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science for global insight

Climate risk management for the Loss and Damage debate

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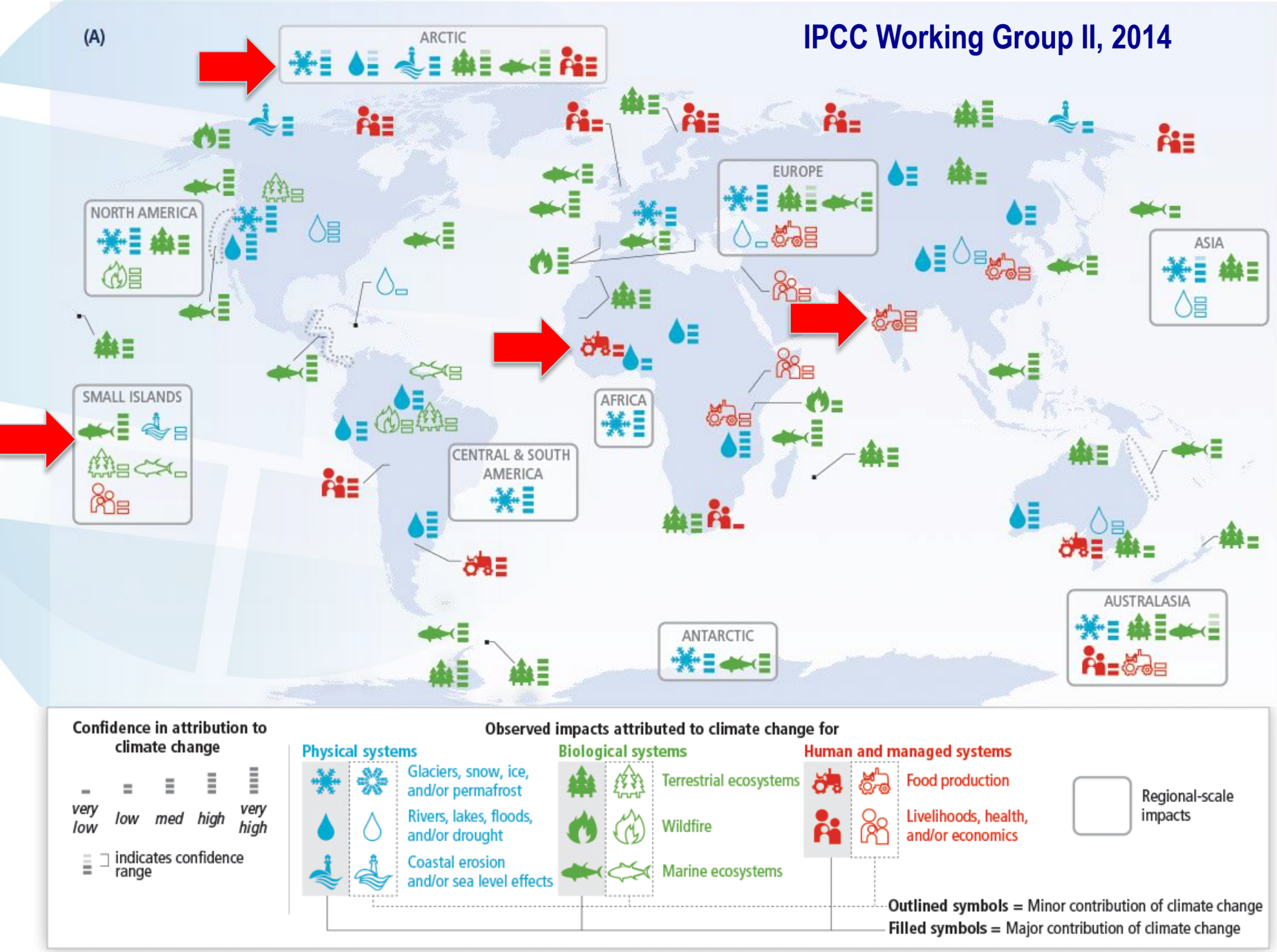
Klimatag

Graz
8.4.2016

Loss & Damage Mechanism: a contested terrain…

- Establishment of the Warsaw International Mechanism for loss and damage (WIM): to deal with support for residual climate-related damages 'beyond adaptation'
- **Contested terrain**
  - 'Southern countries' at risk (such as AOSIS) demand climate justice
  - OECD negotiators willing to support good risk management, but liability and compensation considered red lines
- L&D endorsed by Paris agreement
- **"3rd pillar of the work under the UNFCCC in addition to mitigation and adaptation"**

IPCC Working Group II, 2014



Climate change and disaster risk

Hazard
Intensities, duration and frequencies of some hazards changing (IPCC 2012&14)
Extreme event attribution in early stages (James et al., 2014; Trenberth et al., 2015)

Exposure
Dominating Factor - <u>currently</u>
(IPCC, 2012&14)

Vulnerability
Key driver, knowledge gaps, significant adaptation deficit (IPCC, 2012)

Images:
IPCC, 2014

Compensatory justice perspective: Attribution complex for risks

Table 1 A specimen inventory of anthropogenic climate change impacts for Europe 2000–2010, based on the events with the most severe mortality and economic losses as defined by WMO.

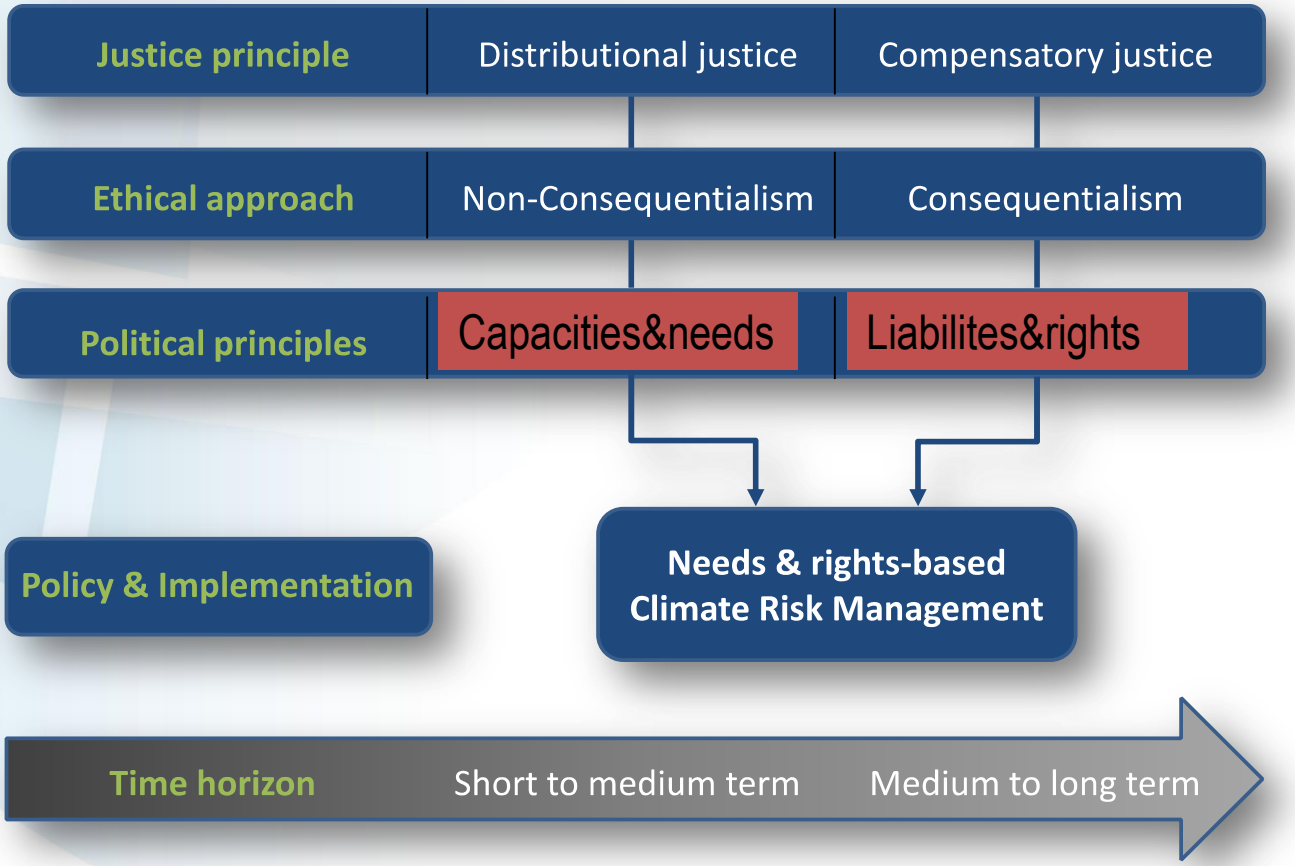
Extreme Event	Anthropogenic influence on climate event	Anthropogenic influence on impacts	Anthropogenic influence on economy
UK flooding 2000	Increase in risk	20% increase in risk	?
Italy flooding 2000	?	?	?
Germany flooding 2002	?	?	?
Europe-wide heatwave 2003	Increase in risk by ≥100%	?	?
France heatwave 2006	?	?	?
Germany storm 2007	?	?	?
Russia heatwave 2010	Increase in risk by 0 to 150%	?	?

James and colleagues, 2015

Taking the debate forward in a principled way

- Principle of strict liability cannot yet be applied to climate risk
- Argue for a pragmatic policy approach to the L&D: balance between compensatory and distributional justice
  - Supporting climate risk management for distributional justice: global, national, local
  - Integrate evidence from attribution studies to work towards compensatory justice

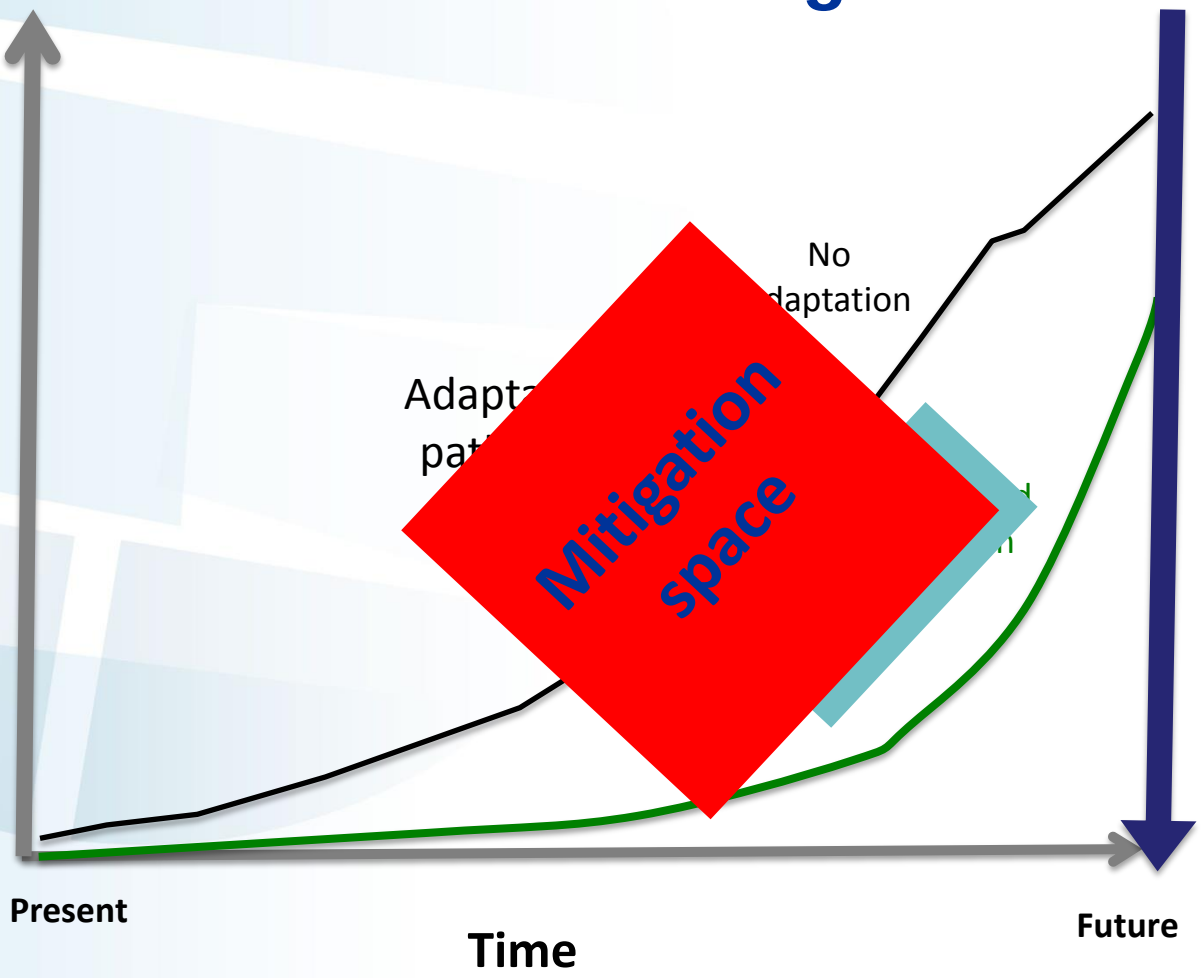
Positioning Loss & Damage in the climate justice debate



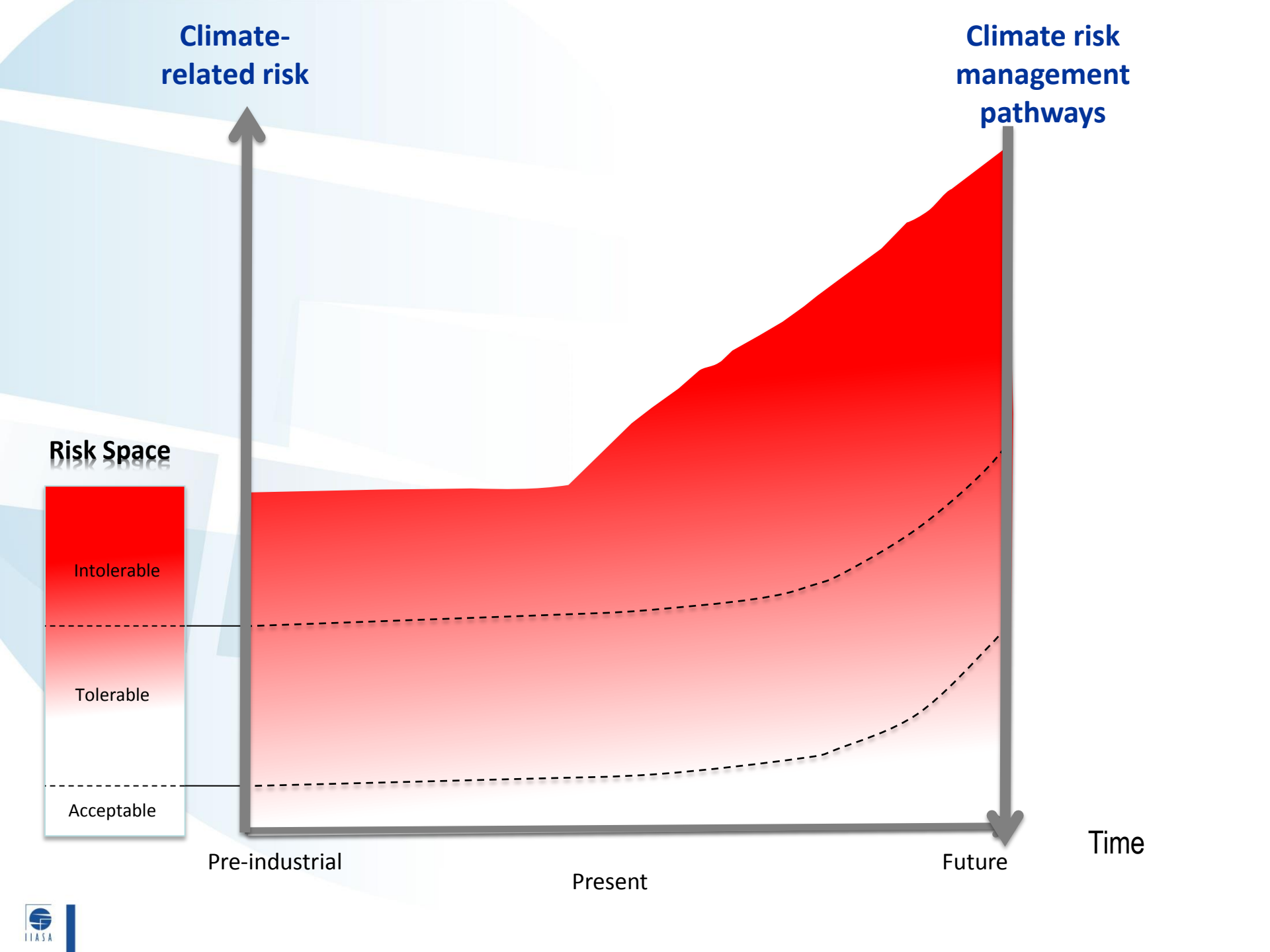
Needs based/distributional perspective Methodological elements

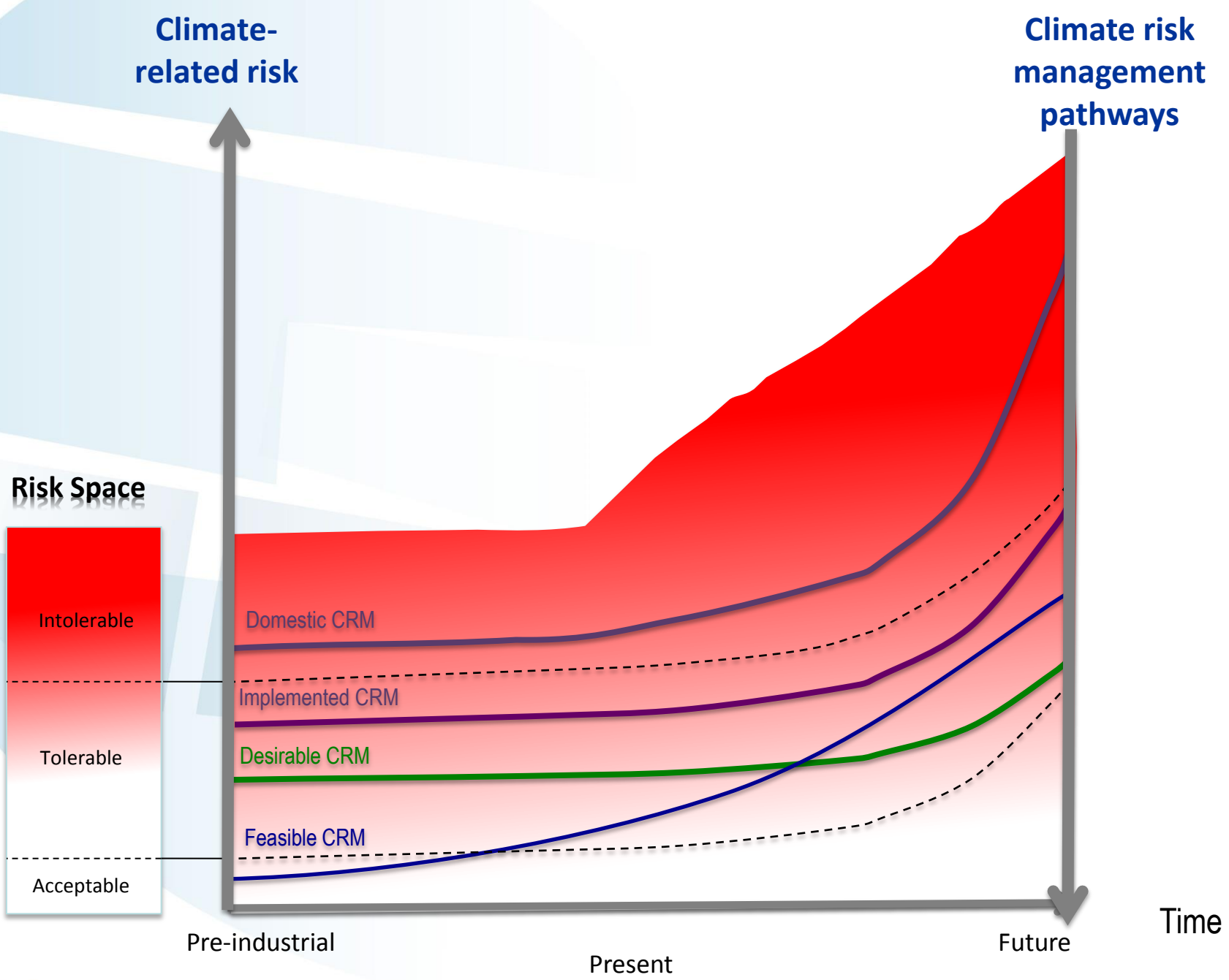
- Identify country-level risk
- Identify country level adaptive capacity: stress-testing
- Risk layering principle:
  - risk reduction for more frequent risks
  - Risk financing and assistance for infrequent risks
- Develop funding mechanism and appropriate delivery channels

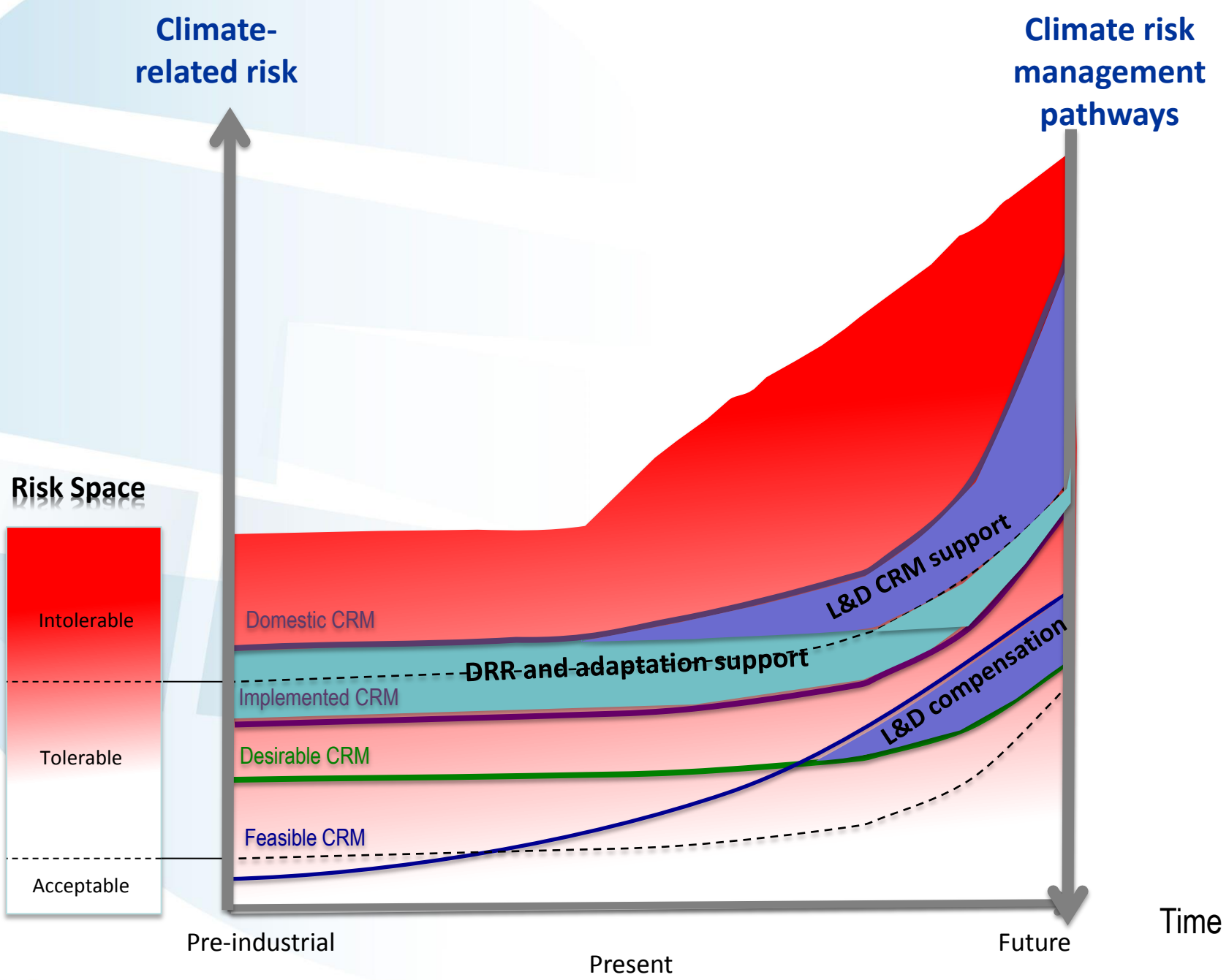
Traditional framing



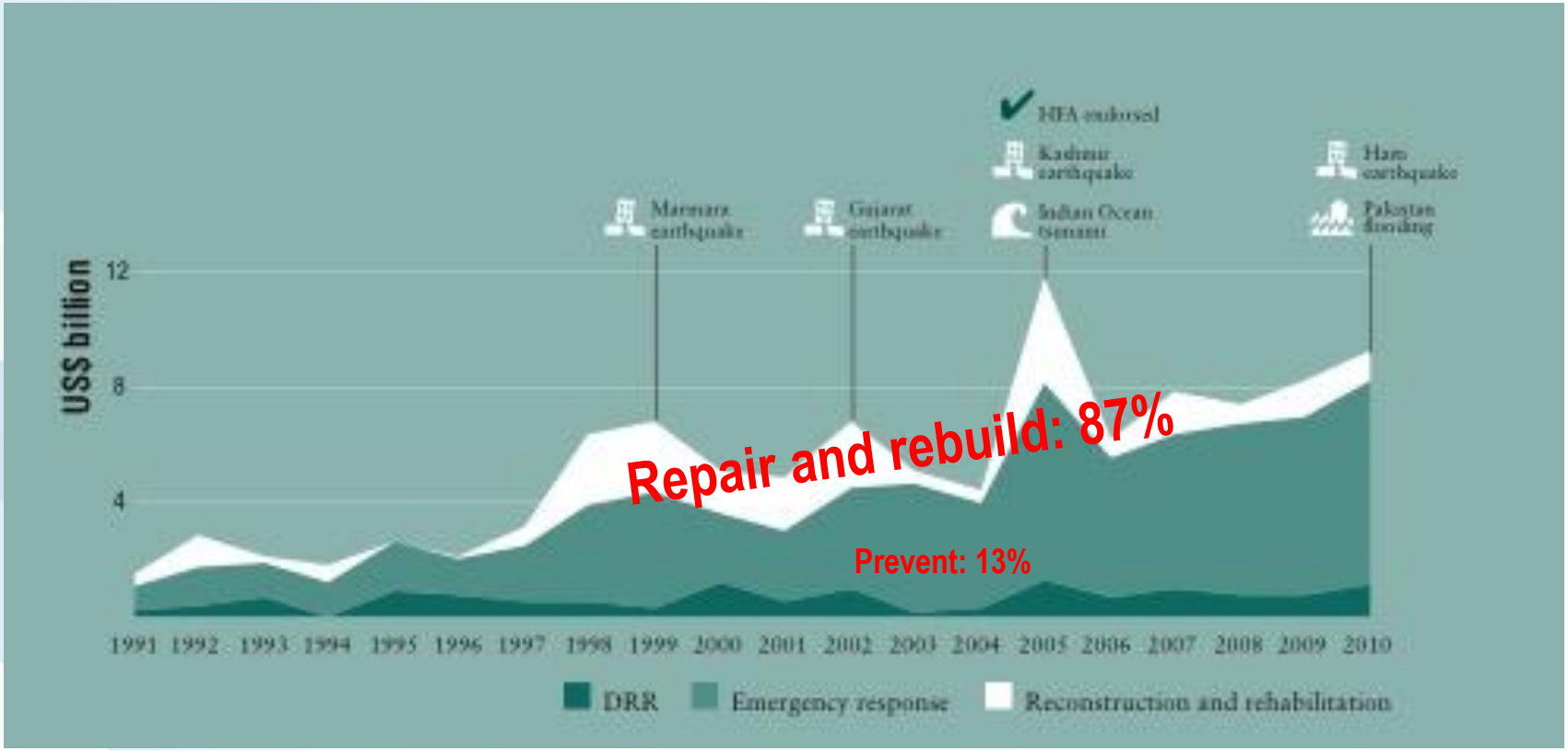
THE ADAPTATION GAP
A Preliminary Assessment
REPORT


Climate-related risk
Climate risk management pathways
Risk Space
Intolerable
Tolerable
Acceptable
Pre-industrial
Present
Future
Time


Climate-related risk
Climate risk management pathways
Risk Space
Intolerable
Tolerable
Acceptable
Domestic CRM
Implemented CRM
Desirable CRM
Feasible CRM
Pre-industrial
Present
Future
Time


Climate-related risk
Climate risk management pathways
Risk Space
Intolerable
Tolerable
Acceptable
Domestic CRM
L&D CRM support
DRR and adaptation support
Implemented CRM
Desirable CRM
L&D compensation
Feasible CRM
Pre-industrial
Present
Future
Time

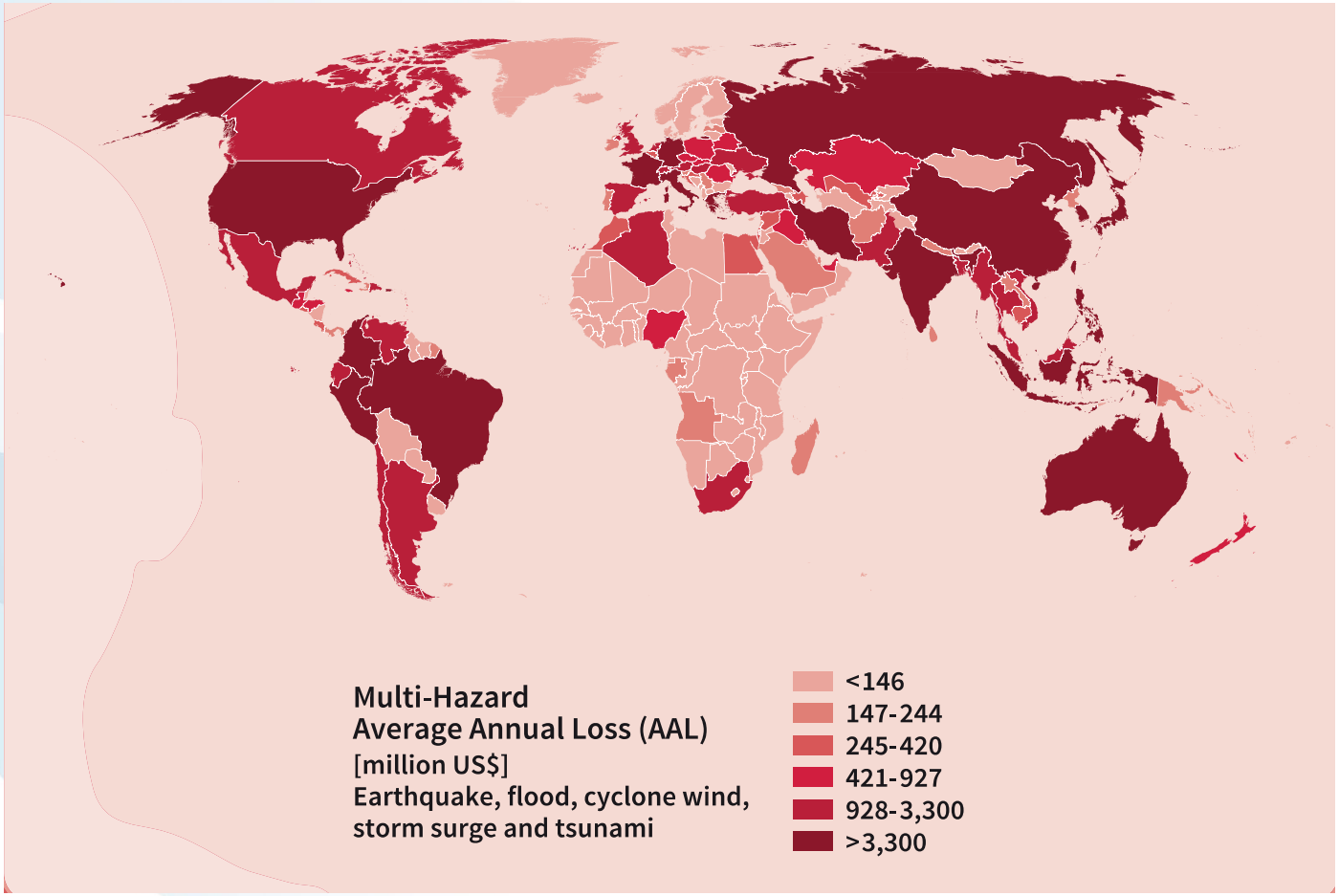
Distributional justice being acted upon, but lack of finance for pre-disaster risk management



Disaster–related financing 1991-2010

Kellet and Caravani, 2013

Distributional justice needs based perspective

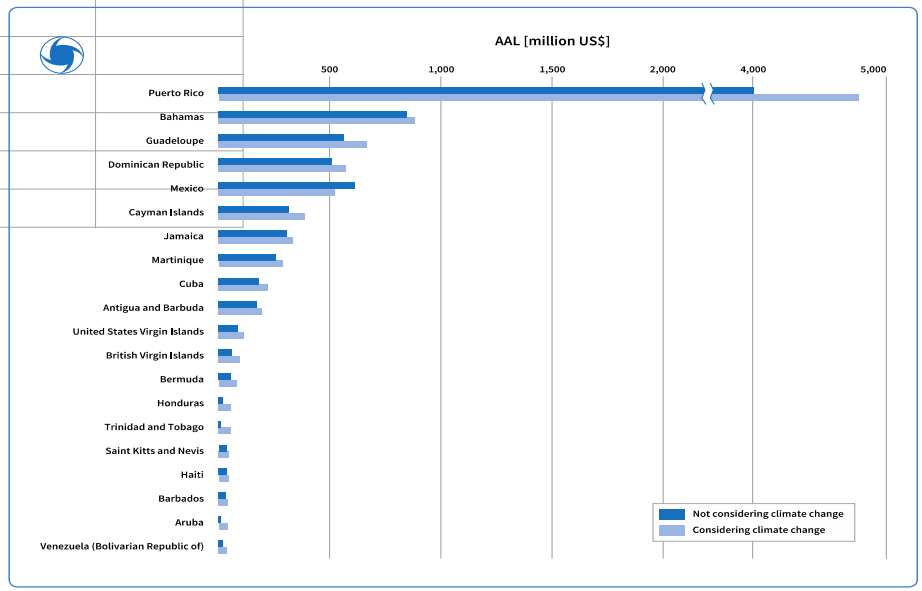


Global disaster risk today

GAR-Global Assessment Report, 2015

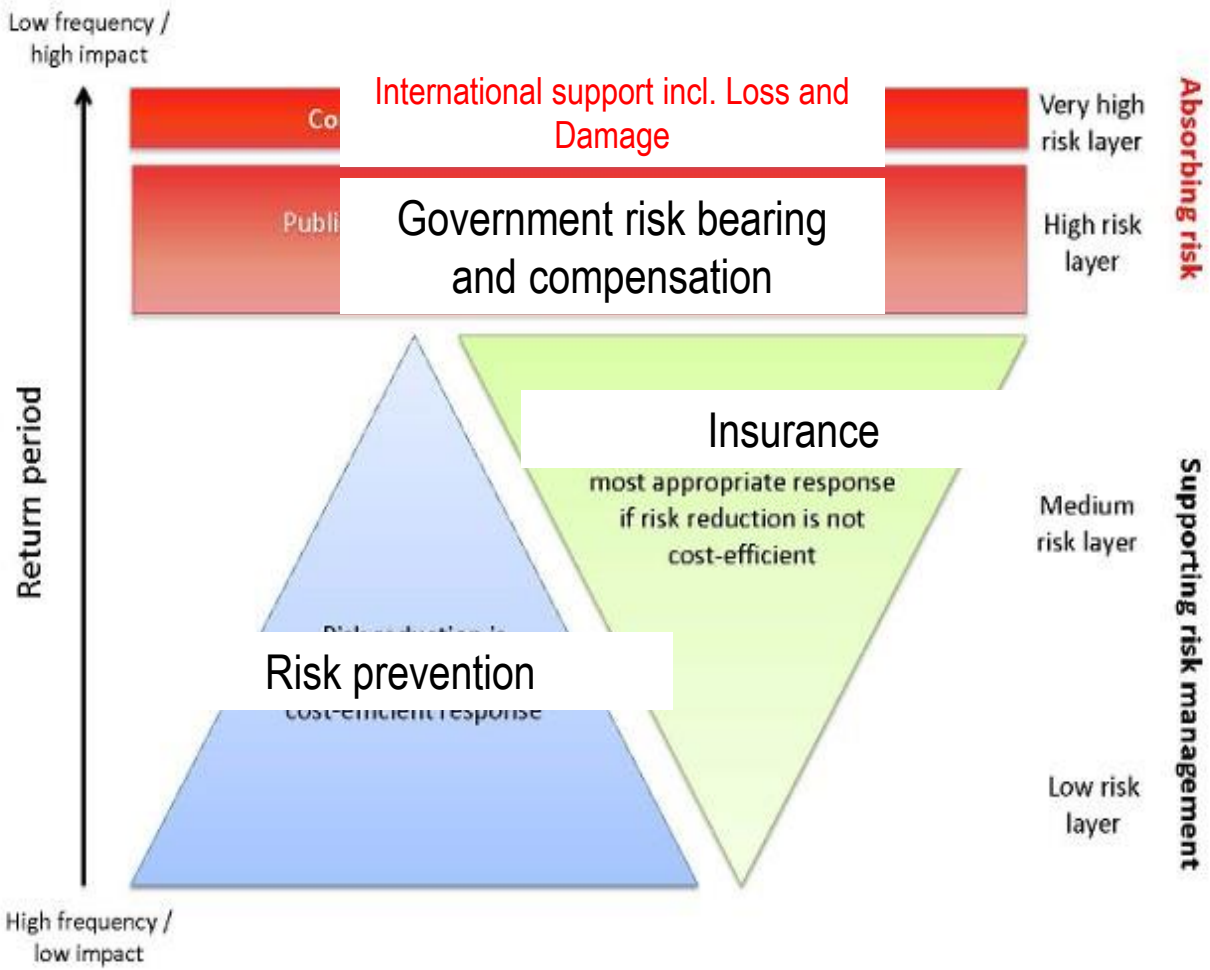
Country-level risk

	AAL [million US$]	Social Expenditure [million US$]
Myanmar	1,957	1,037
Lao PDR	220	503
Bangladesh	2,463	6,398
Cambodia	251	670
Bhutan	55	177
Gabon	200	740
Central African Republic	5	40
Madagascar	36	293
Malawi	24	198
Guinea	18	153
Pakistan	1,030	9,028
Viet Nam	2,295	21,531
Nepal	143	1,359
Congo	126	1,271
Eritrea	13	130



GAR-Global Assessment Report, 2015

Portfolios: Layering risk management

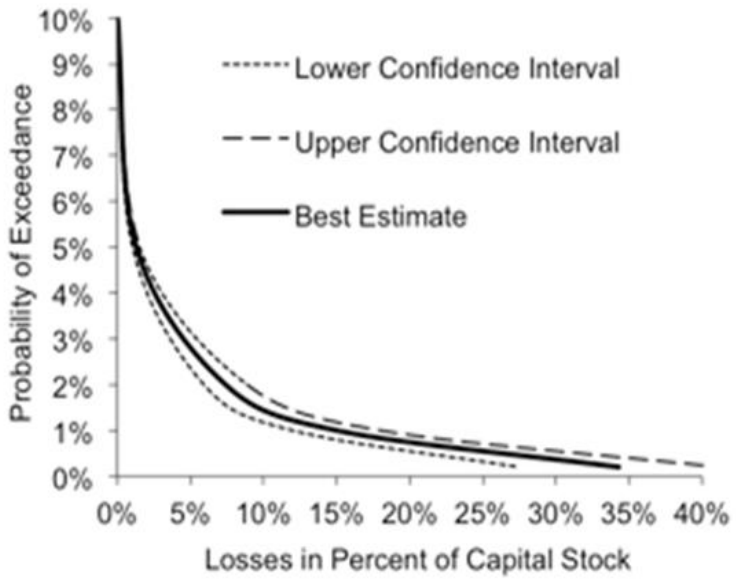


Mechler et al., *Nature Climate Change* 2014

RPV's Catastrophe Simulation Model CATSIM

Physical Vulnerability

Loss Exceedance Distribution



Fiscal Resilience

Ex Post examples:

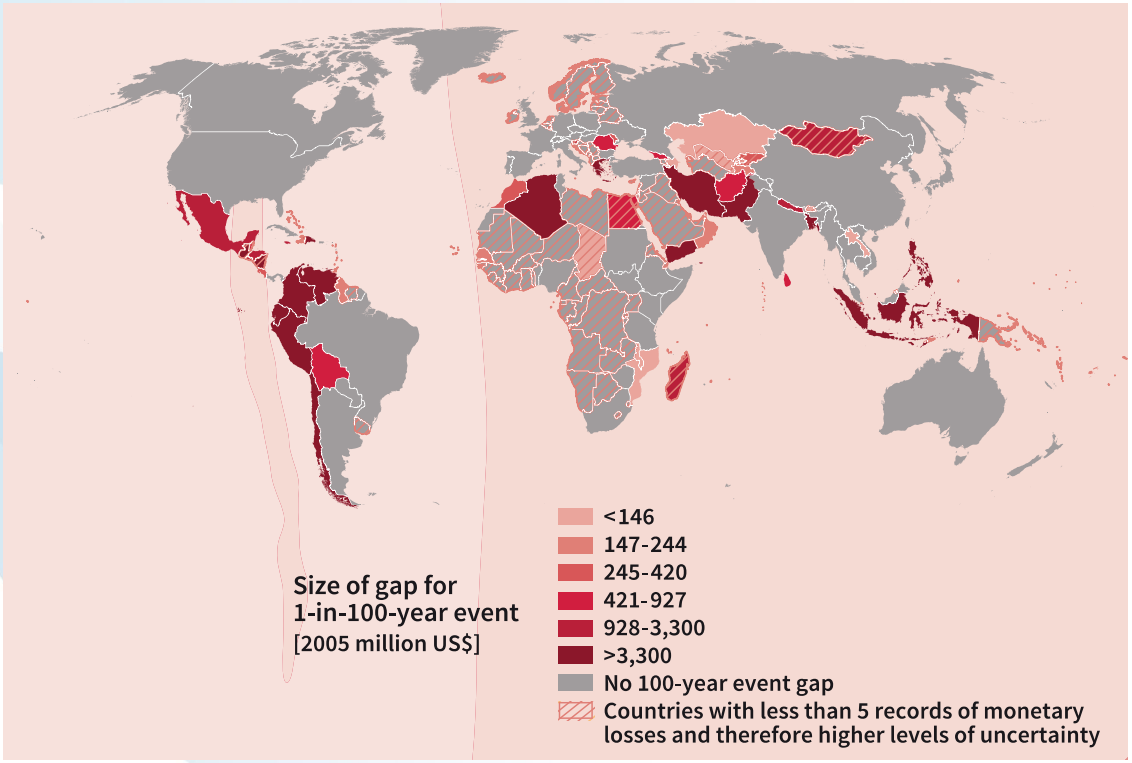
- Diversion from budget
- International borrowing
- Aid

Ex Ante examples:

- Reserve funds
- Sovereign insurance

Economic Risk

Distributional justice
Capacity & Needs

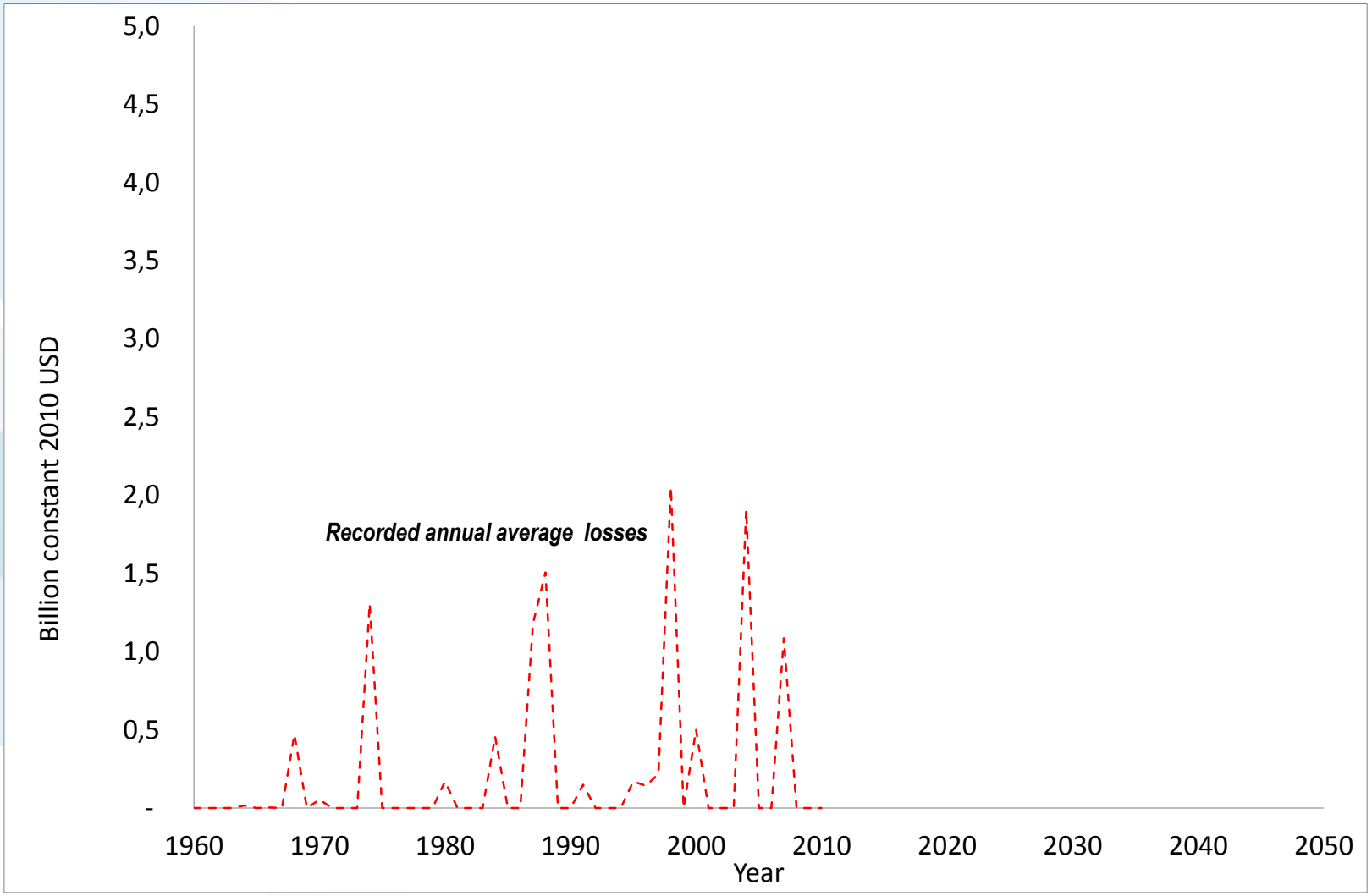


- Compensating all countries for loss and damage beyond their coping capacity
- ~ USD 10 billion annually
- Increasing over time
- Signal for mitigation challenge

Stress testing for 1-in-100 year events

IIASA for GAR, 2015
Hochrainer-Stigler et al., *Global Environmental Change*, 2014

Country perspective
Projecting risks: Bangladesh



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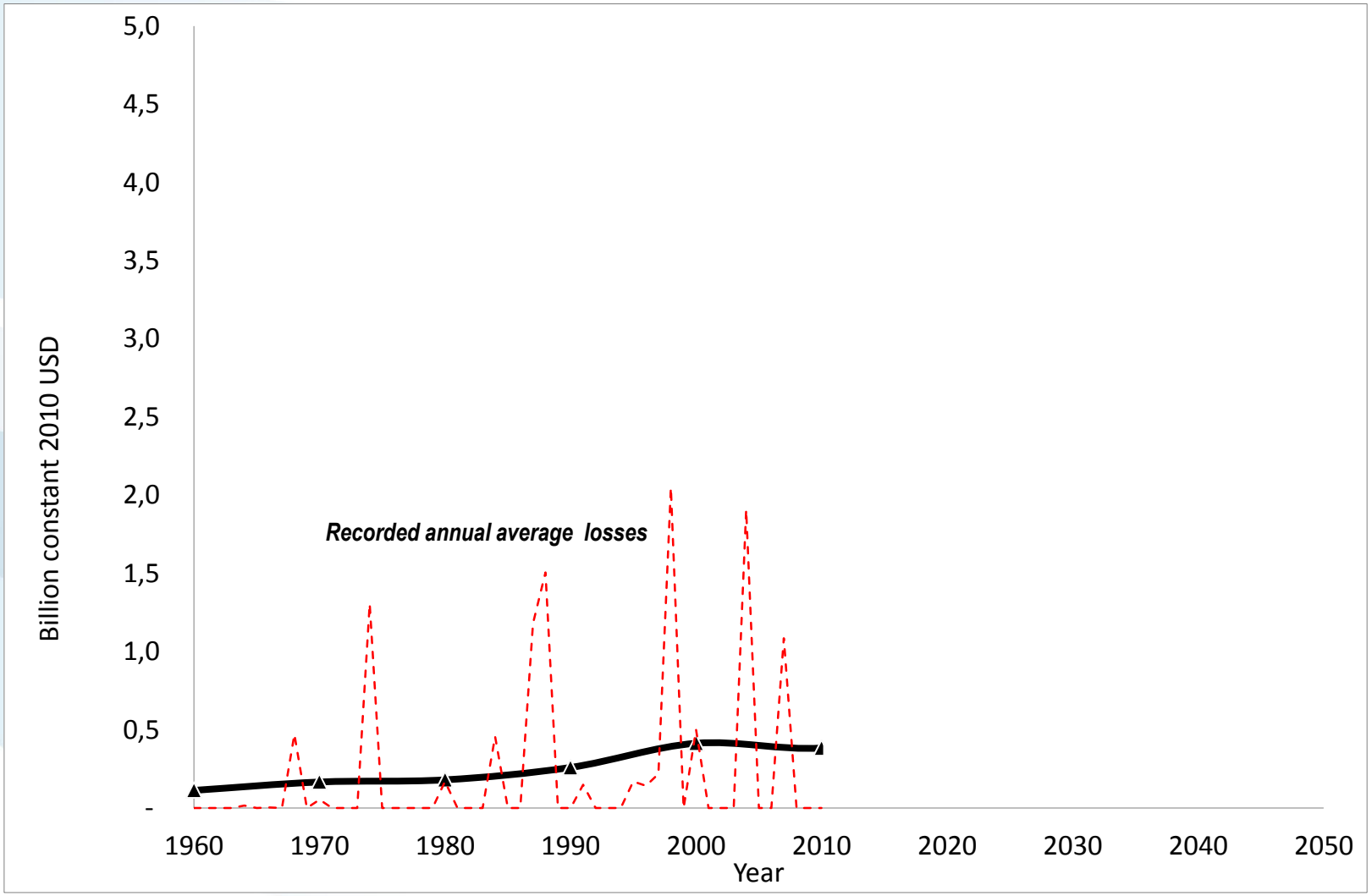

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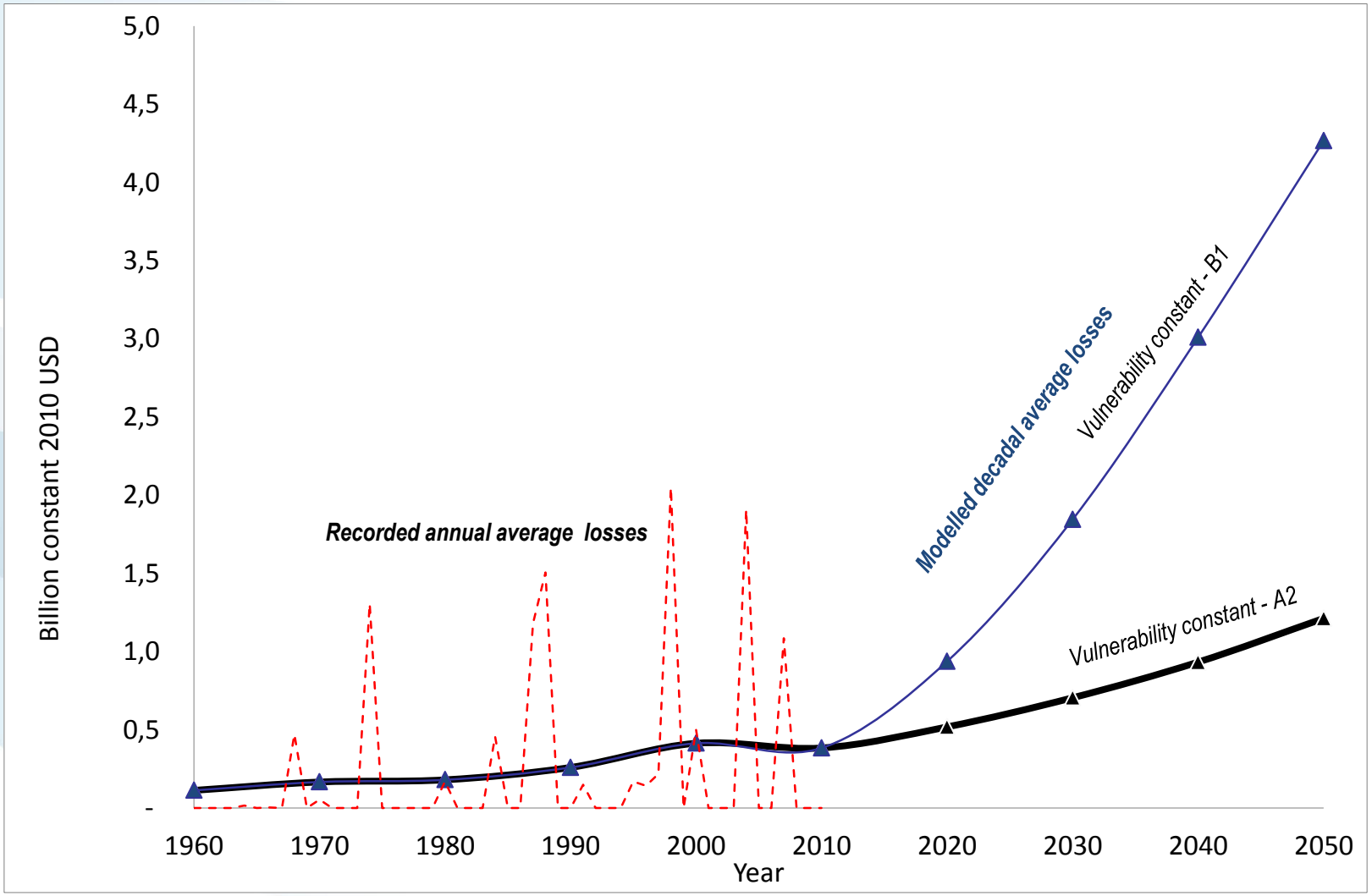

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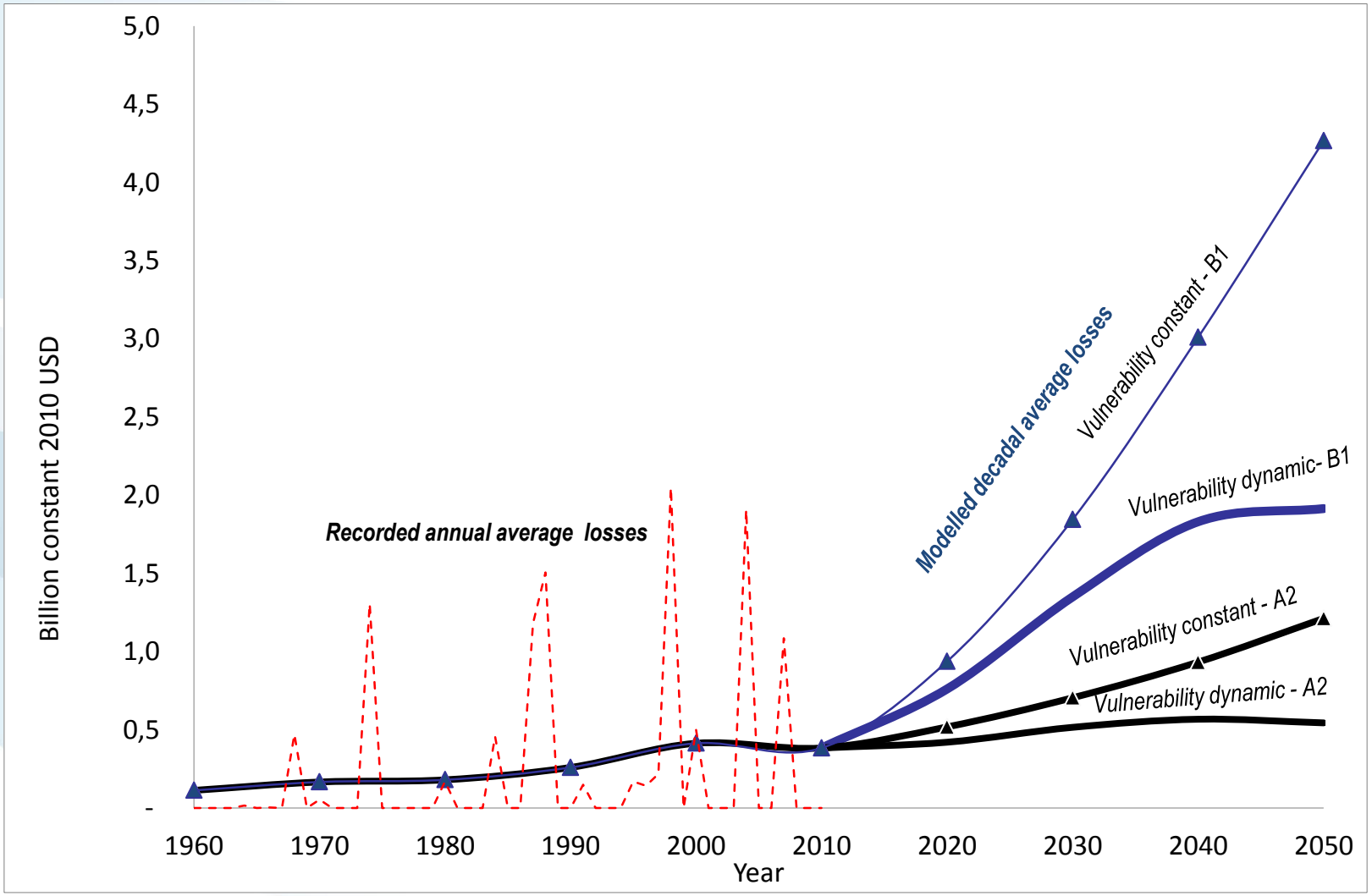
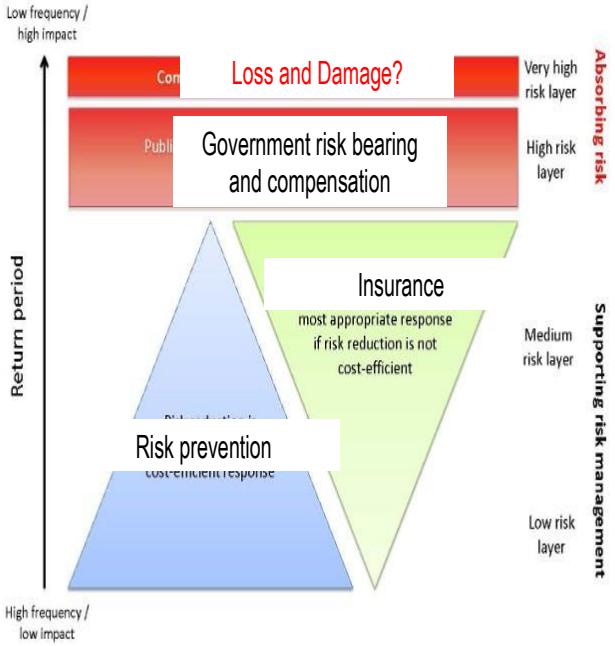
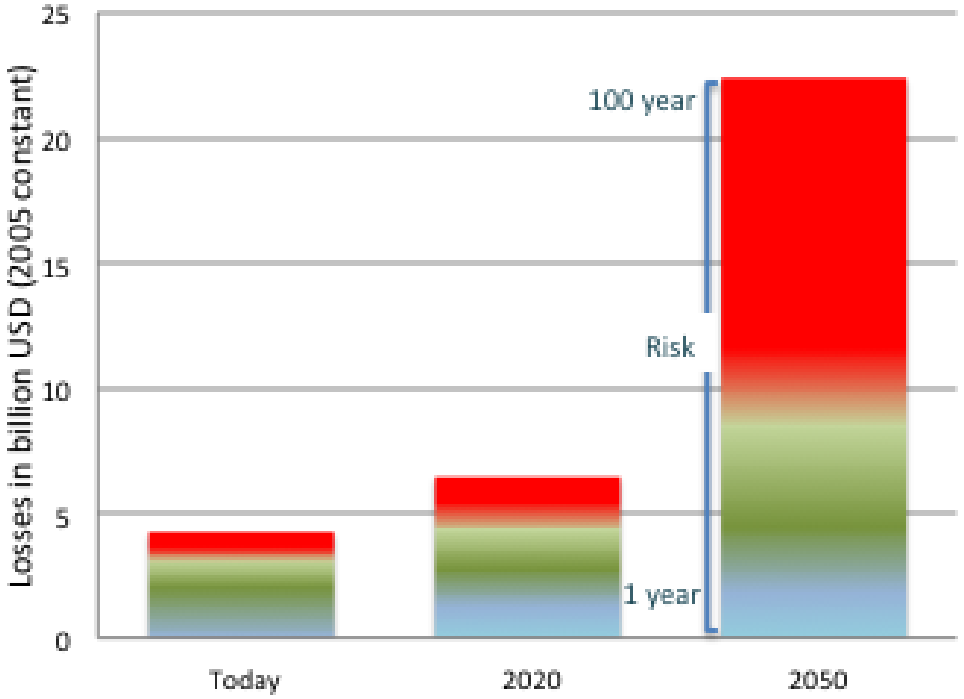


Mechler and Bouwer, *Climatic Change*, 2015
Hochrainer et al., 2013

Climate risk layering
Example Bangladesh



Layering risk management



Risk layers with climate change
(B1 scenario and no additional risk reduction)

Based on Mechler and Bouwer, *Climatic Change,* 2015

Funding perspective: What and how to support coping with L&D risk?

- **Regional and national level:** Risk pooling and financing- Sovereign insurance and regional pools:
  → Caribbean, Pacific, Africa

- **National to community level:** Public-private partnerships for comprehensive risk reduction: National funds to bolster community-level risk management partnerships (Peru)

Example Peru

- Devolution of DRR: National-local
- $ 100 Million Fund to support disaster risk management
- Strong-community-led partnerships emerging (Flood Resilience Alliance)

Discussion points

- Framing: Adaptation vs. Loss & Damage - distinction with practical relevance?
- Politics: Can approach help to overcome the red lines?
- Financing L&D: How to arrange and what are sources?

References

- Mechler, R. Bouwer, L., Linnerooth-Bayer, J., Hochrainer-Stigler, S., Aerts, J., Surminski, S. (2014). Managing unnatural disaster risk from climate extremes. *Nature Climate Change 4*: *235-237*
- Mechler R. and Bouwer, L. (2015). Reviewing trends and projections of global disaster losses and climate change: Is vulnerability the missing link? *Climatic Change* 33 (1) : 23-35
- Mechler, R. and Schinko, T. What is the space for Loss and Damage? *under review*