Managing the impacts of climate change

Stéphane Hallegatte

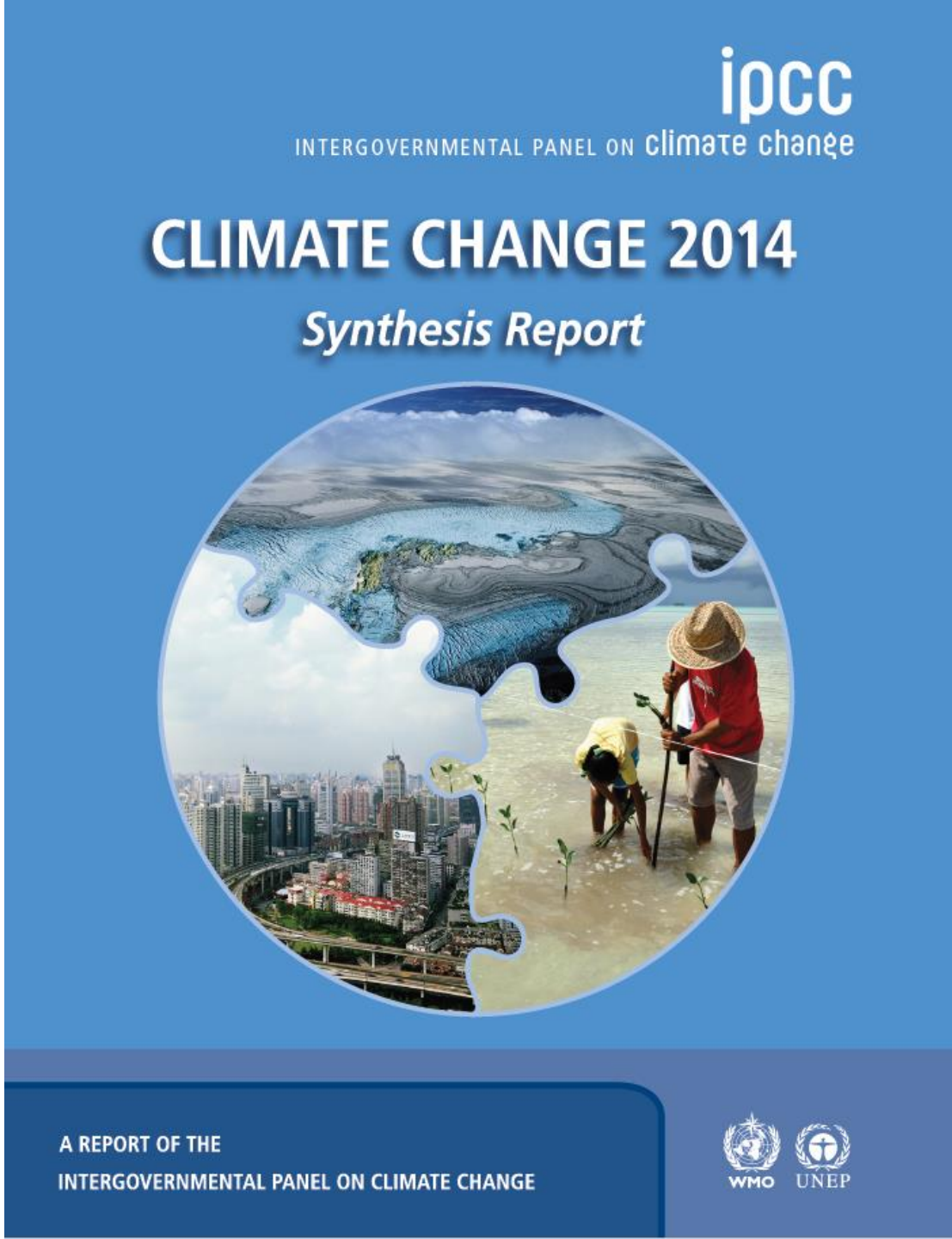
The World Bank – Global Facility for Disaster Reduction and Recovery

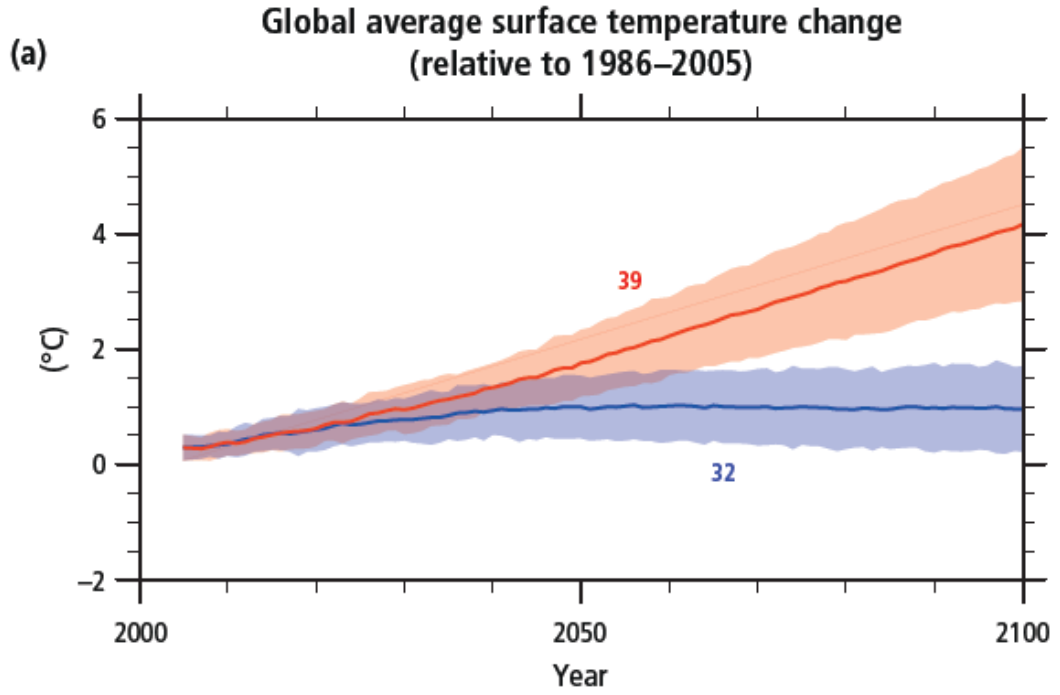
WORLD BANK GROUP

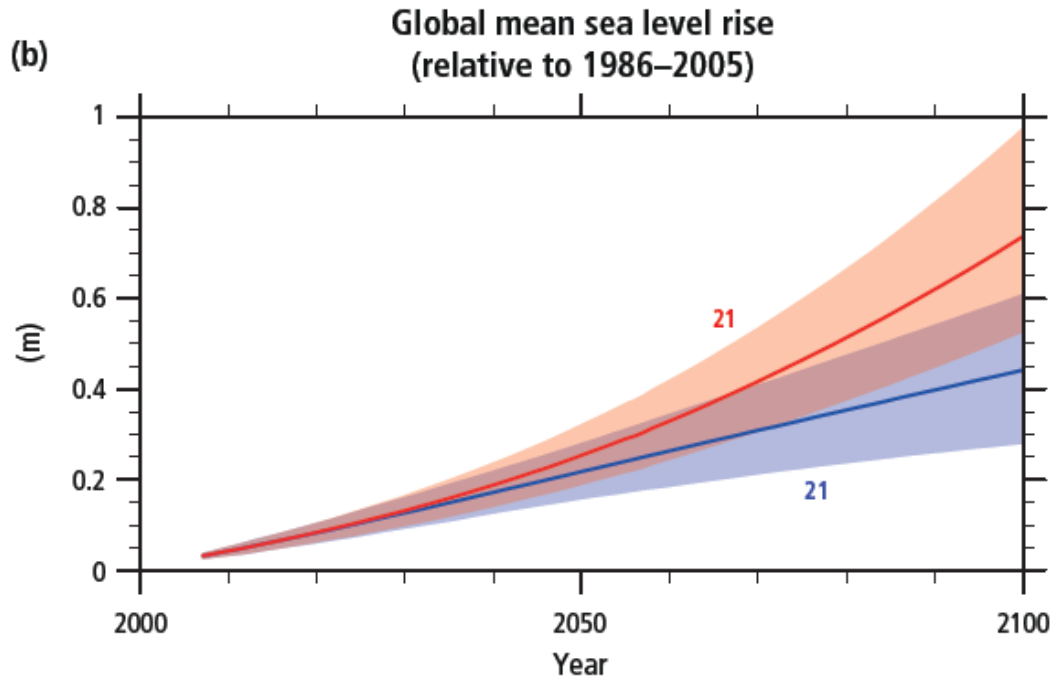
GFDRR

Global Facility for Disaster Reduction and Recovery

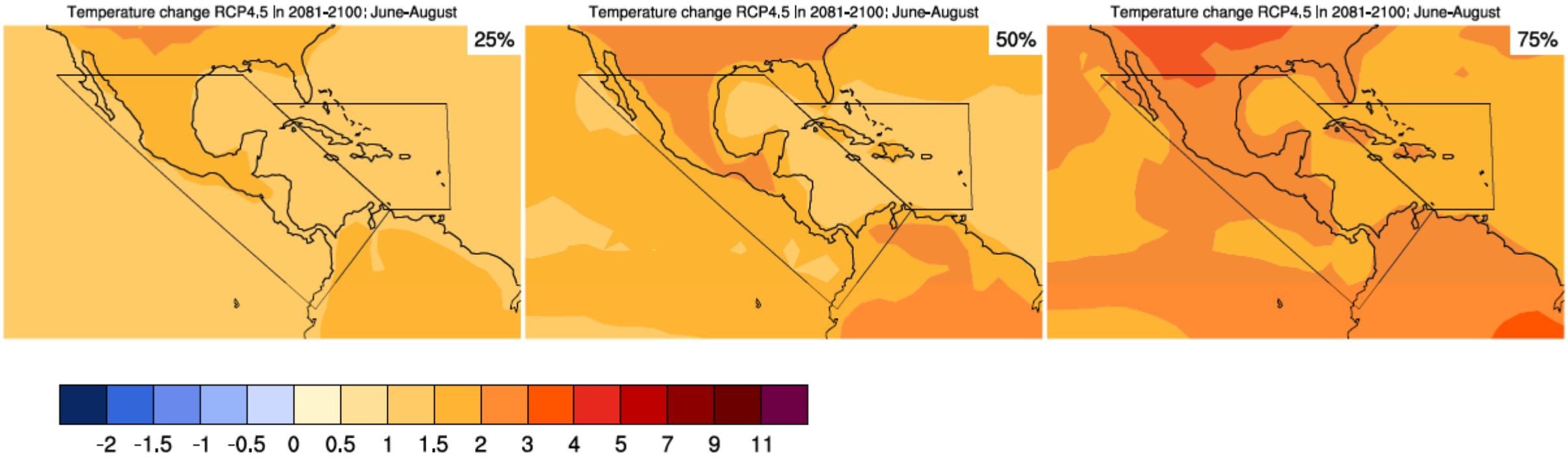
MESSAGE 1 – CLIMATE IS CHANGING AND THIS CHANGE WILL NEGATIVELY AFFECT ECONOMIC ACTIVITY AND PRODUCTIVITY



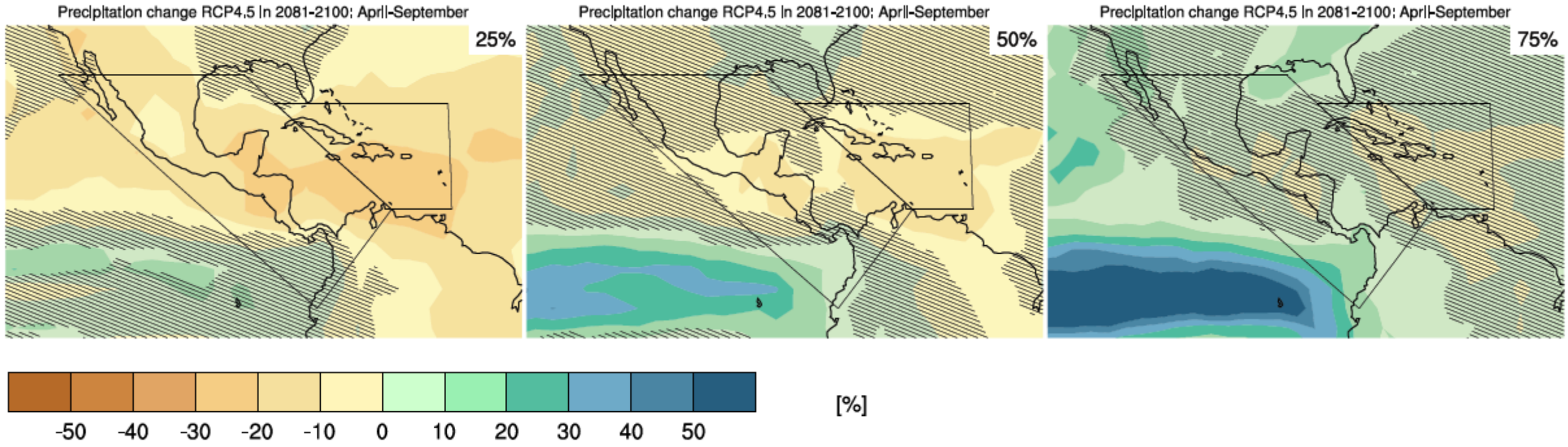

(a)
Global average surface temperature change
(relative to 1986–2005)
6
4
2
0
−2
(°C)
39
32
2000
2050
2100
Year


(b)
Global mean sea level rise
(relative to 1986–2005)
1
0.8
0.6
0.4
0.2
0
(m)
21
21
2000
2050
2100
Year

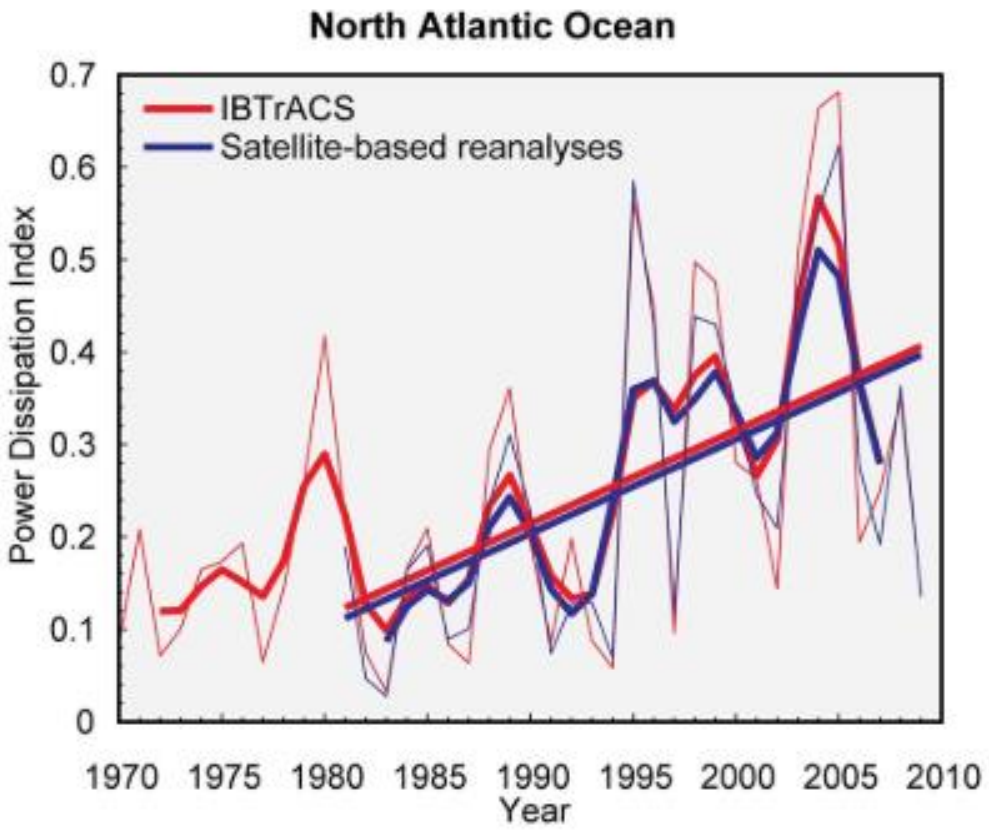
Things we know: temperatures will increase and sea level will rise

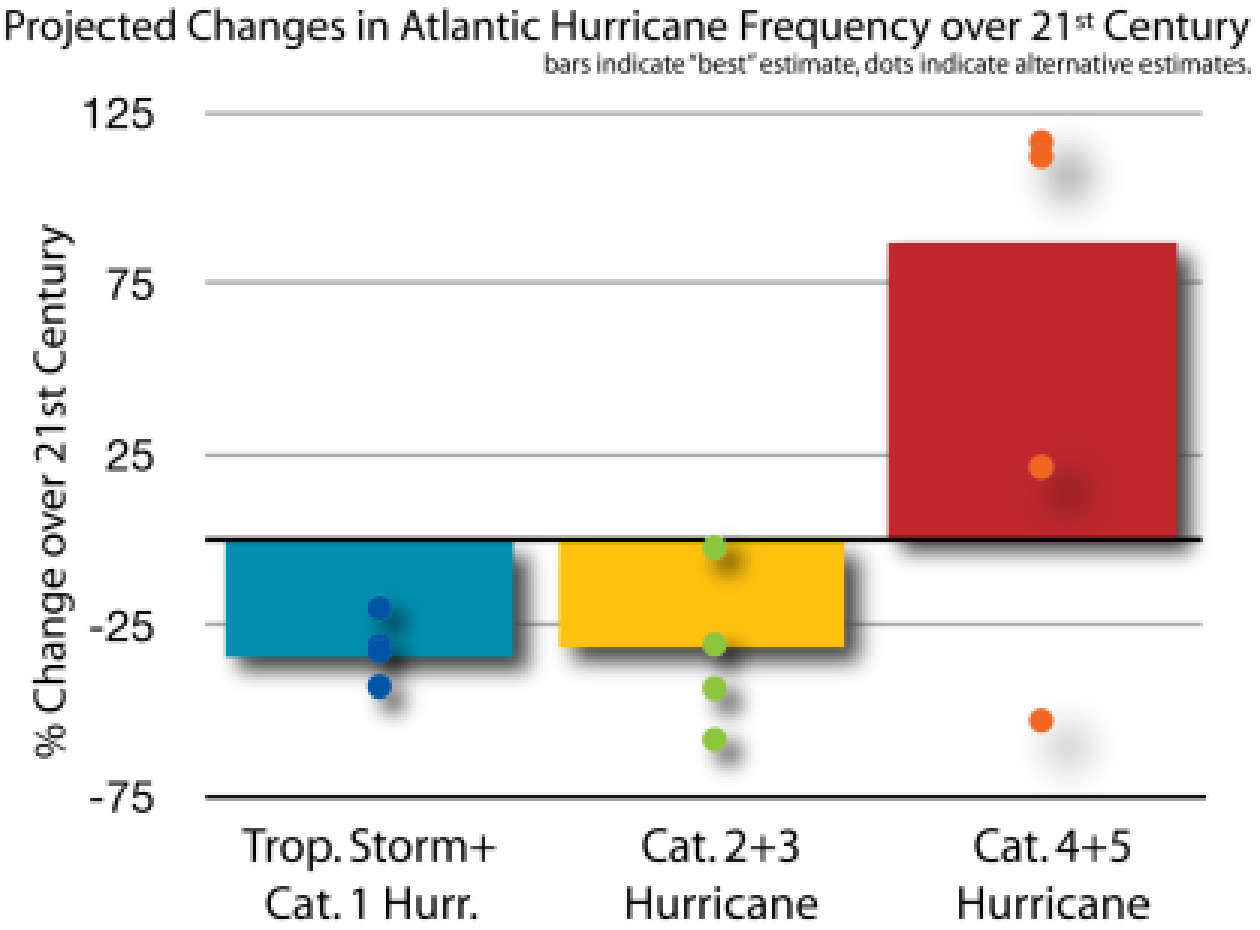


Things we suspect: rainfall will probably decrease…



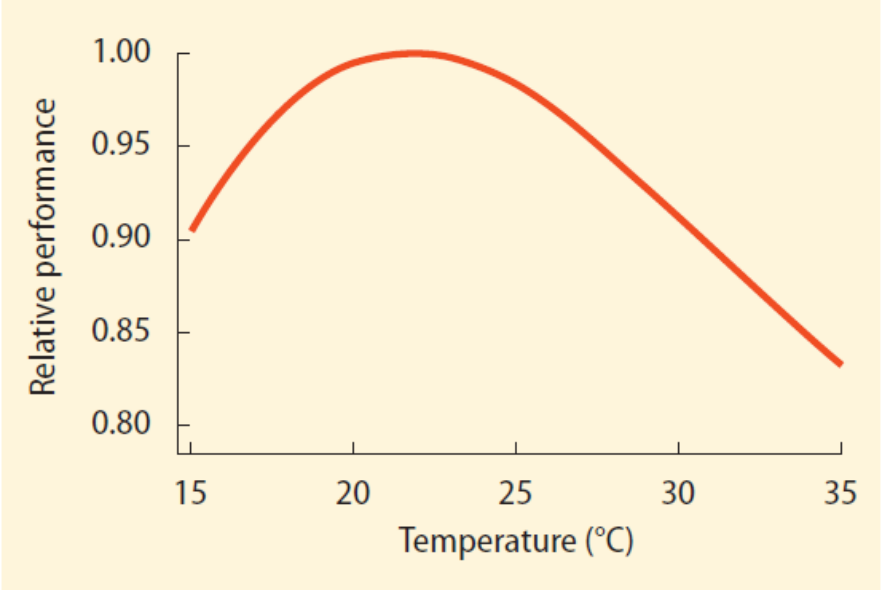
Things we do not know:
how will El Niño and hurricanes change?





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…



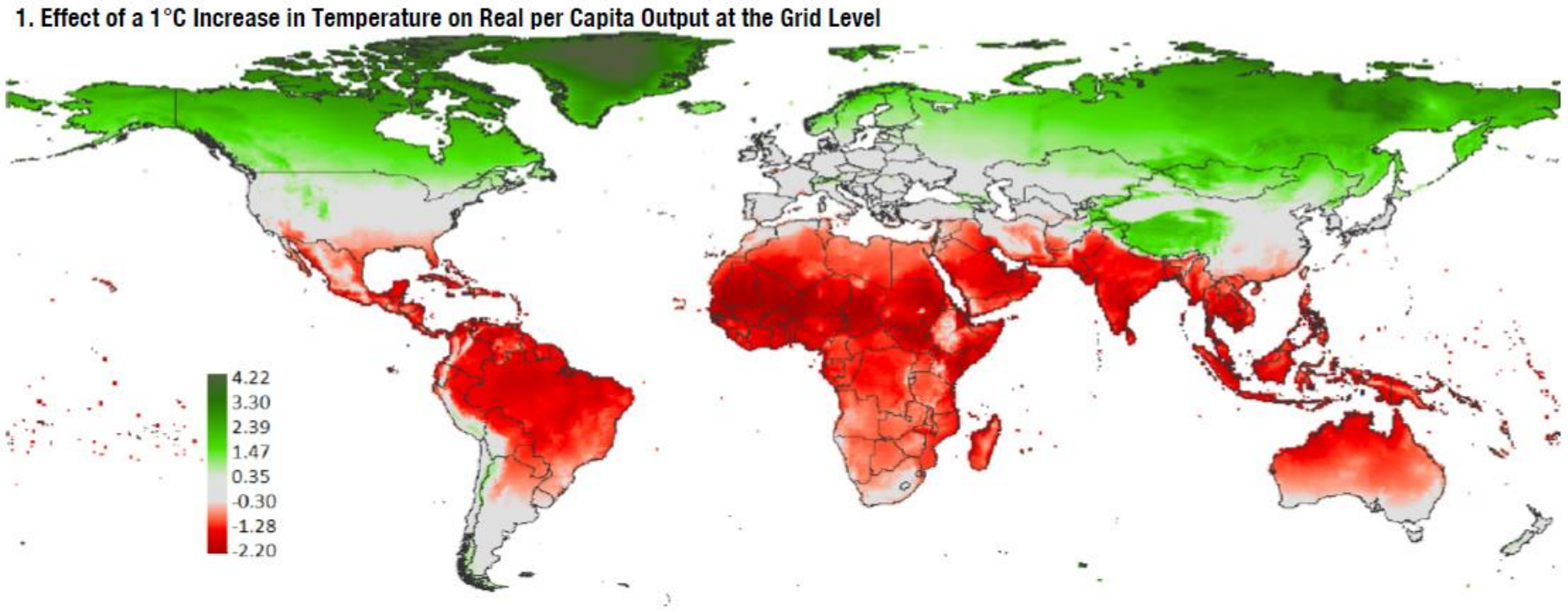
Source: Seppanen, Fisk, and Lei 2006.

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

World Economic and Financial Surveys

World Economic Outlook
October 2017

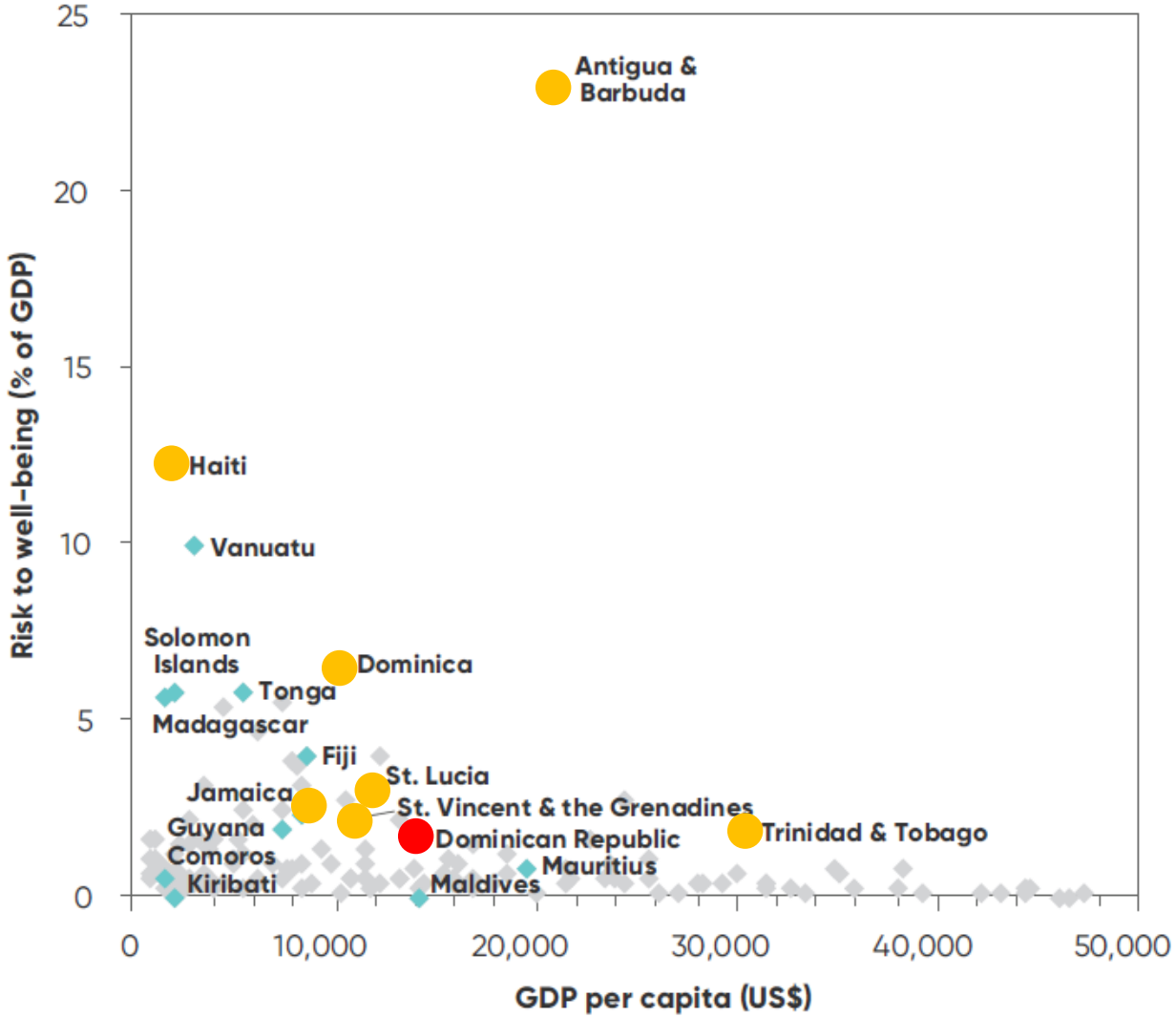
Seeking Sustainable Growth
Short-Term Recovery, Long-Term Challenges

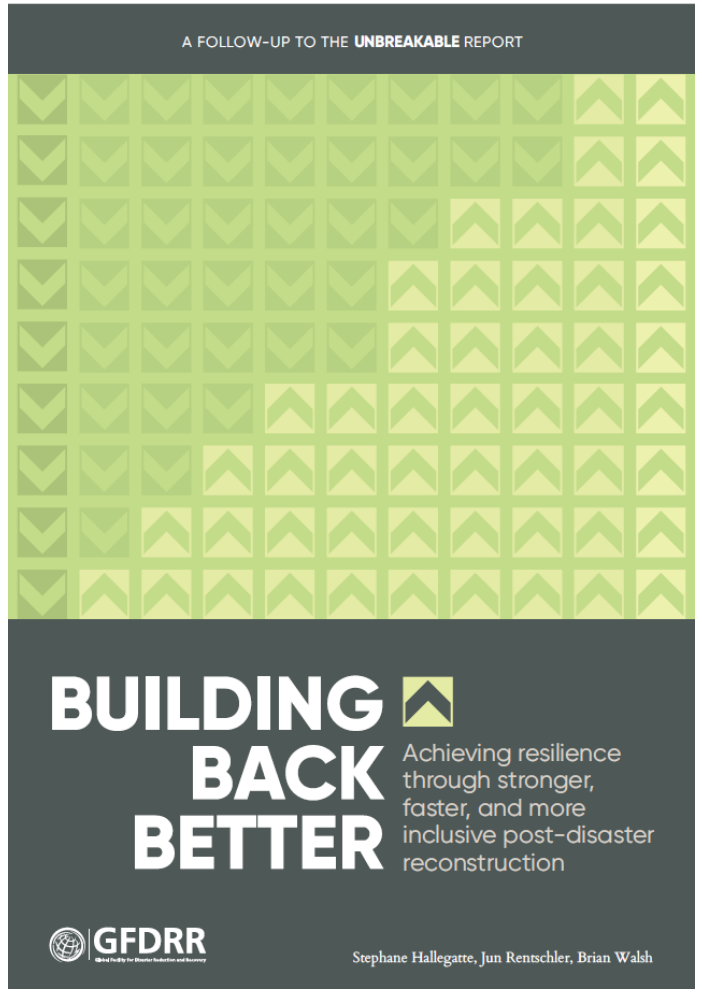


Source: IMF WEO (2017)

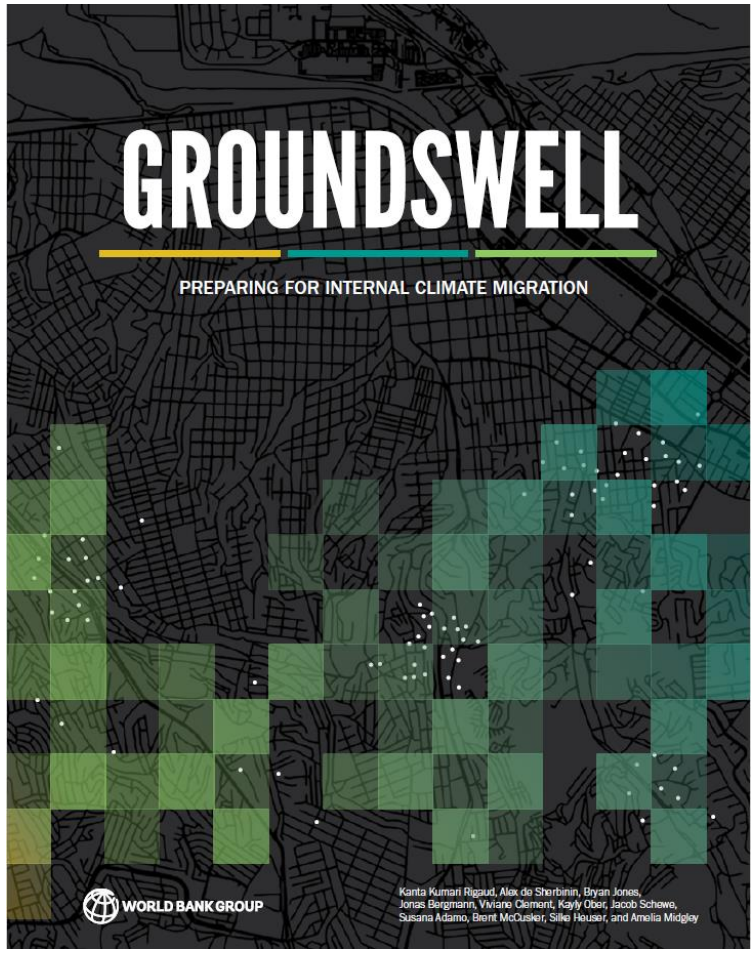
INTERNATIONAL MONETARY FUND

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



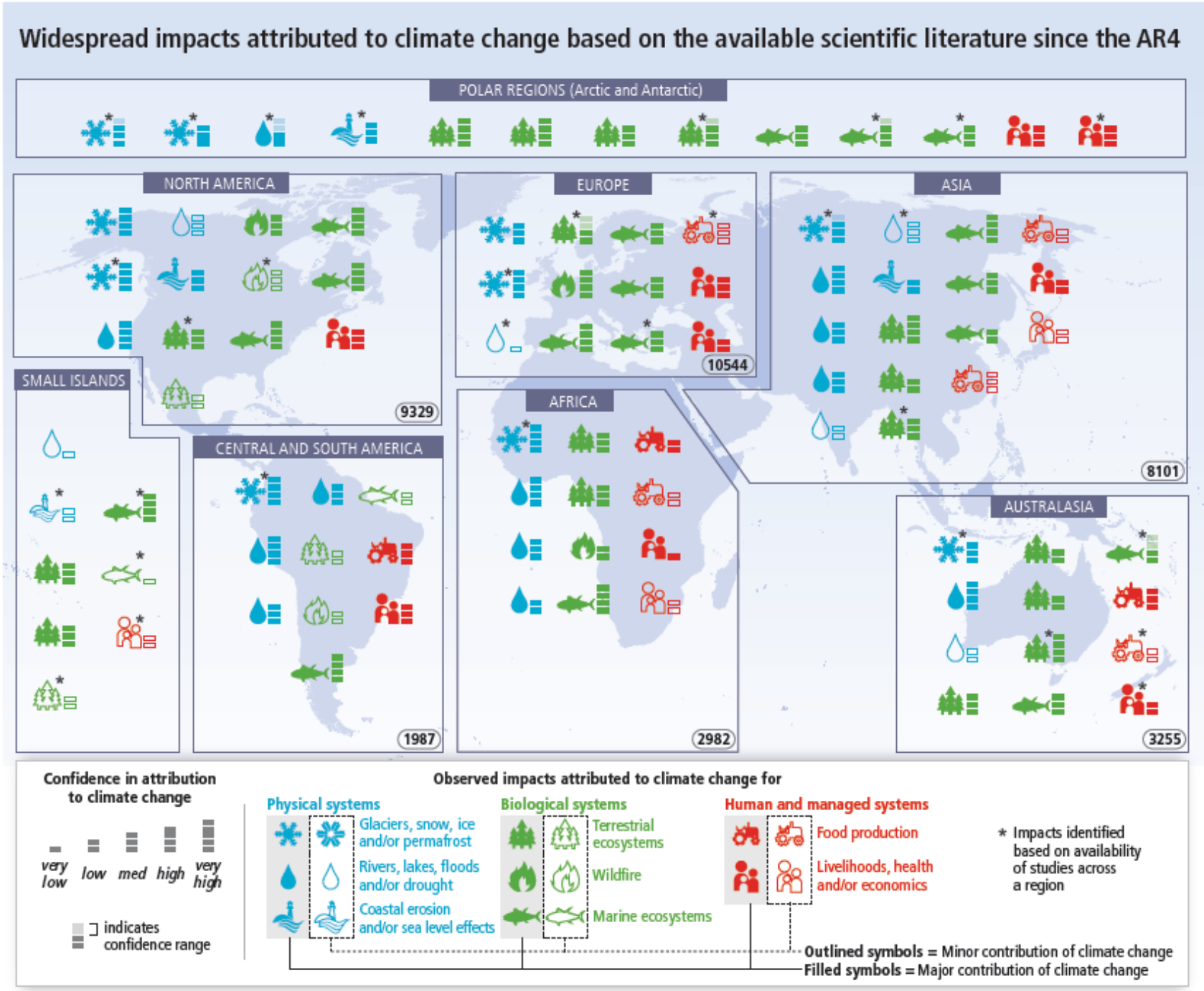


And significant migrations...



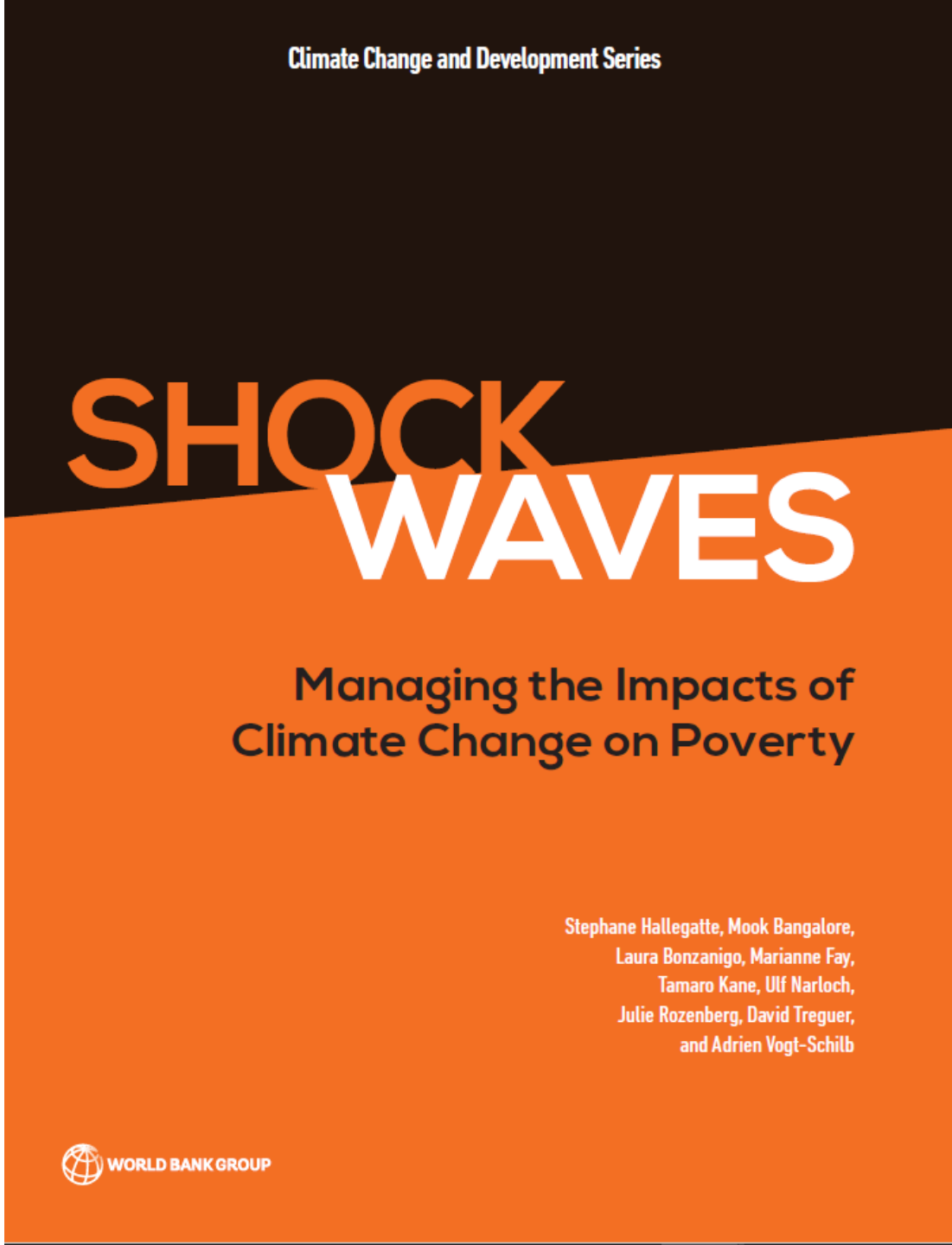
Up to 17 million people would move to different locations in Central America due to climate change by 2050

FAQ: Do we already see climate change impacts?



FAQ: Do we already see climate change impacts?

MESSAGE 2 – POOR PEOPLE WILL BE AFFECTED THE MOST



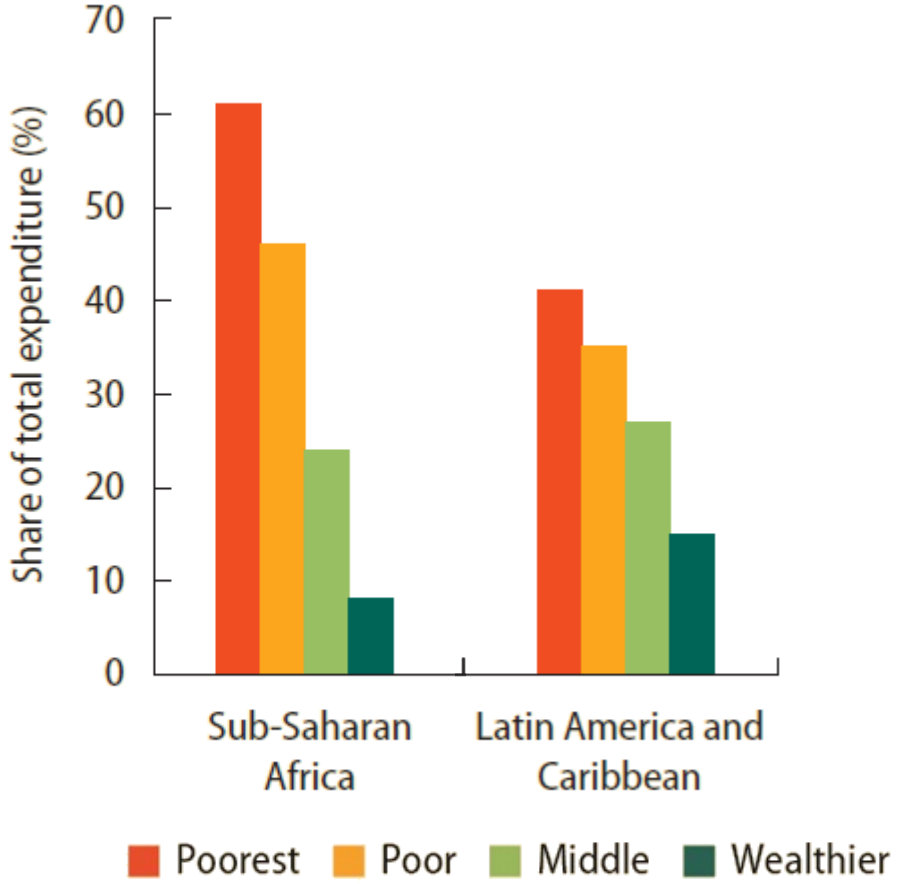
Poor people are more exposed to natural hazards. Take the case of Nigeria

Poor people are 50% more likely to be flooded

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

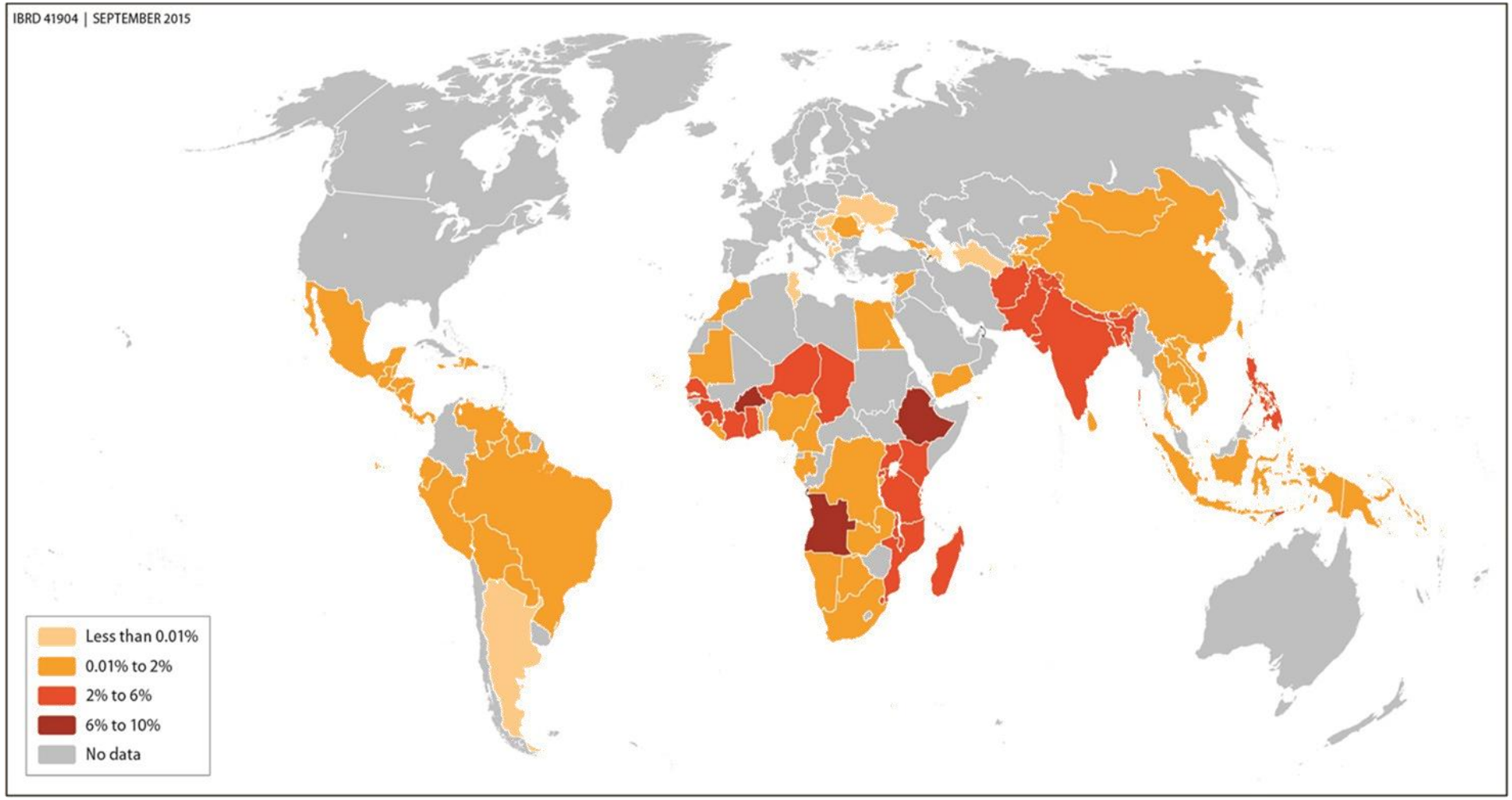
Poor people are 80% more likely to be affected by extreme heat

Poor people spend more on food



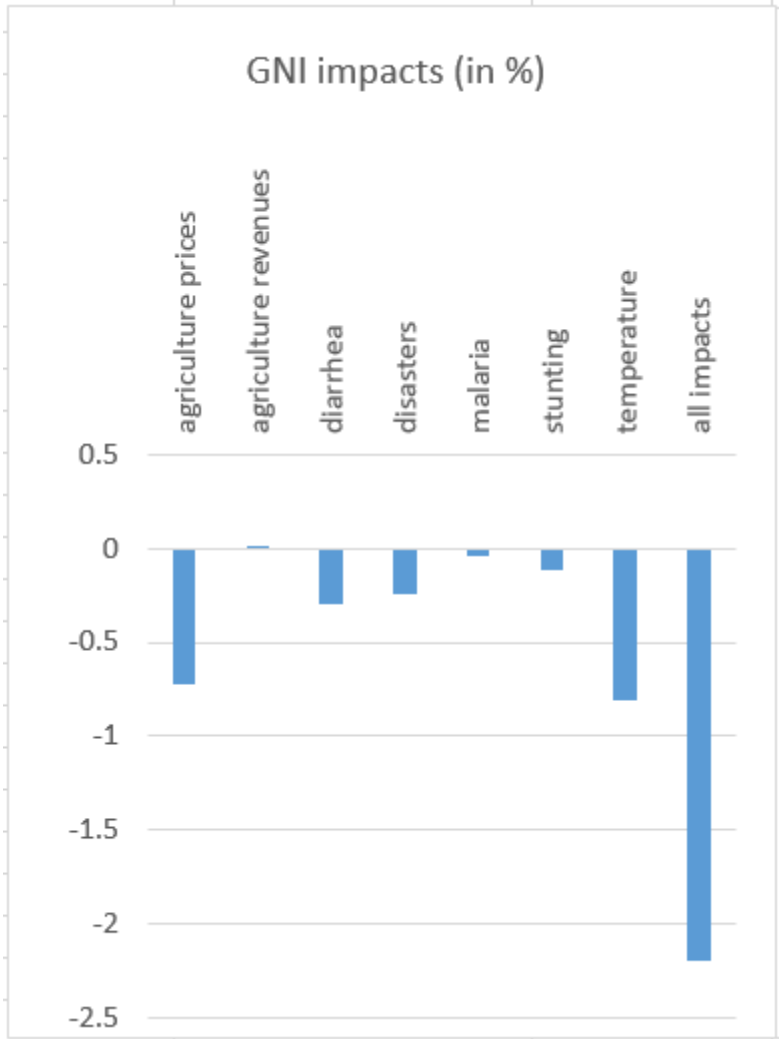
Climate change could keep more than 100 million people in poverty, especially in Sub-Saharan Africa and South Asia

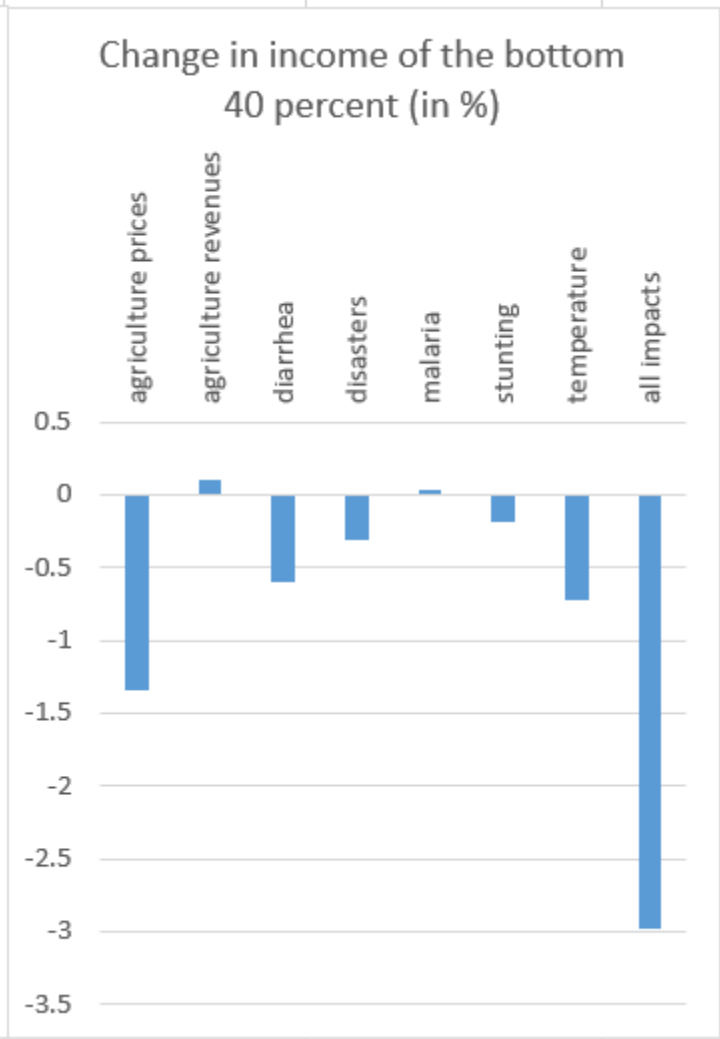
Poverty Scenario

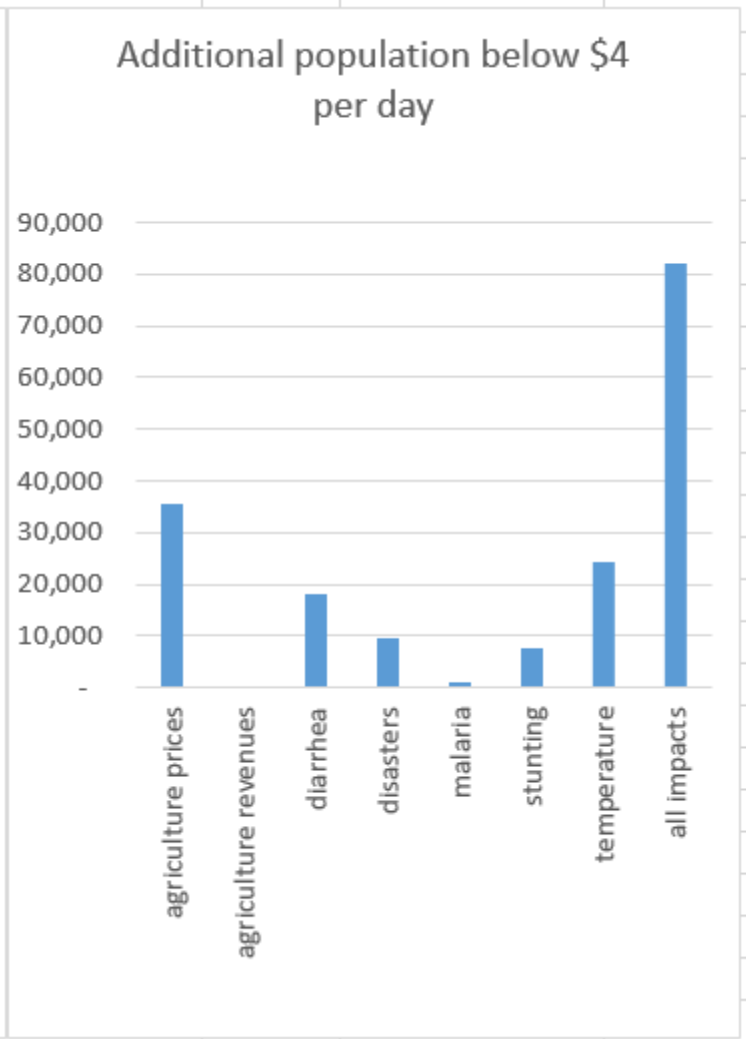


Up to 122 million more people below the poverty line in 2030 due to climate change

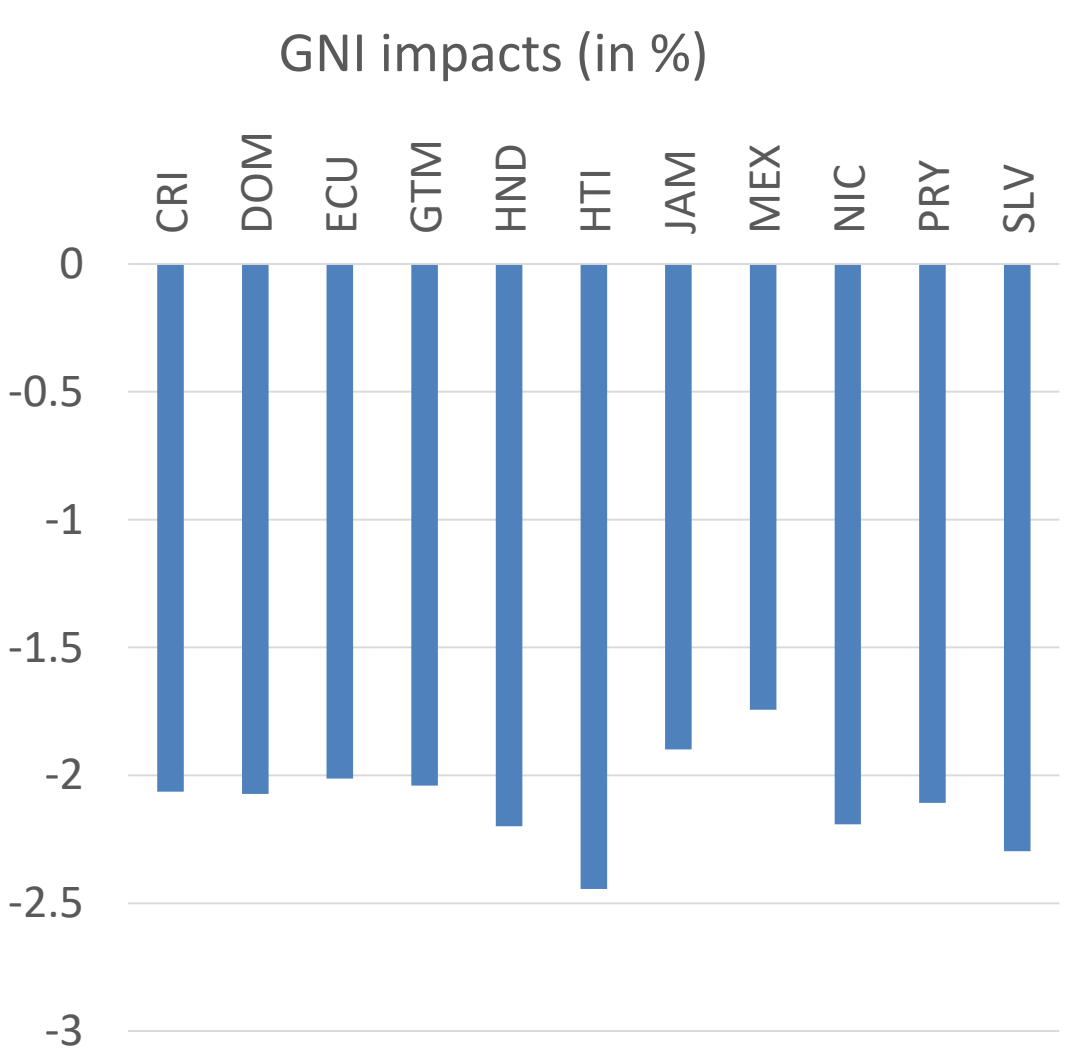
Illustration on Honduras, for 2030

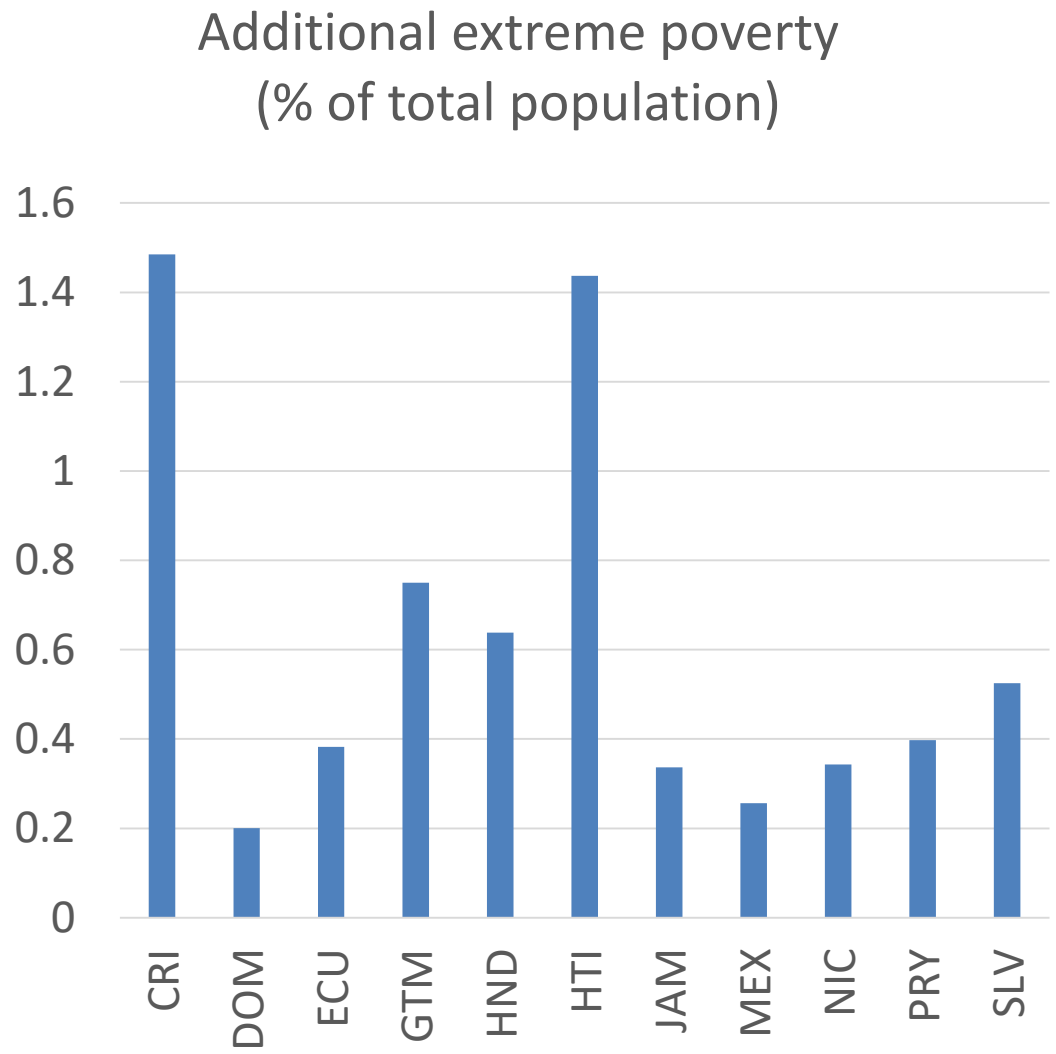






Results for a few countries in the region, for 2030





MESSAGE 3 – MANAGING CLIMATE CHANGE IMPACTS IS A DEVELOPMENT CHALLENGE

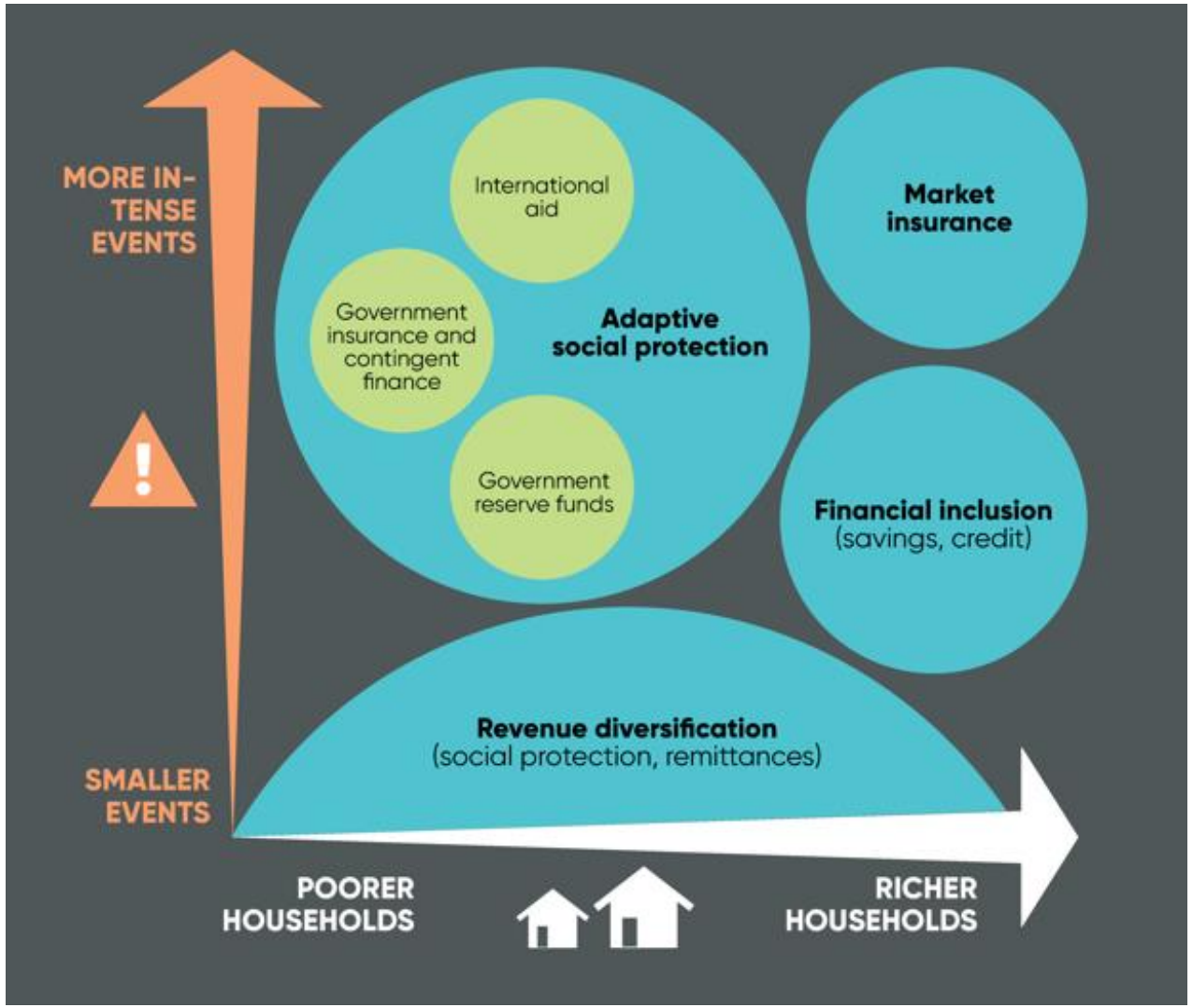
We need development: less poverty, and universal access to basic services

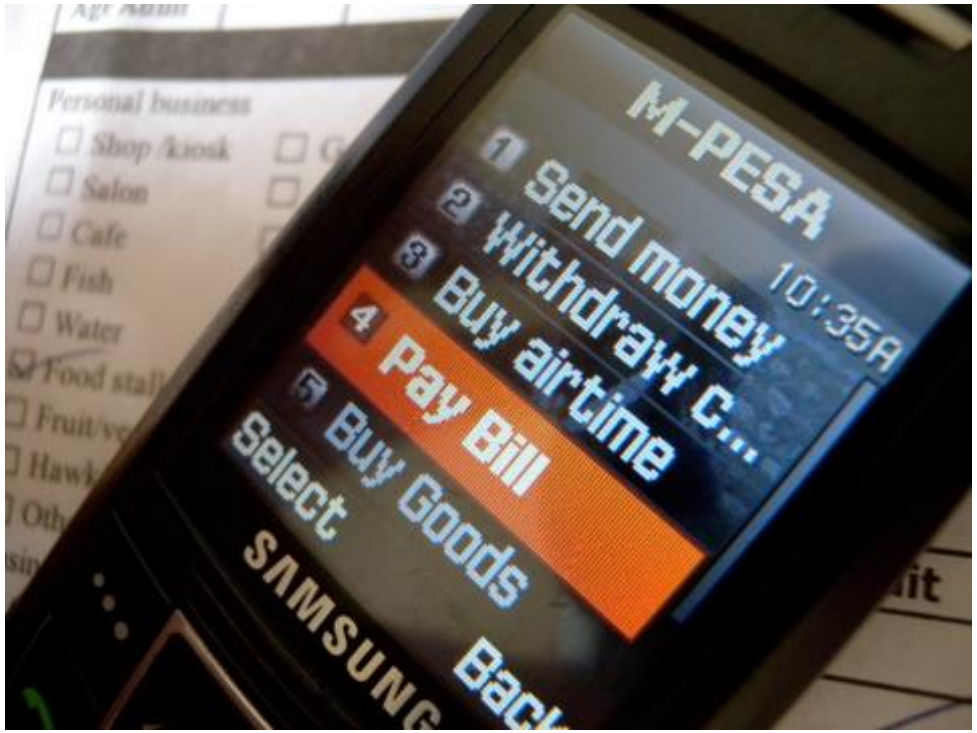
Poverty reduction is adaptation to climate change

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

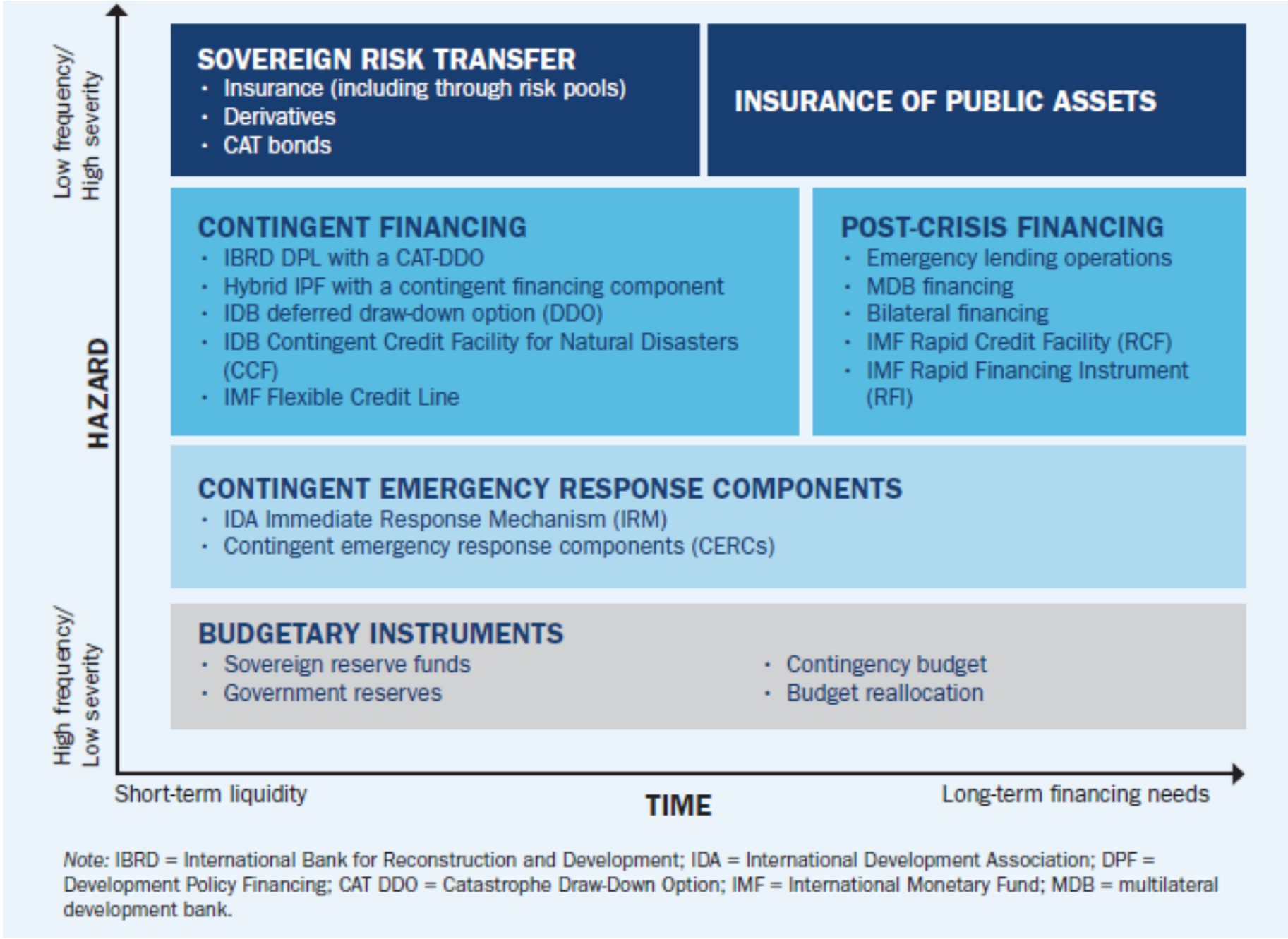
… which is made really difficult by the uncertainty on future climates

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



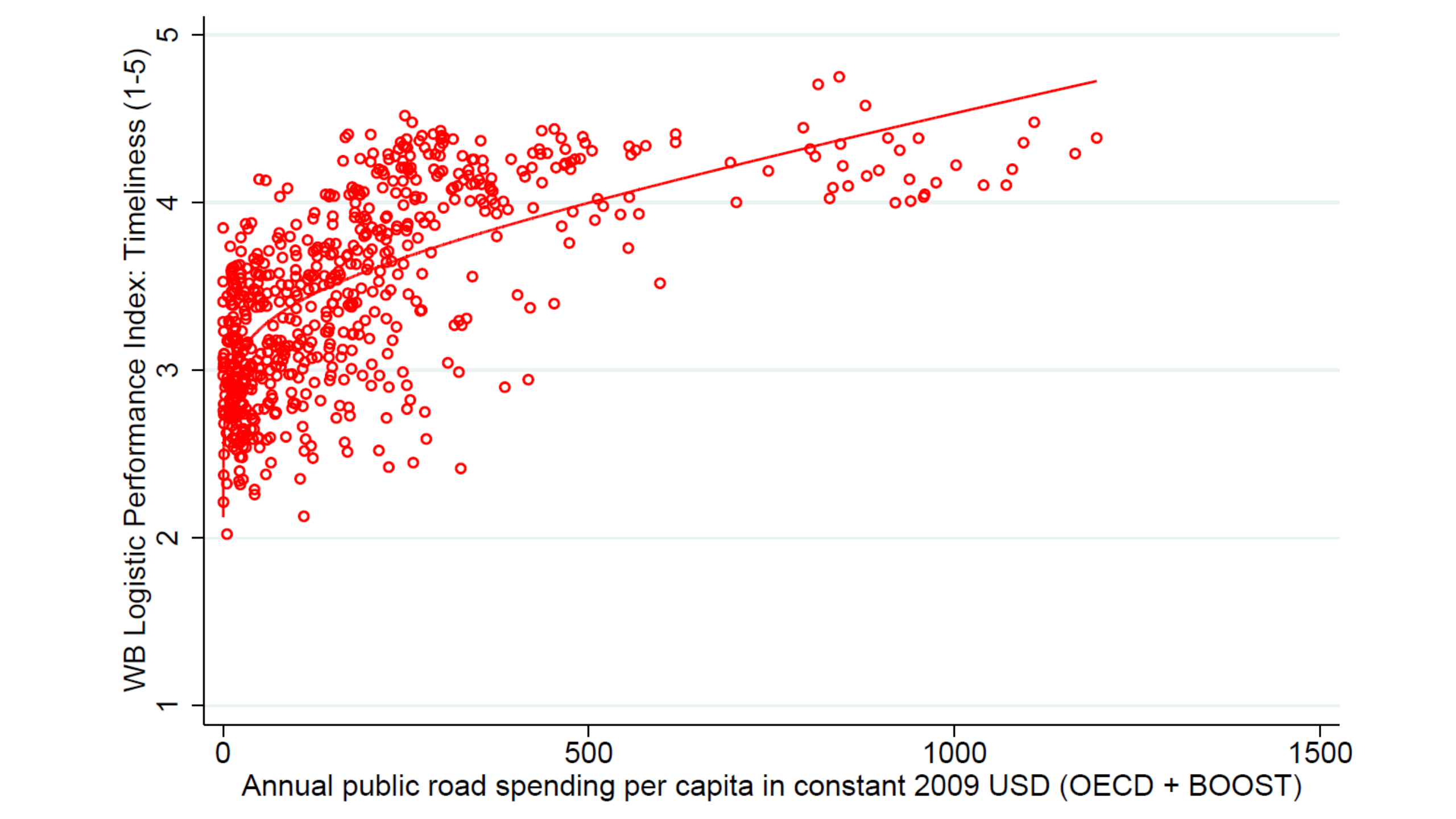


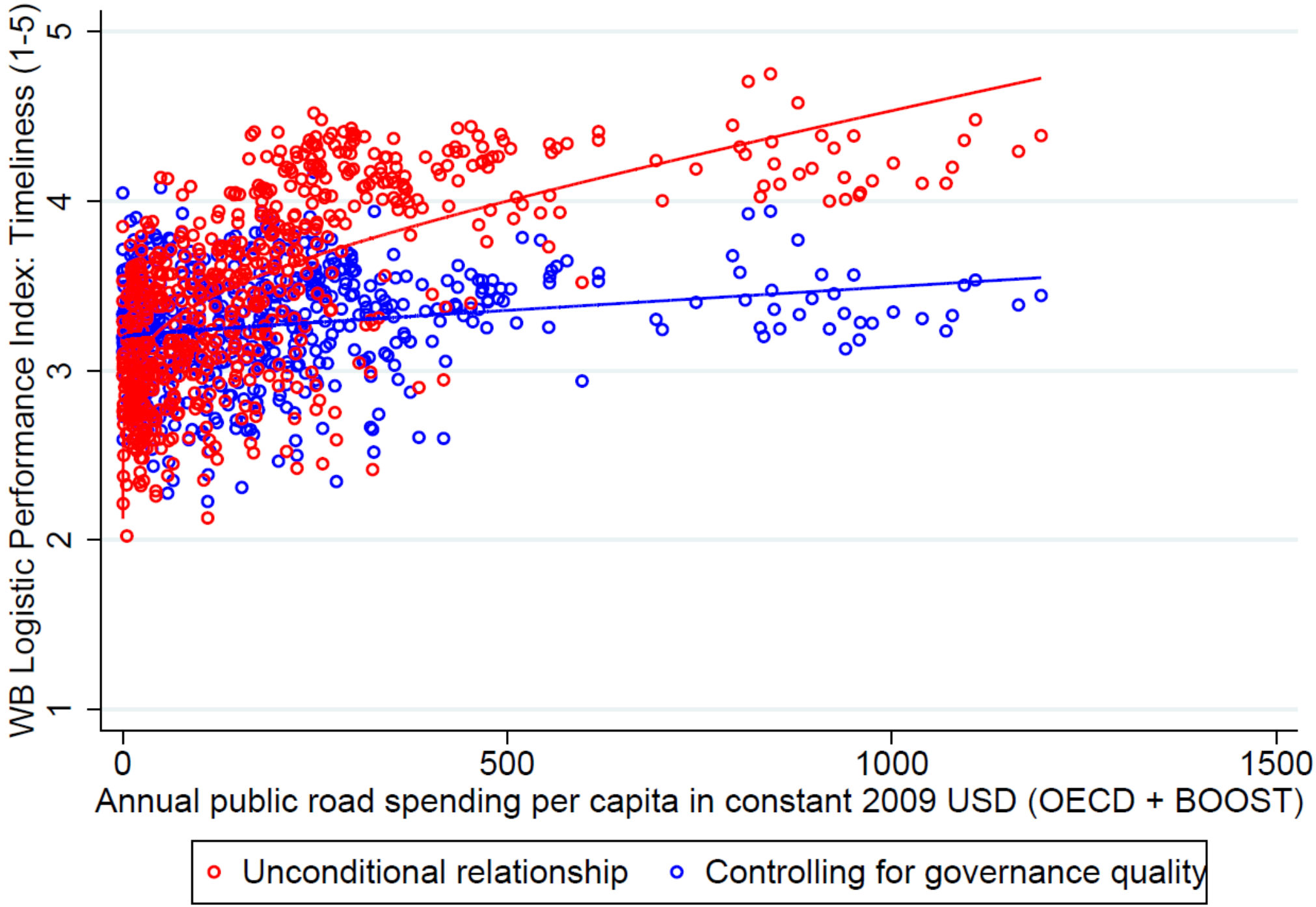
Disaster risk finance with a combination of reserves funds, contingent credit lines, insurance, cat bonds, and regional risk pools.

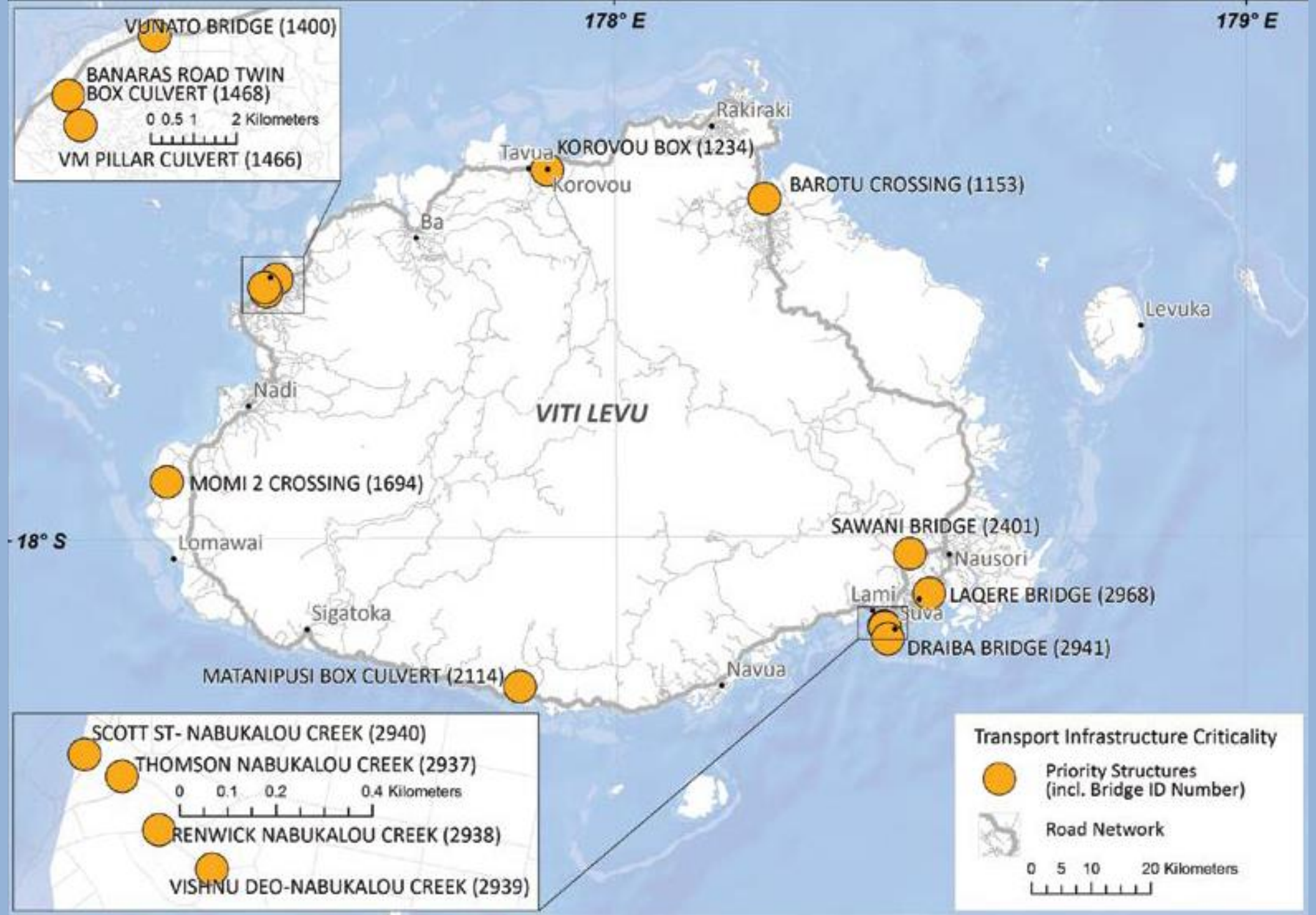


Note: IBRD = International Bank for Reconstruction and Development; IDA = International Development Association; DPF = Development Policy Financing; CAT DDO = Catastrophe Draw-Down Option; IMF = International Monetary Fund; MDB = multilateral development bank.

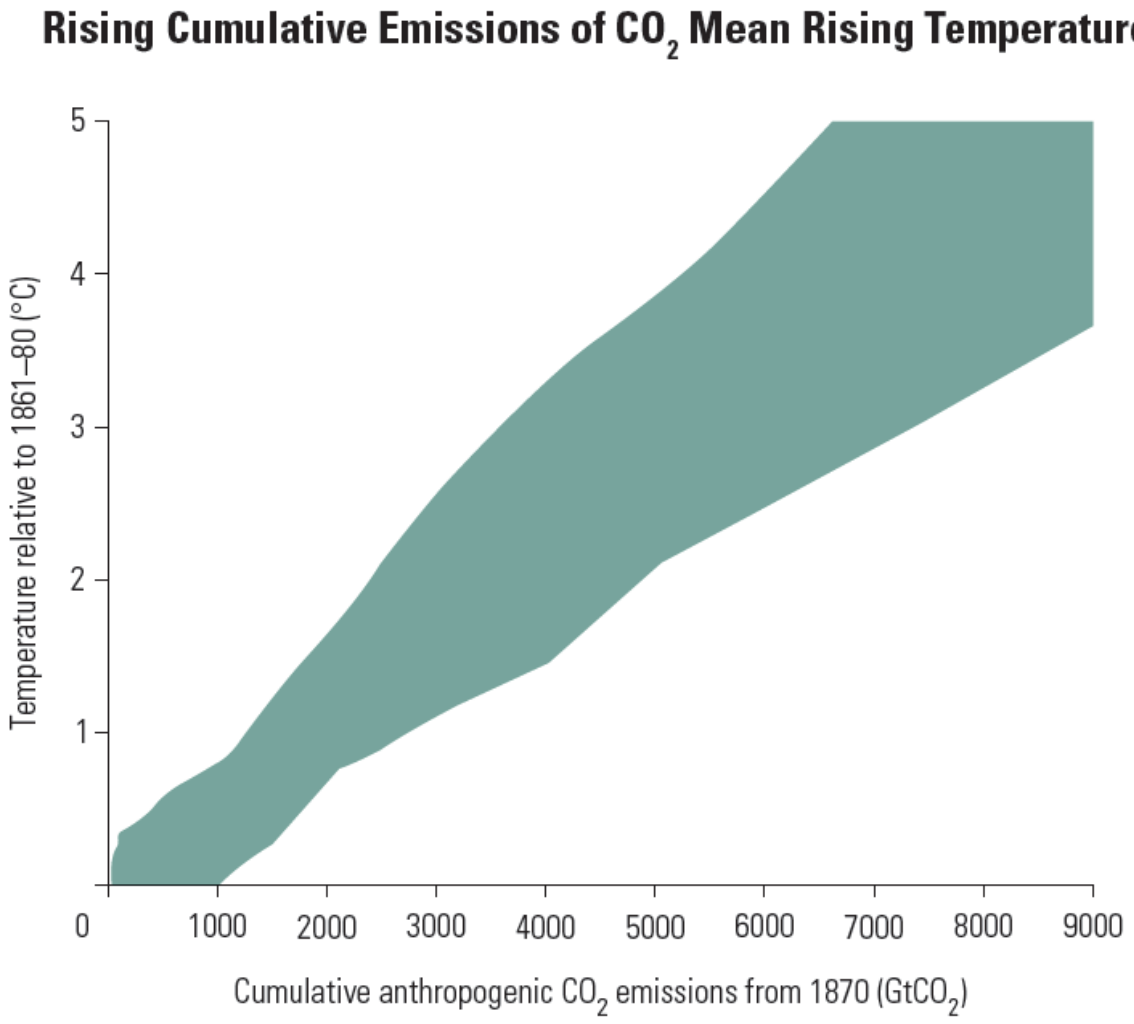
MESSAGE 4 – IT IS NOT (ONLY) ABOUT SPENDING MORE, IT IS (MOSTLY) ABOUT SPENDING BETTER


WB Logistic Performance Index: Timeliness (1-5)
1
2
3
4
5
0
500
1000
1500
Annual public road spending per capita in constant 2009 USD (OECD + BOOST)


WB Logistic Performance Index: Timeliness (1-5)
1
2
3
4
5
0
500
1000
1500
Annual public road spending per capita in constant 2009 USD (OECD + BOOST)
Unconditional relationship
Controlling for governance quality


178° E
179° E
18° S
VUNATO BRIDGE (1400)
BANARAS ROAD TWIN BOX CULVERT (1468)
0 0.5 1 2 Kilometers
VM PILLAR CULVERT (1466)
Rakiraki
Tavua
KOROVOU BOX (1234)
Korovou
BAROTU CROSSING (1153)
Ba
Levuka
Nadi
VITI LEVU
MOMI 2 CROSSING (1694)
Lomawai
SAWANI BRIDGE (2401)
Nausori
Lami
LAQERE BRIDGE (2968)
Suva
Sigatoka
DRAIBA BRIDGE (2941)
MATANIPUSI BOX CULVERT (2114)
Navua
SCOTT ST- NABUKALOU CREEK (2940)
THOMSON NABUKALOU CREEK (2937)
0 0.1 0.2 0.4 Kilometers
RENWICK NABUKALOU CREEK (2938)
VISHNU DEO-NABUKALOU CREEK (2939)
Transport Infrastructure Criticality
Priority Structures (incl. Bridge ID Number)
Road Network
0 5 10 20 Kilometers

MESSAGE 5 – WE CAN MANAGE THE IMPACTS OF CLIMATE CHANGE, BUT WE STILL NEED TO BRING CO_2 EMISSIONS TO ZERO



For any temperature limit, there is a maximum CO_2 budget

So CO_2 emissions have to go to zero at some point

The only question is *when.*