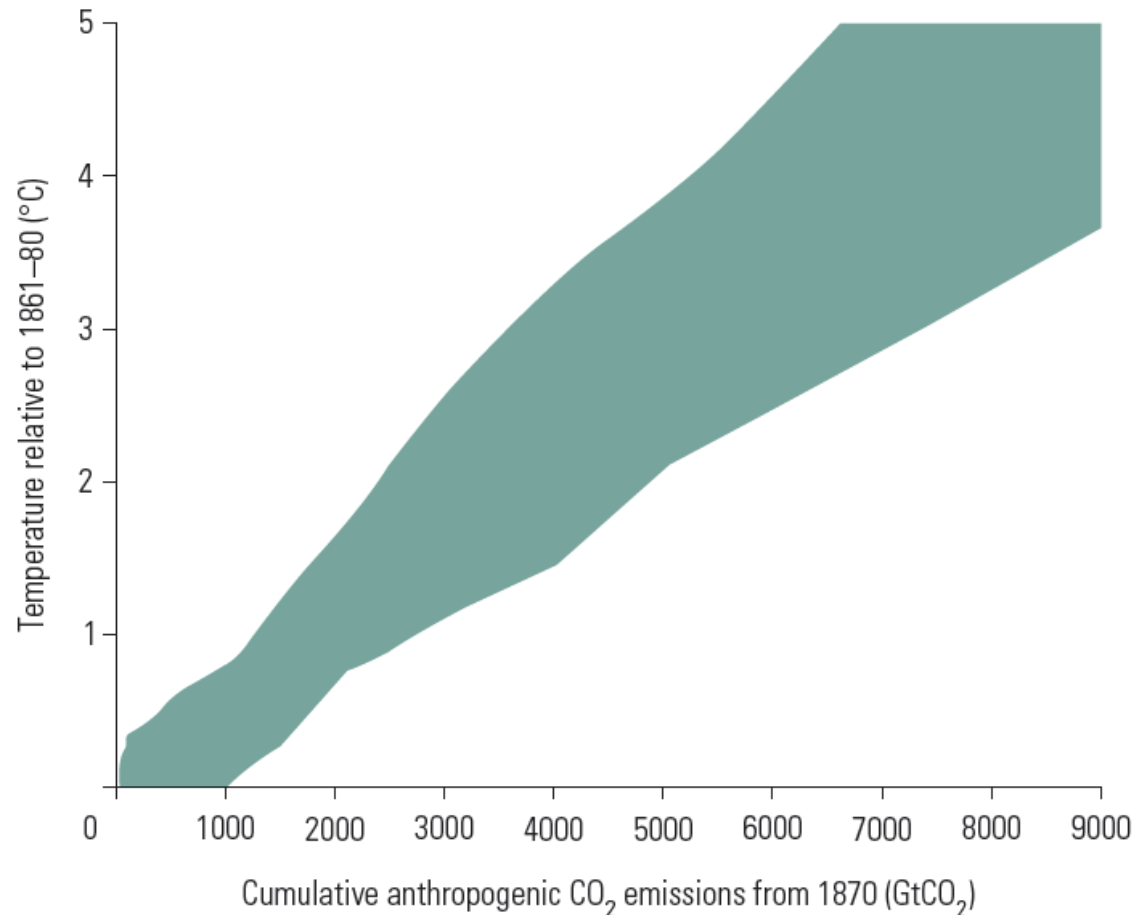
○ Unconditional relationship ○ Controlling for governance quality





MESSAGE 5 – WE CAN MANAGE THE IMPACTS OF CLIMATE CHANGE, BUT WE STILL NEED TO BRING CO₂ EMISSIONS TO ZERO

Rising Cumulative Emissions of CO₂ Mean Rising Temperatures



For any temperature limit, there is a maximum CO₂ budget

So CO₂ emissions have to go to zero at some point

The only question is *when*.