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Understanding disaster risk in a changing world:

Achievements and remaining challenges

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Rationale

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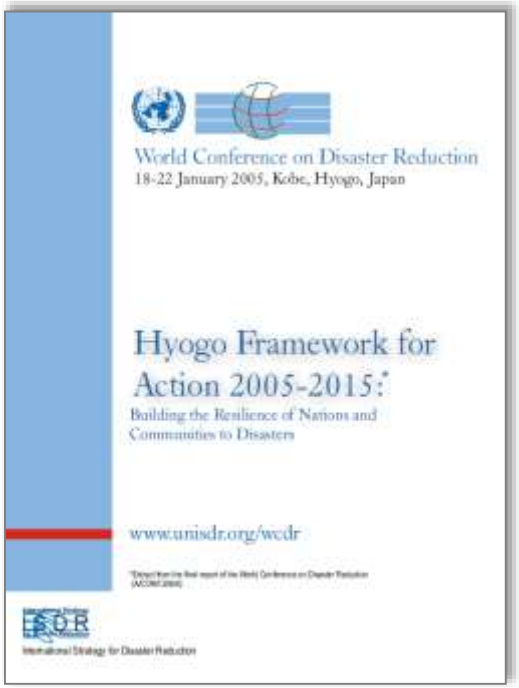
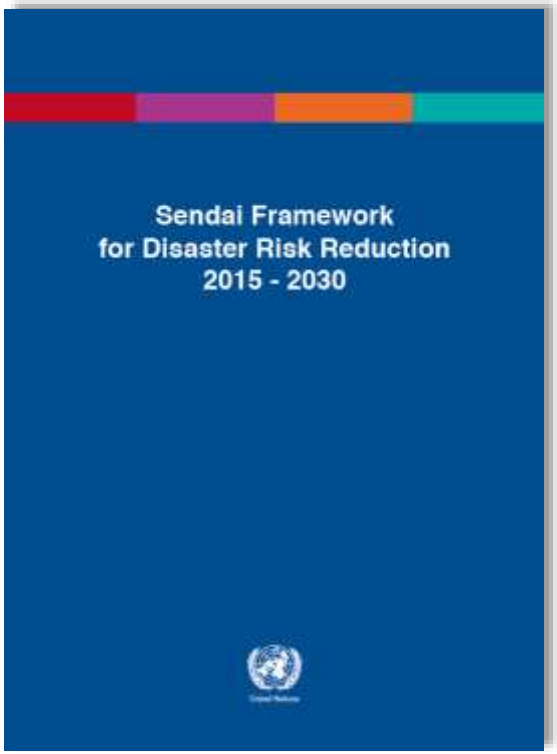
"The starting point for reducing disaster risk and for promoting a culture of disaster resilience lies in the knowledge of the hazards and the physical, social, economic and environmental vulnerabilities to disasters that most societies face, and of the ways in which hazards and vulnerabilities are changing in the short and long term, followed by action taken on the basis of that knowledge." *(HFA: Priority for Action 2)*



Rationale

"Policies and practices for disaster risk management should be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment. Such knowledge can be leveraged for the purpose of pre-disaster risk assessment, for prevention and mitigation and for the development and implementation of appropriate preparedness and effective response to disasters." *(SFA: Priority for Action 1)*



Guiding questions

- What are key (scientific) achievements reached since the HFA regarding a better understanding of
  - (1) the causal fabric of vulnerability and risk,
  - (2) drivers of vulnerability and risk,
  - (3) hotspot regions and sectors,
  - (4) risk reduction measures?
- Which knowledge gaps do still exist?
- What are emerging fields of research that deserve increased attention in terms of understanding risk and vulnerability?

Scientific engagement with disaster risk reduction

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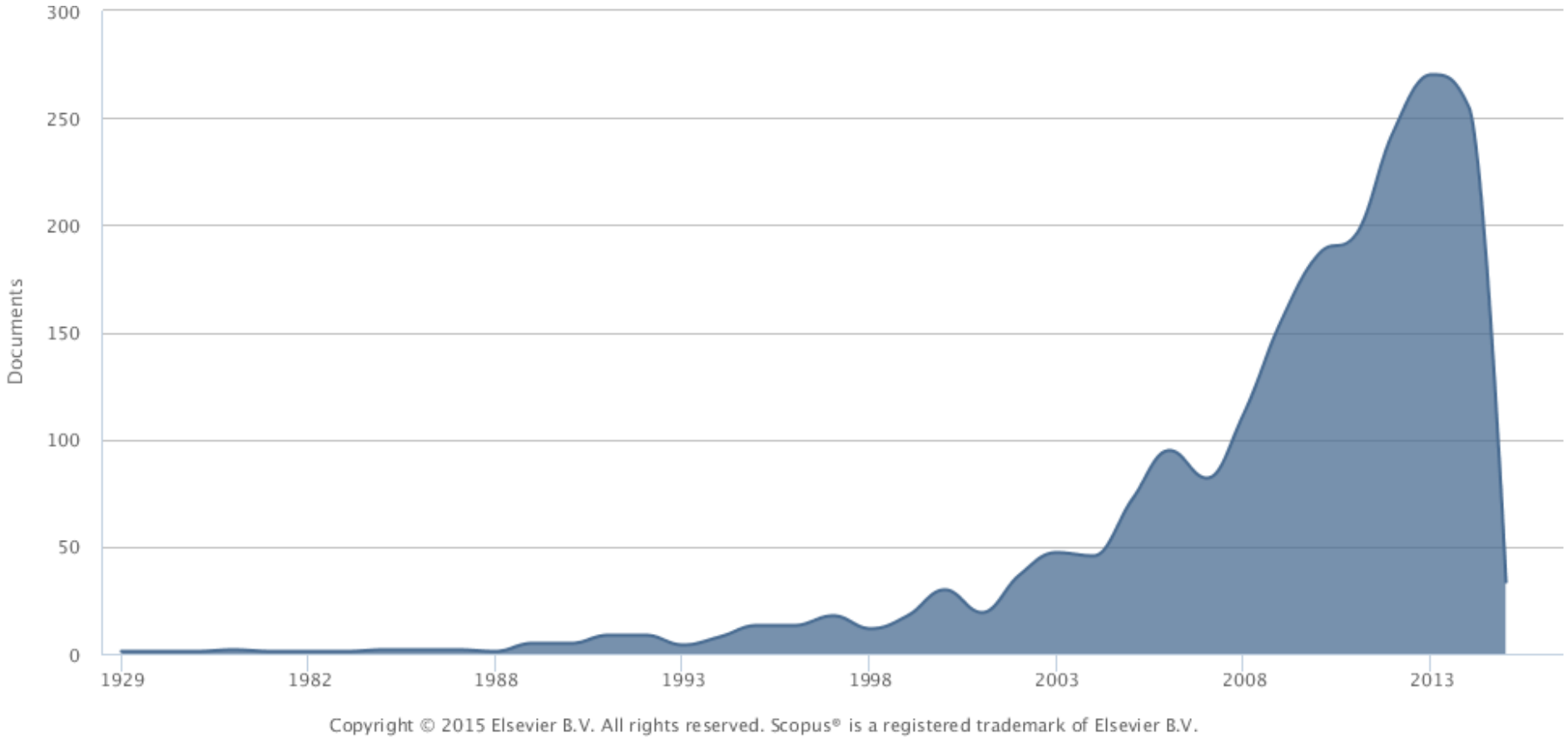
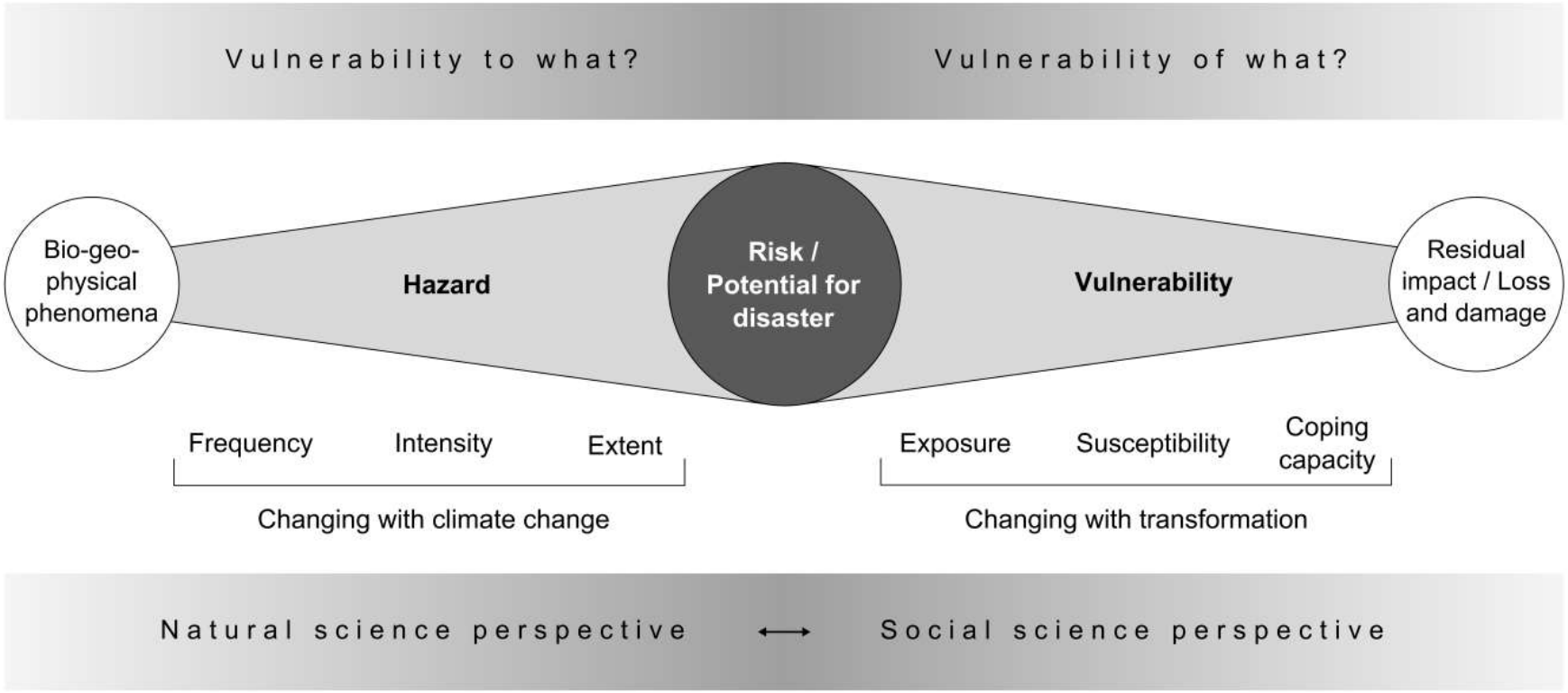
"disaster risk reduction" in title, keyword and/or abstract

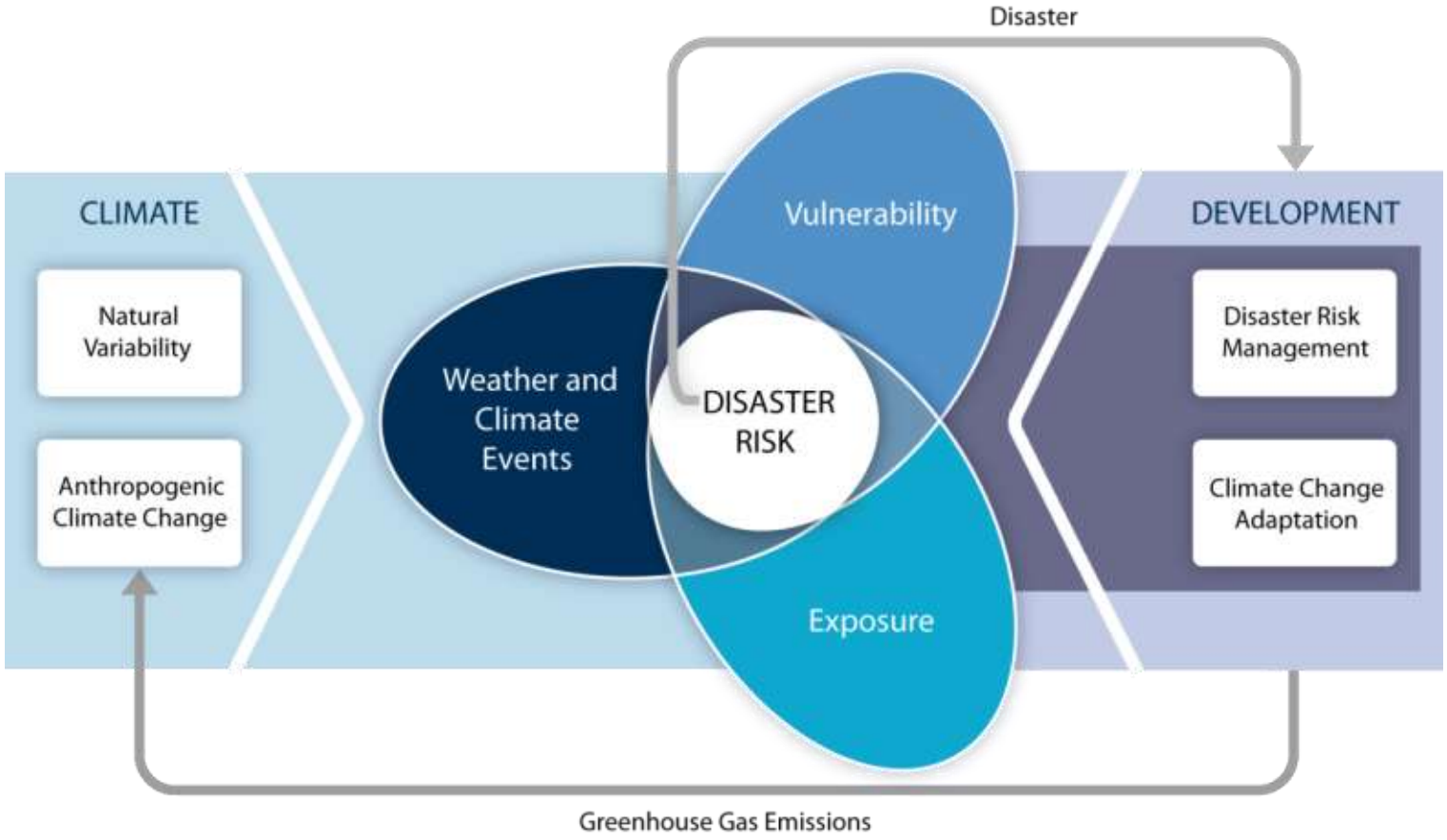


Integrative perspectives in risk research: from natural hazard to vulnerability



Source: Garschagen 2013, partly inspired by (Bohle 2008b: 108)

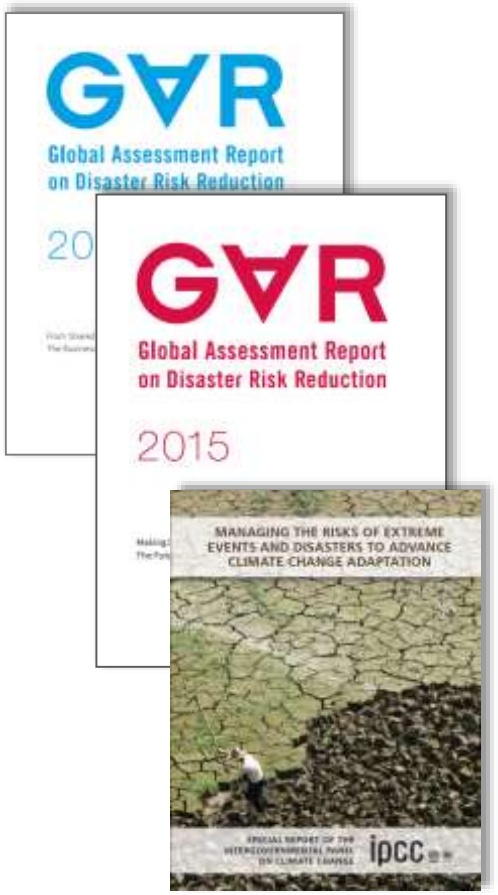
Integrative perspectives in risk research: from natural hazard to vulnerability



Source: IPCC 2012

Progress

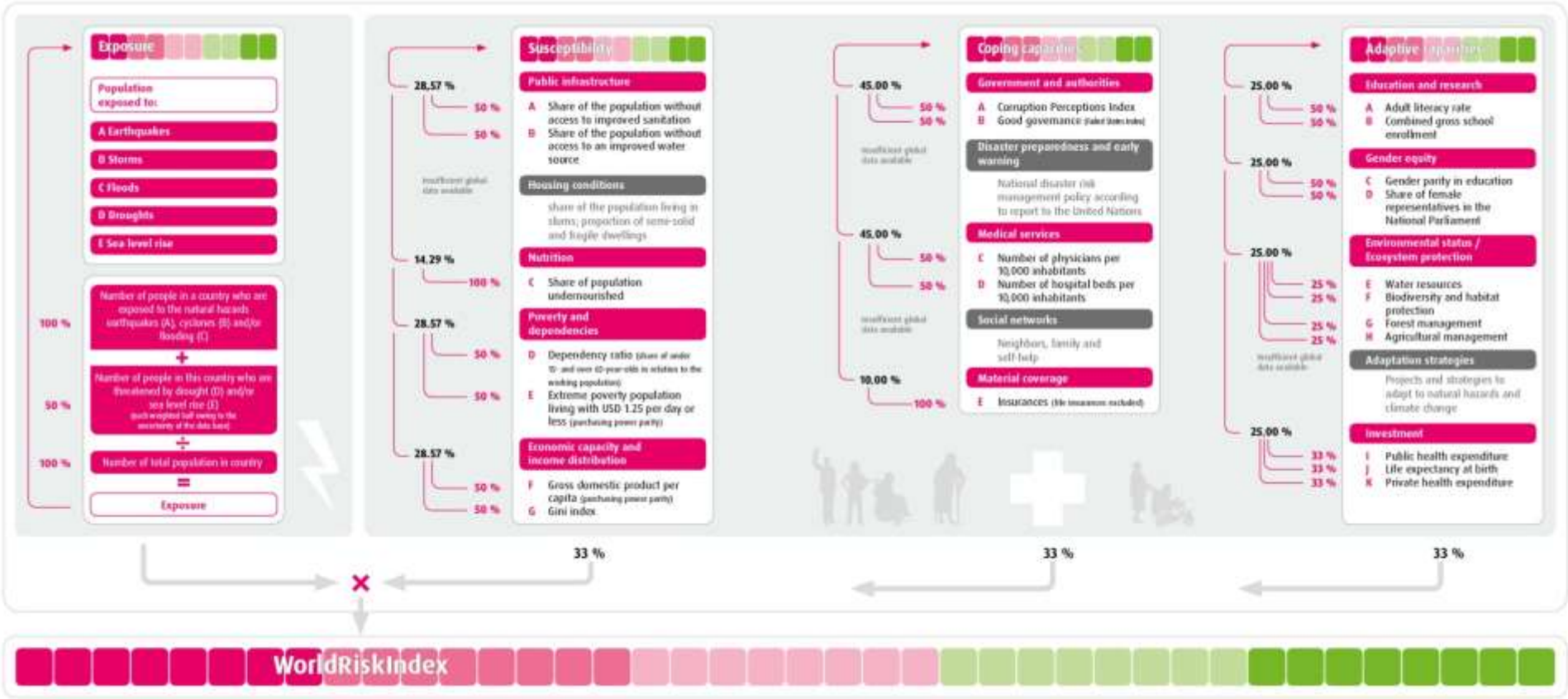
- Which achievements have been made?
  1. causal fabric of vulnerability
  2. analyzing past disasters
  3. seeing risk/disaster as a social vs. a technical/natural problem
  4. methods to assess risk and vulnerability across different scales
  5. different hazard types
  6. regional patterns of risk and vulnerability
  7. urban vs. rural settings
  8. integrated perspectives on DRR and CCA
  9. integrated perspectives on DRR/CCA and development



Identifying patterns of risk: The World Risk Index

Source: World Risk Report

Identifying patterns of risk: The World Risk Index



Source: World Risk Report

Identifying patterns and hot-spot areas of risk

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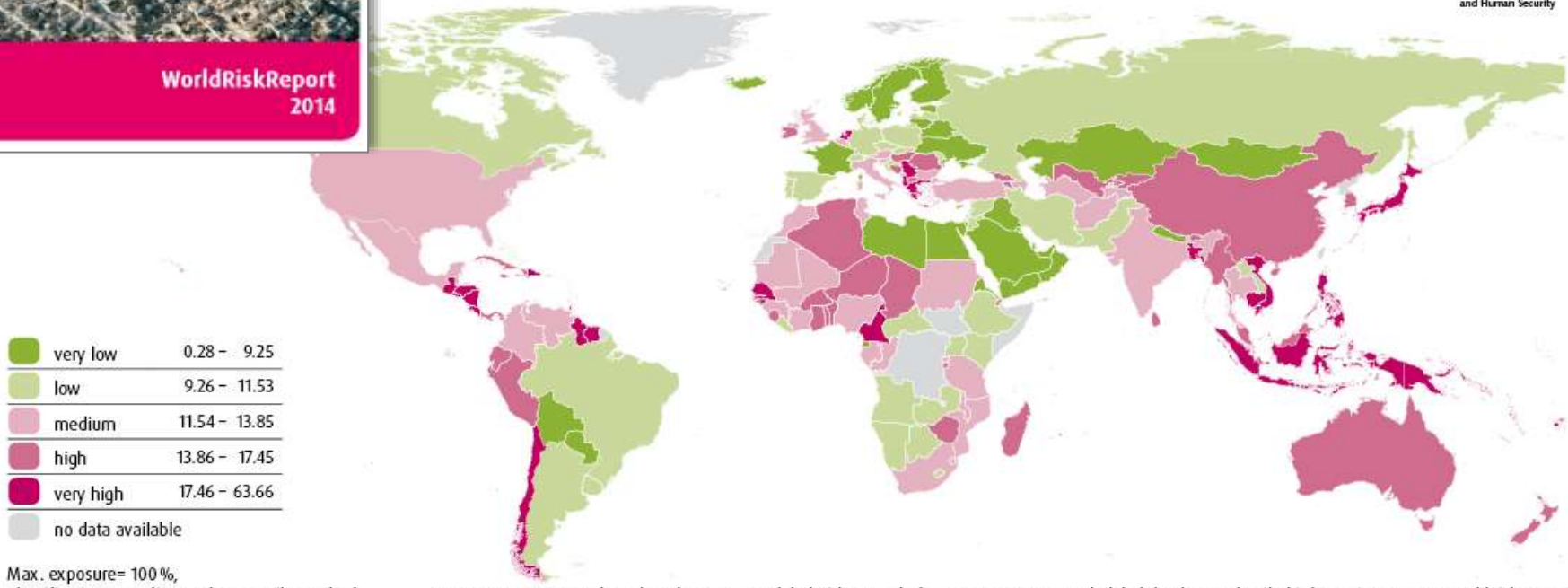
Exposure

Exposure of the population to the natural hazards earthquakes, storms, floods, droughts and sea level rise.



Max. exposure= 100 %,
Classification according to the quantile method

Data: Source UNU-EHS, based on the PREVIEW Global Risk Data Platform, CReSIS, CIESIN and global databases; detailed information at www.WorldRiskReport.org

Identifying patterns and hot-spot areas of risk

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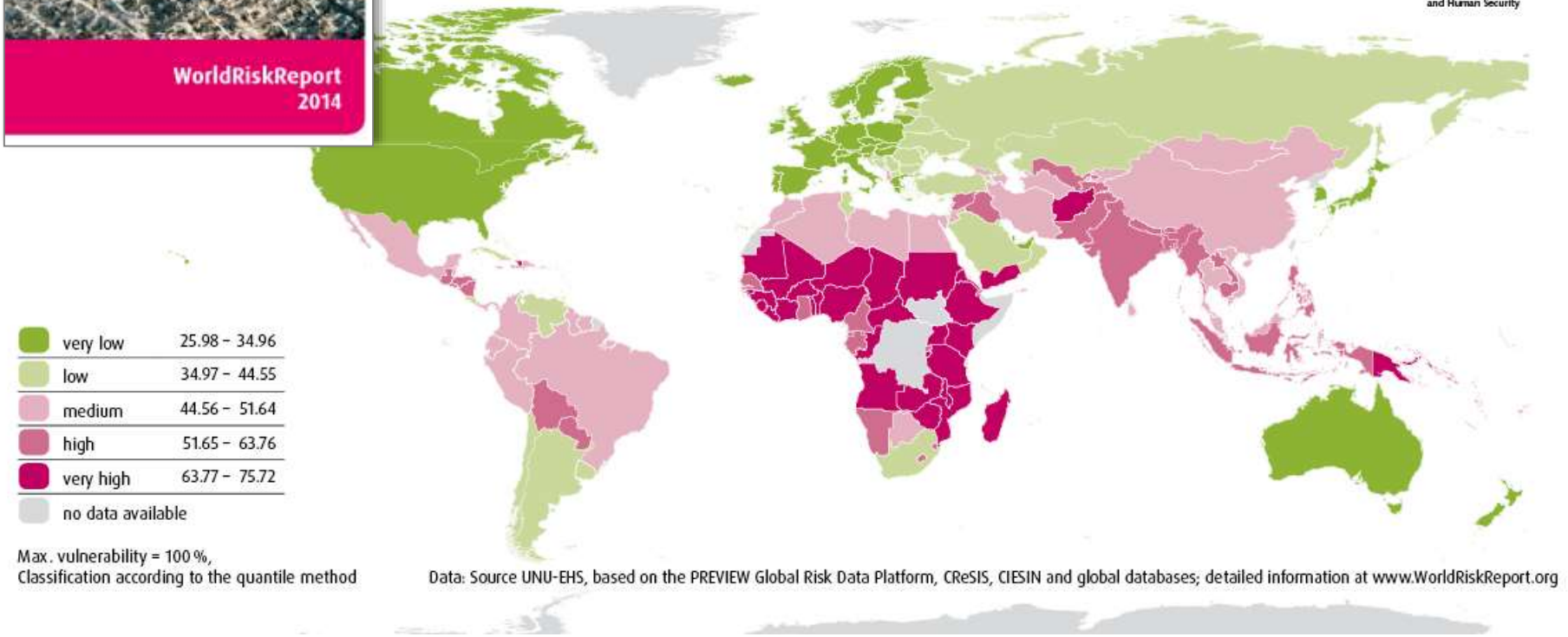
Vulnerability

Vulnerability of society as the sum of susceptibility, lack of coping capacities and lack of adaptive capacities



Urbanization and risk

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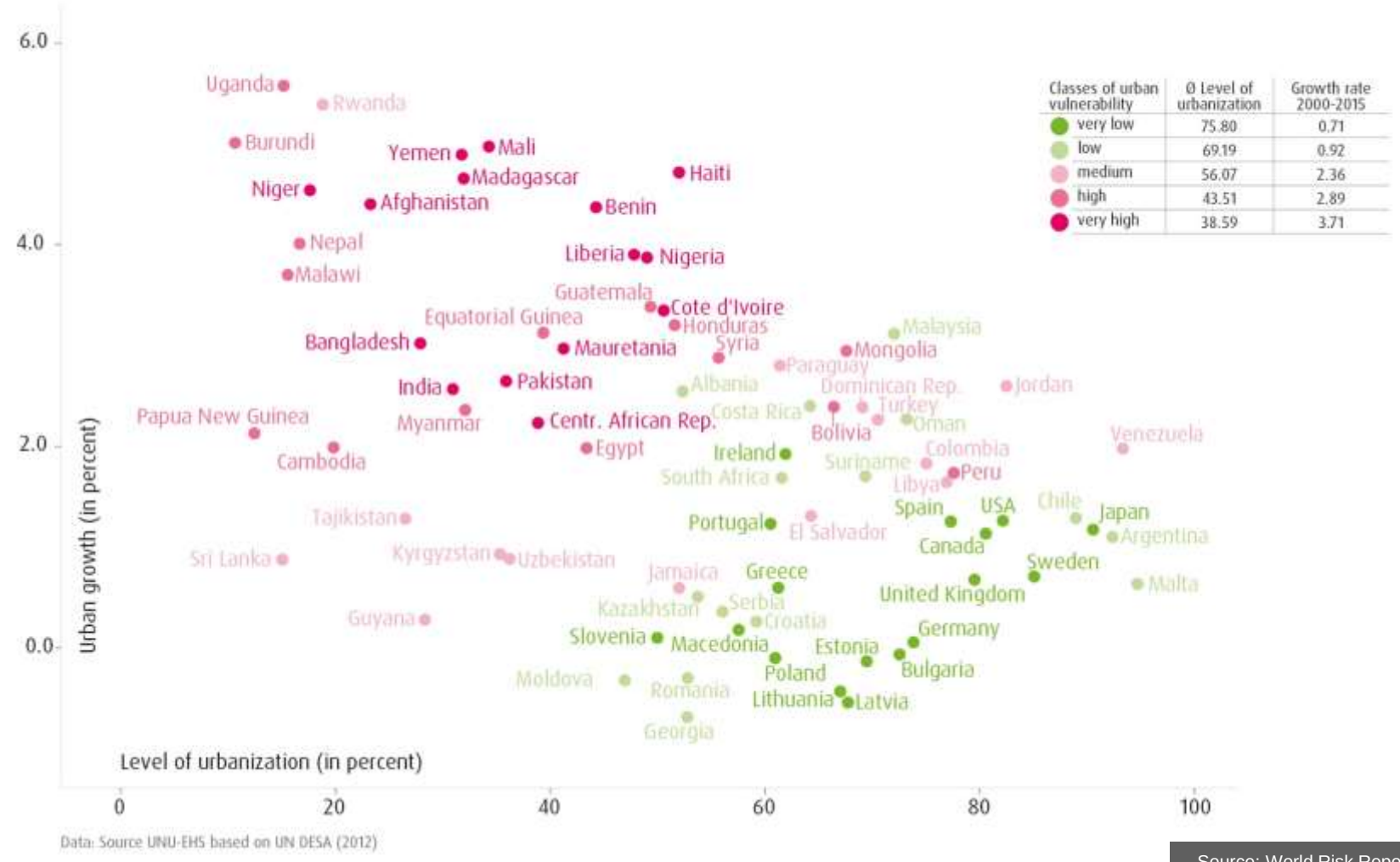
Where rapid growth faces high vulnerability



Source: World Risk Report 2014

Remaining knowledge gaps and emerging fields

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- Which challenges and knowledge gaps do still exist? Which emerging fields need more attention?

1. research on risky systems/places that have not yet experienced a major disaster but might do so in future (e.g. through CC)
   - epistemological challenges
   - scientific credibility and legitimacy of the research (e.g. funding)
   - lack of experience of local actors
2. compounding causes and consequences of disasters
   - e.g. fragile states cum epidemics cum disasters
3. cross-boundary implications of disasters
   - e.g. Douglass et al. 2015

Remaining knowledge gaps and emerging fields

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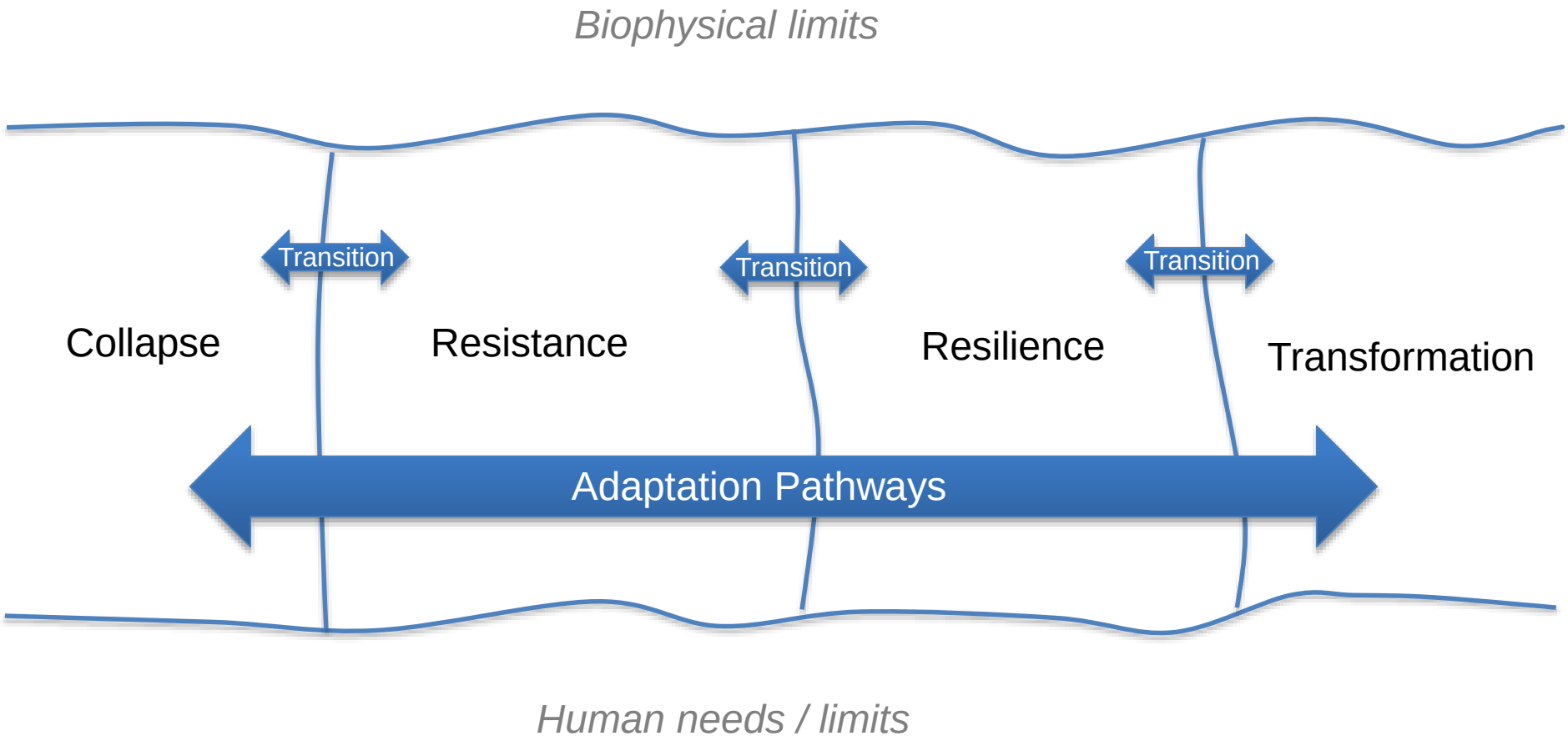
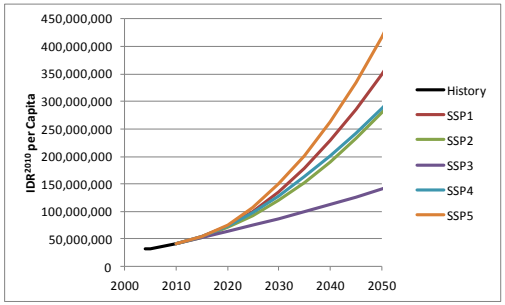
6. mid-sized cities and urban-rural linkages
7. private business sector and its risk mitigation action
8. **future shifts in vulnerability patterns and adaptive capacity along with socio-economic transition**
9. **evaluation of different adaptation options**
   - beyond economic cost-benefit-analysis
10. **different types/paradigms of adaptation trajectories**
    - collapse, resistance, resilience, transformation
    - is resilience enough?

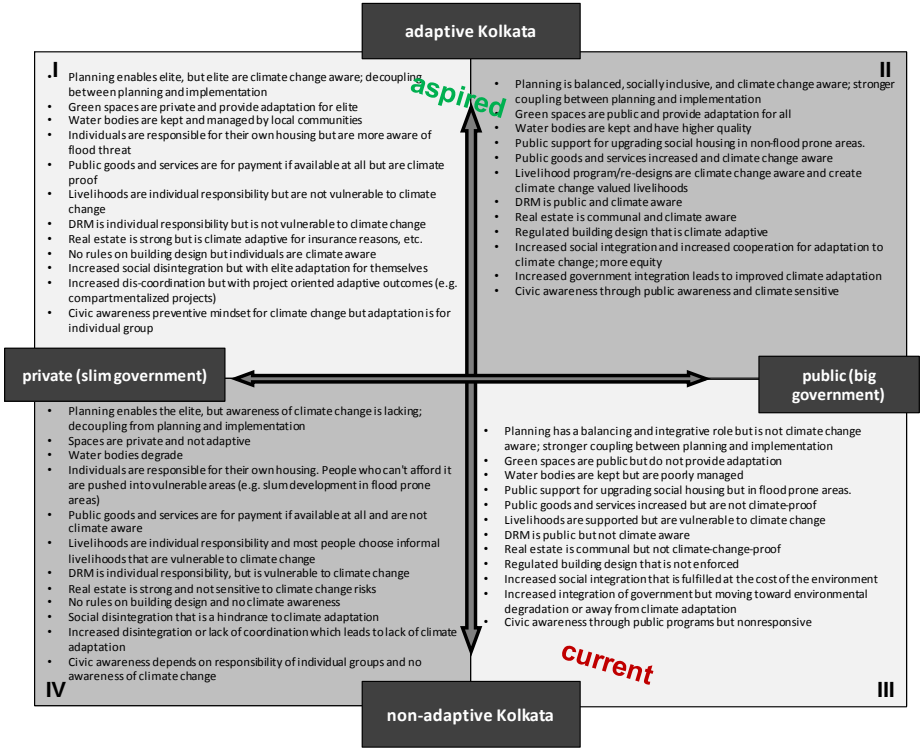
Adaptation pathways and paradigms



Source: Solecki et al. 2014

Vulnerability scenarios and adaptation decisions





Conclusions

- A lot of progress has been made in terms of understanding disaster risk
- But open questions remain and new fields emerge
  - vulnerability scenarios
  - evaluation of adaptation options
  - adaptation paradigms
- Knowledge gaps vs. implementation gaps

Thank you very much for attention and questions !

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