



International Institute for
Applied Systems Analysis
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science for global insight

Managing the risks of climate extremes in vulnerable countries – benefits and costs

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IIASA

15th Swiss Global Change Day



Proposal



- For most vulnerable countries
- Funded by Annex 1 countries
- As part of the Warsaw mechanism on loss and damage

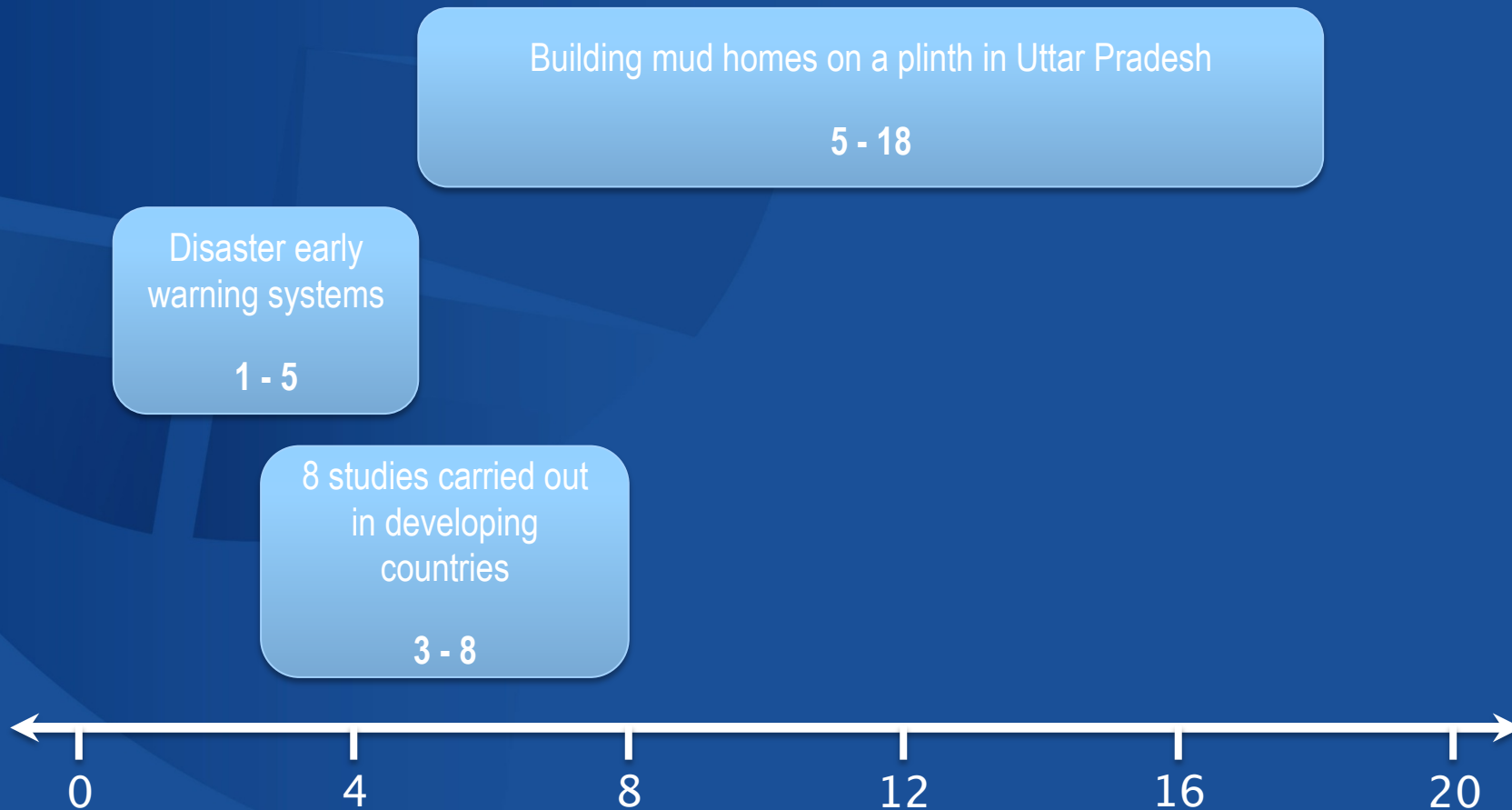
Bs & Cs of risk reduction: flood proofing



Retrofitting home
B/C ratio is negative

Building back after a flood
B/C ratio = 5 to 18

How does the B/C ratio compare?



Benefits and costs

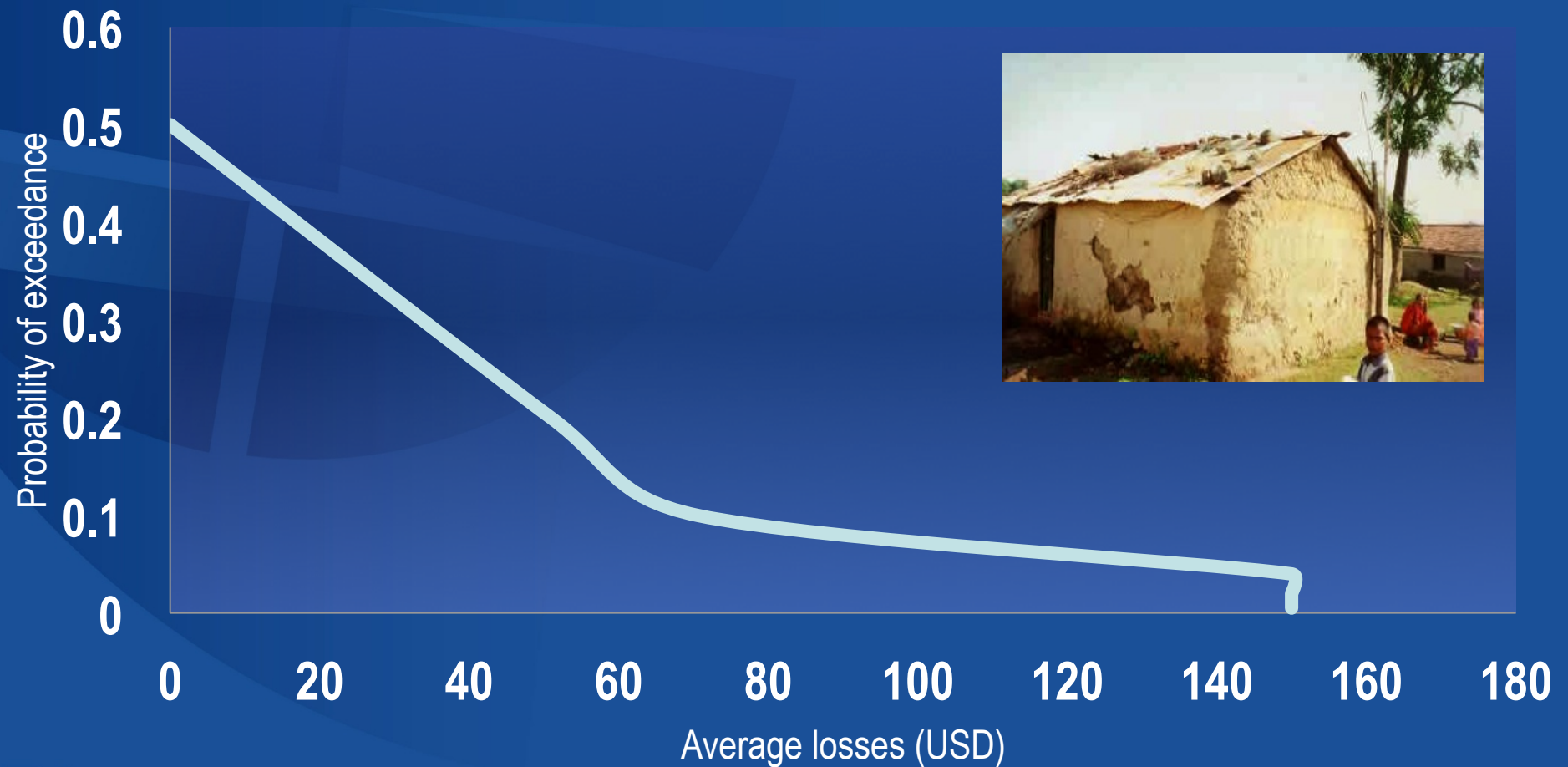
Every dollar invested into disaster prevention saves \$2, 5, 7,..10 in disaster aftermath (UNDP, Red Cross, IPPC, Ban Ki Moon)

Yet, only 18% disaster aid is invested in disaster prevention

In Switzerland, only 4%

The science

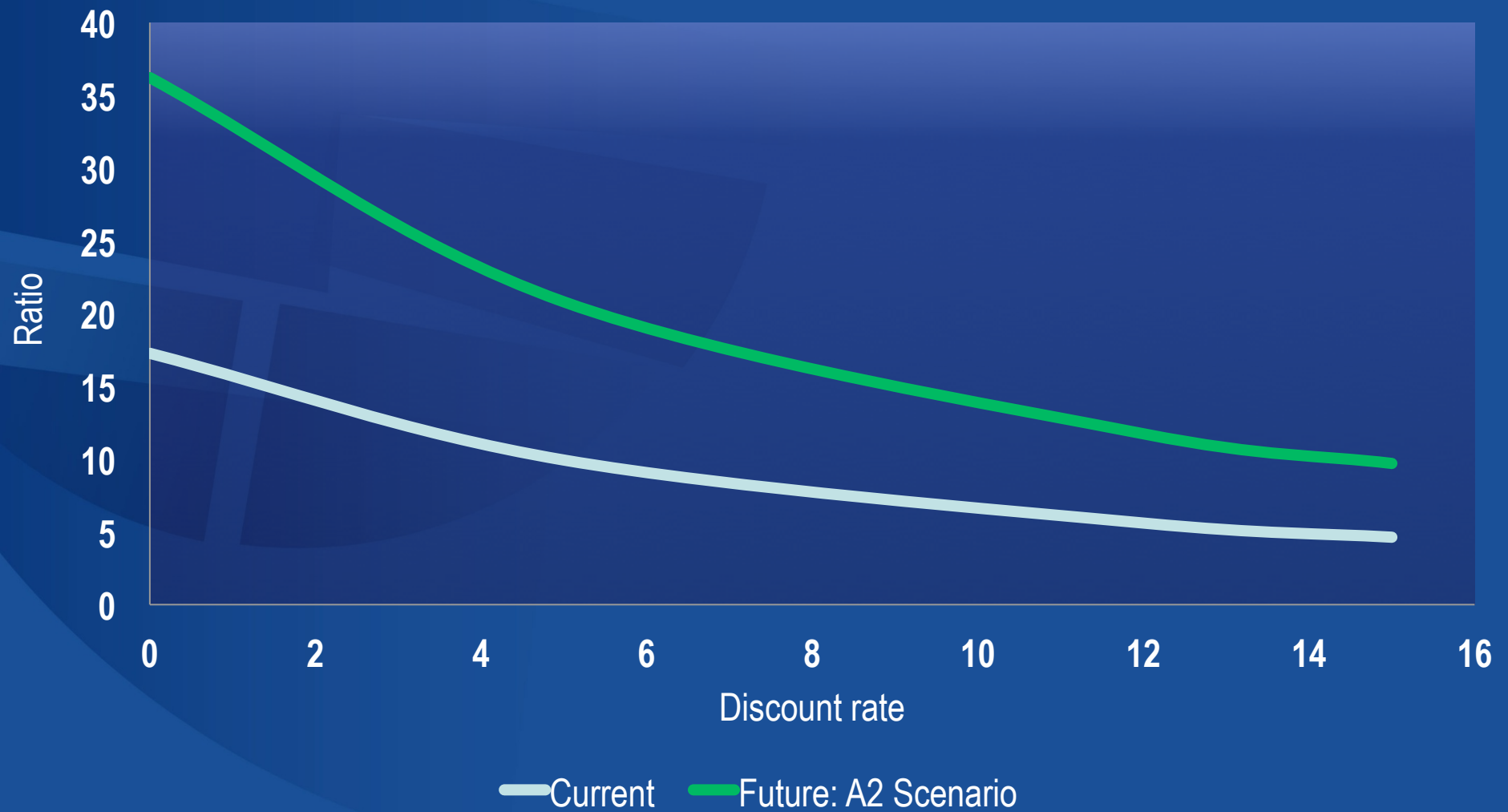
Loss exceedance distribution



B/C Ratio: building back with a plinth

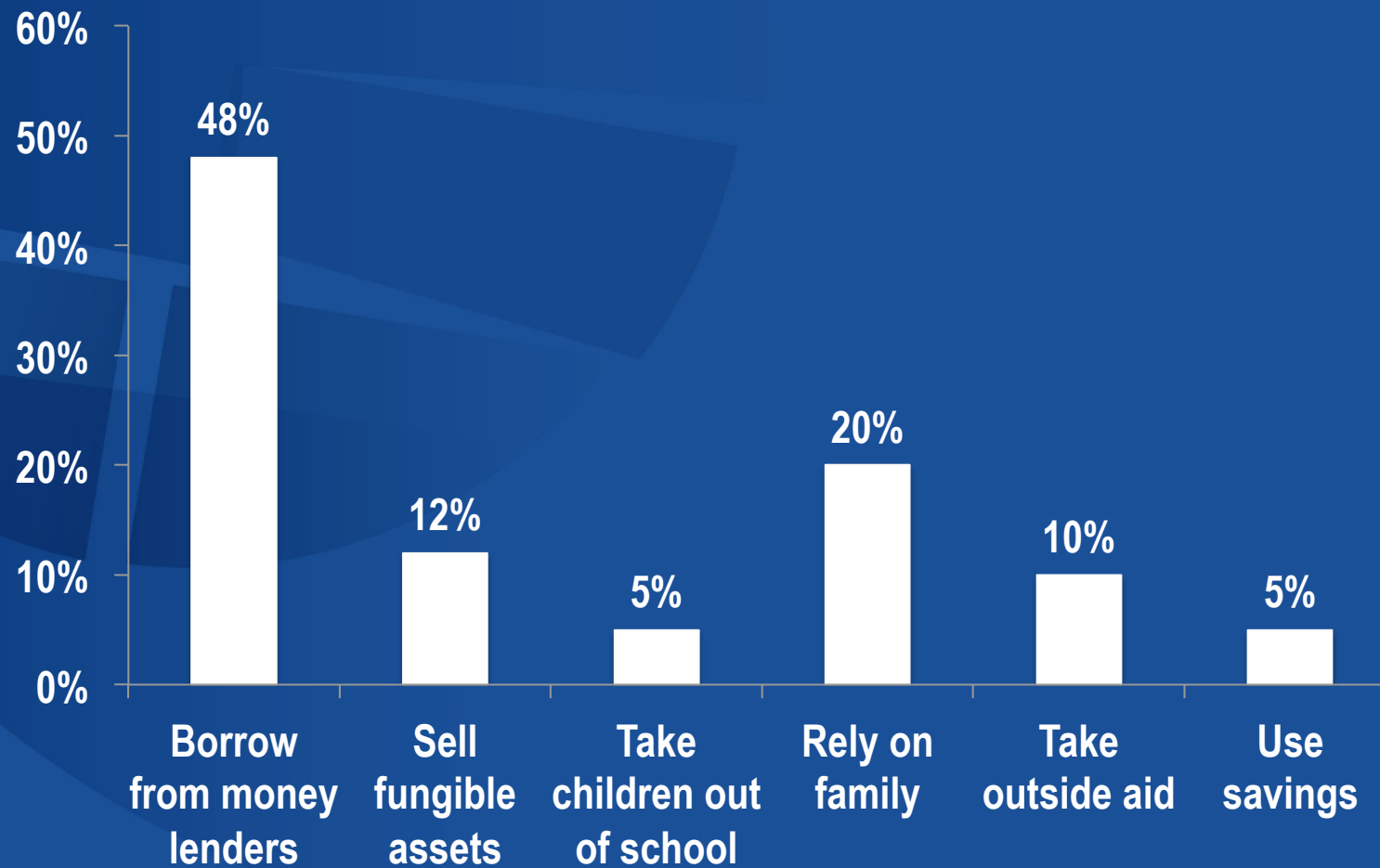


B/C ratio with climate change



Risk transfer (safety nets)

Flood coping strategies in Uttar Pradesh



Harita drought micro-insurance project



Source: CIMMYT

Payouts based on rainfall

Farmers can pay premium with off-season work to reduce drought risk

- **Leverages tight aid budgets**
- **Reduces losses**
- **Provides reliable safety net**

Partners: Ethiopian government, Oxfam, Swiss Re, and others

Loss and damage

Warsaw Mechanism: promote implementation of approaches to L&D for most vulnerable countries

**Potential
Losses**

Risk layering: an approach for the Warsaw Mechanism?

↑
200 year

100 year

Return Period

10 year

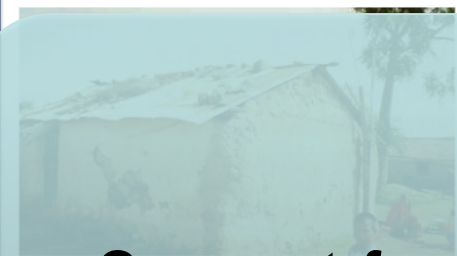
Tier One

Support for a country (government) risk pool across most vulnerable countries

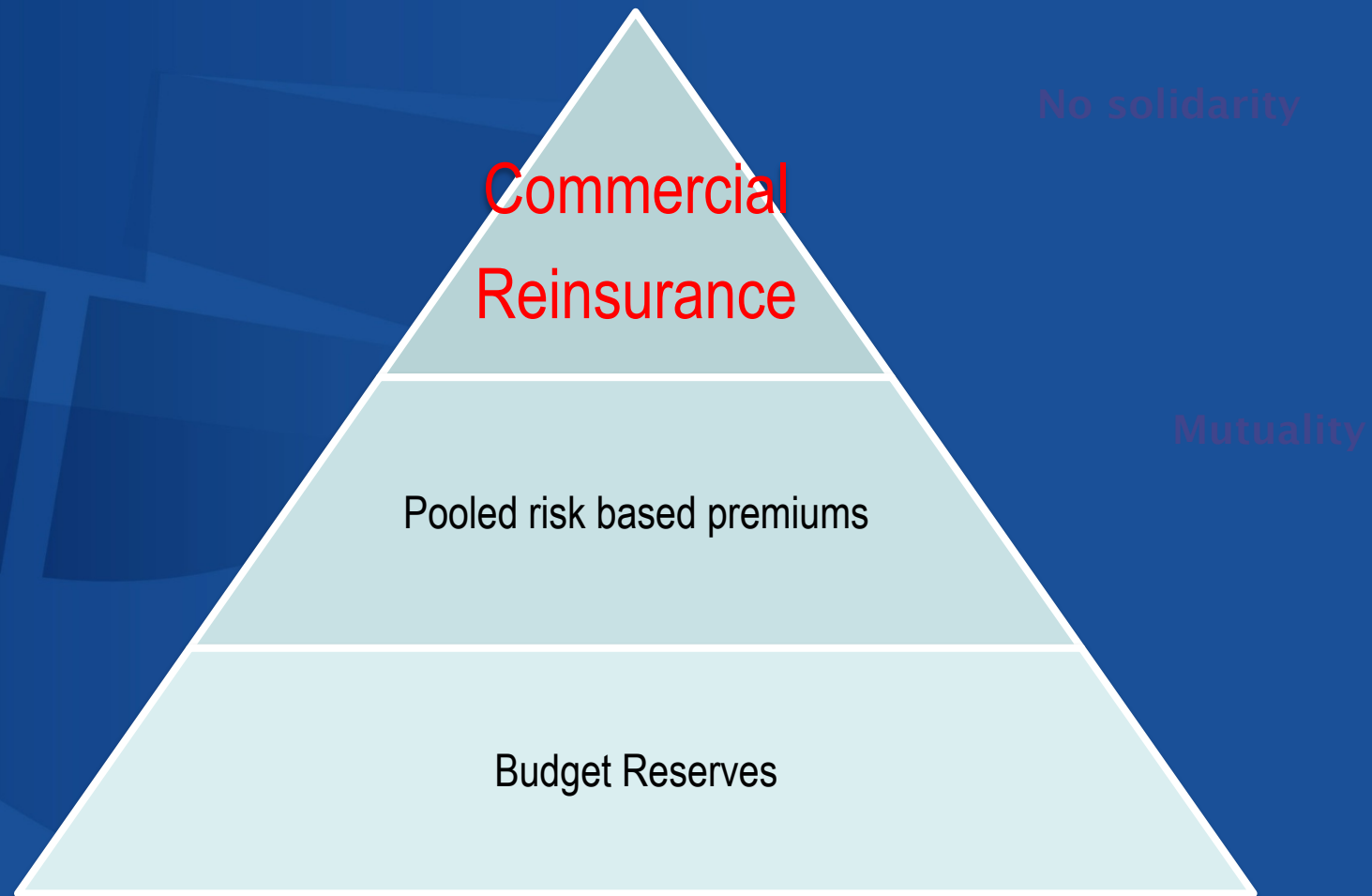


Tier Two

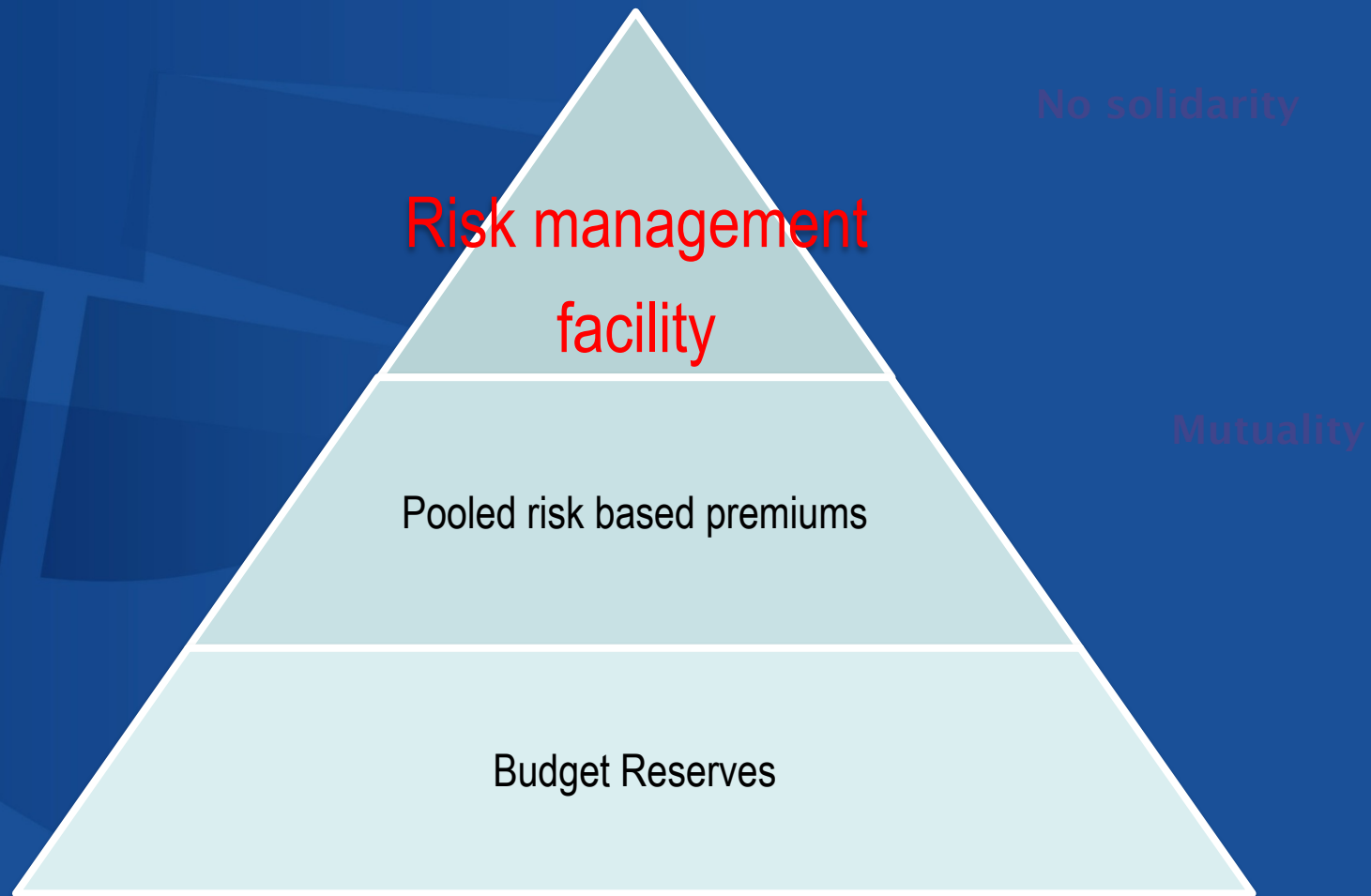
Support for risk transfer and reduction in most vulnerable countries



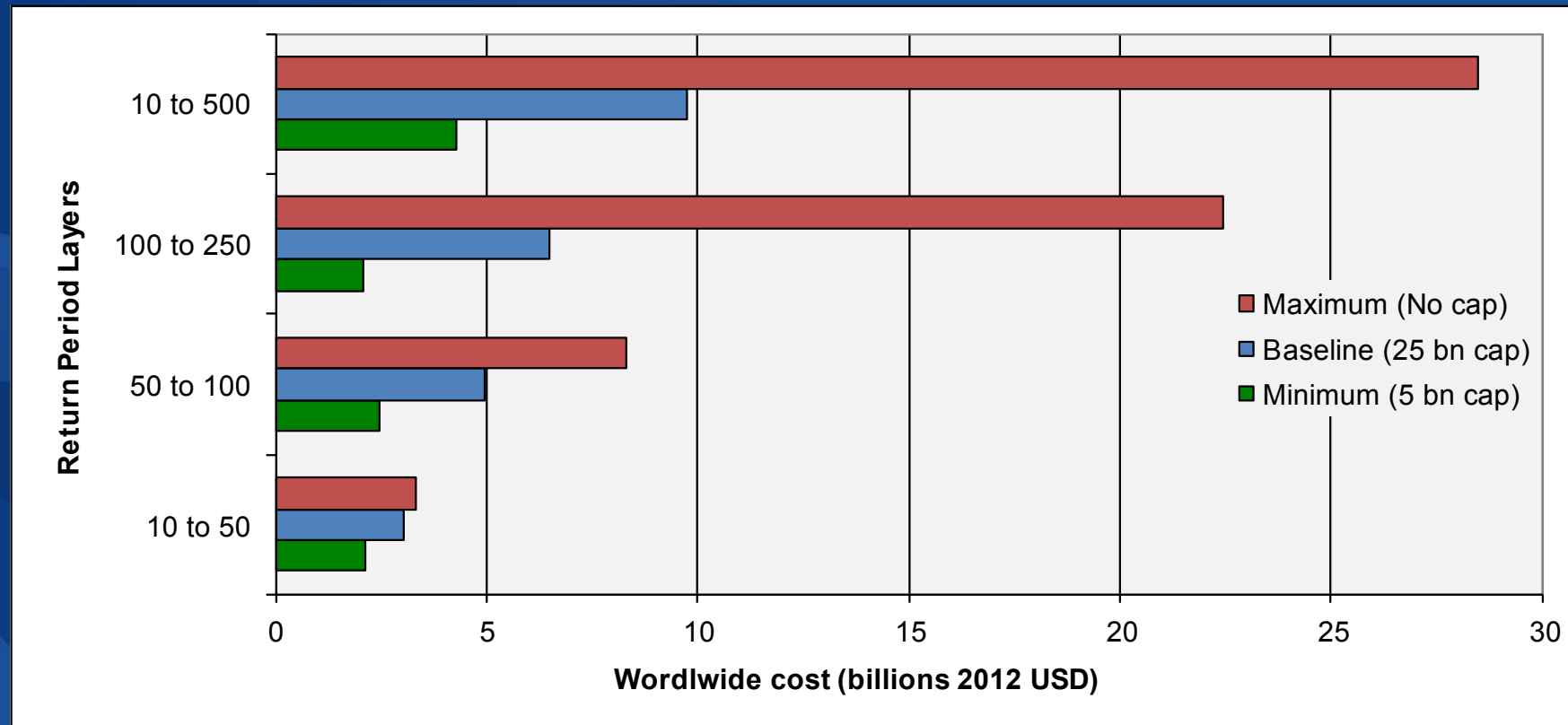
Caribbean Catastrophe Risk Insurance Facility



Caribbean Catastrophe Risk Insurance Facility

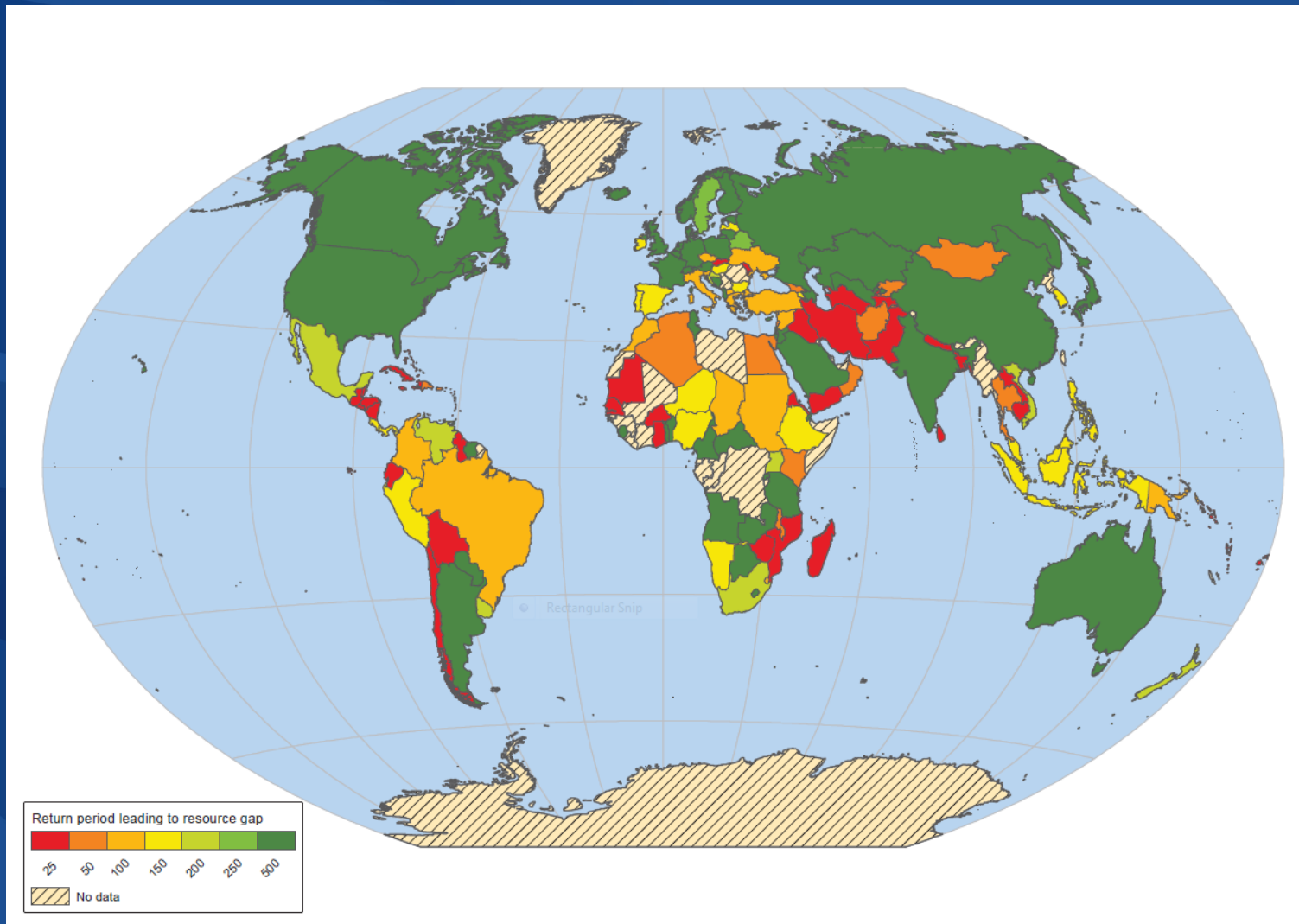


What would Tier One cost?



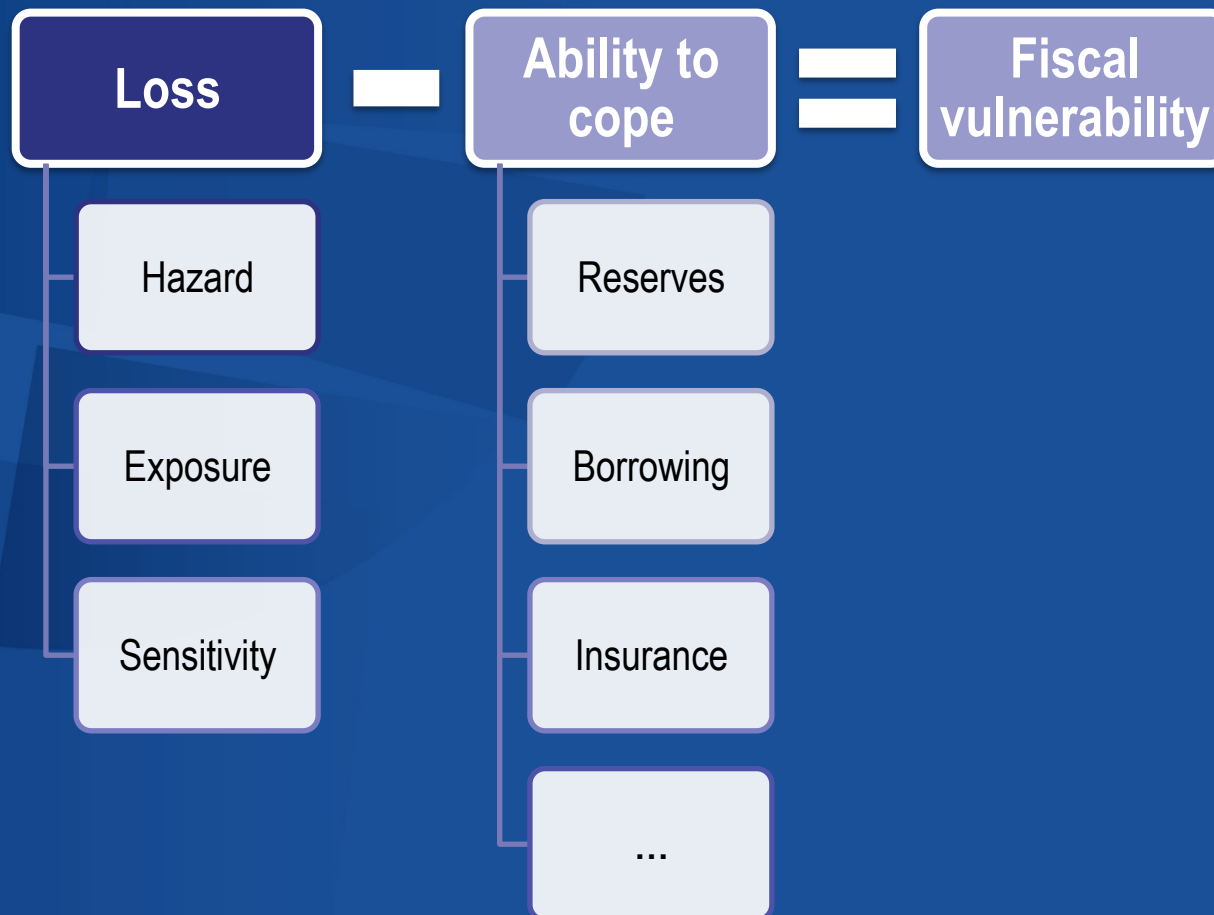
Hochrainer, et al. 2014

Country (fiscal) vulnerability to climate extremes



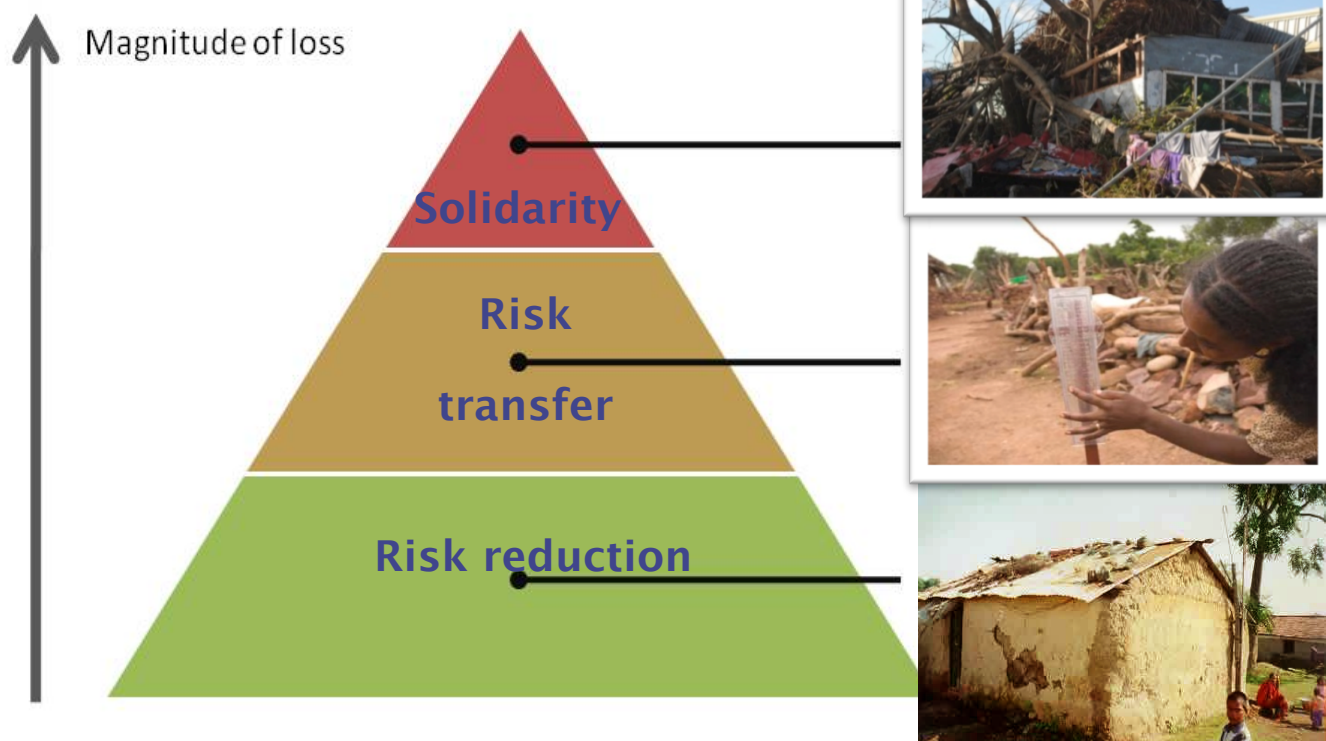
Mechler, et al. 2010; Hochrainer et al. 2012

The science



Summary: Proposal for Warsaw Mechanism

Package of approaches to address loss & damage in a 2015 international agreement





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