Presentation Workshop by GCOS in cooperation with IPCC and UNFCCC

Climate Data Needs in DRR and Urban/Spatial Planning

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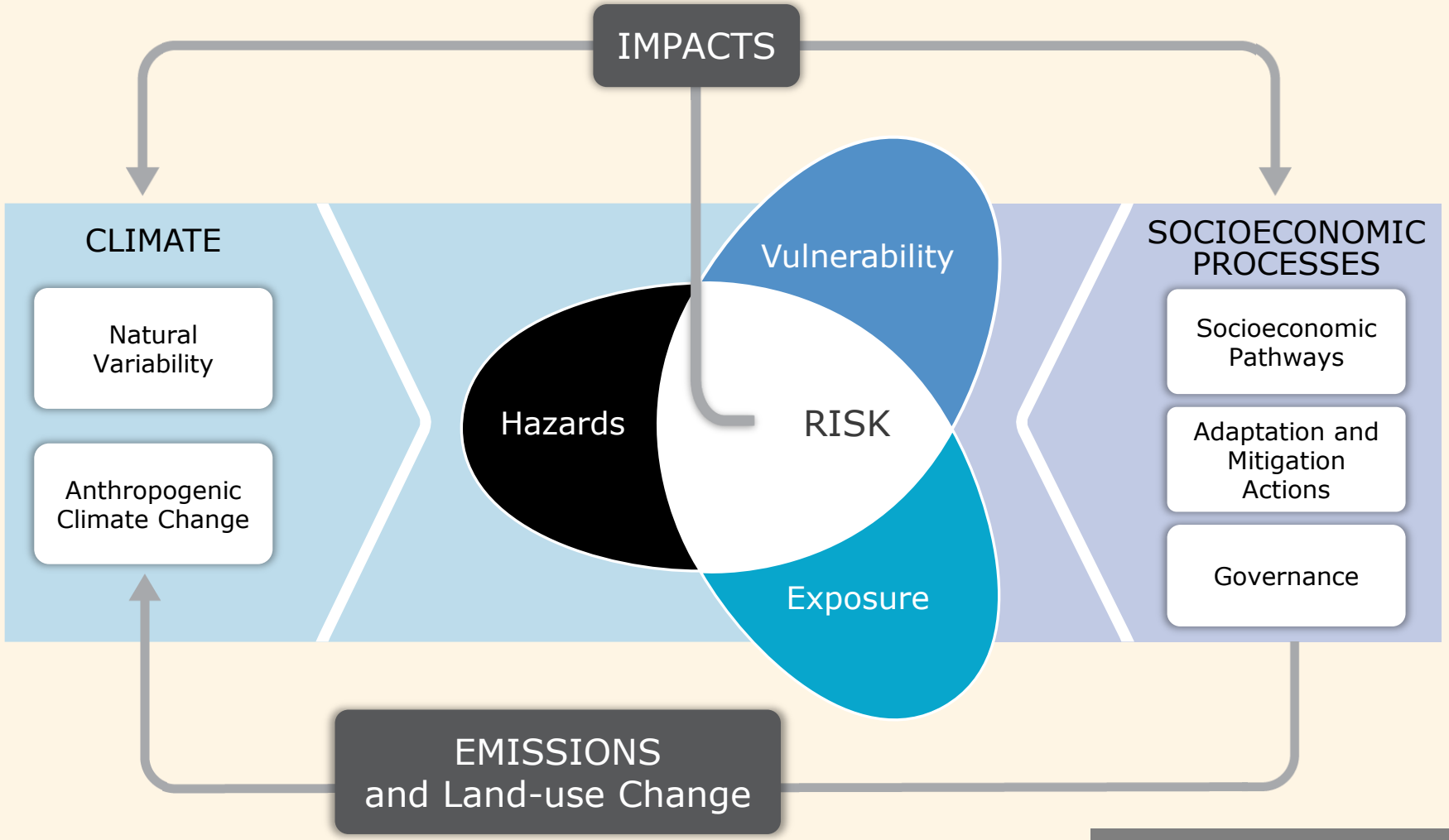
Climate Data for DRR and Urban/Spatial Planning

- DRR needs climate change data for:short-term and seasonal climate data – for warning systems in rural and urban areas
- DRR and Urban/Spatial Planning need:
- historic data on climate variability to estimate ranges of extreme events and associated risks
- climate data to assess residual risks and limits of adaptation
- climate data for regions and provinces with high exposure and high vulnerability levels

User-Needs:
DRR and Urban/Spatial Planning

DRR and Urban as well as Spatial Planning operate primarily at sub-national and locale scale:

- high resolution data
- comparable data (e.g. heat stress, extreme floods….)
- reliable data
- accessibility and sustainability of the data
- differenciated climate data for e.g. urban versus rural areas
- improve the access to national networks for the detection of climate trends and climate variability



IPCC 2014, AR5, WG II

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WorldRiskIndex: Understanding Risks Patterns and the Influence of CC

1. Exposure

Population exposed to:

- A Earthquakes
- B Storms
- C Floods
- D Droughts
- E Sea level rise

2. Susceptibility

Public infrastructure

- A Share of the population without access to improved sanitation
- B Share of the population without access to an improved water source

Housing conditions

Share of the population living in slums; proportion of semi-solid and fragile dwellings

Nutrition

- C Share of population undernourished

Poverty and dependencies

- D Dependency ratio (share of under 15- and over 65-year-olds in relation to the working population)
- E Extreme poverty population living with USD 1.25 per day or less (purchasing power parity)

Economic capacity and income distribution

- F Gross domestic product per capita (purchasing power parity)
- G Gini index

3. Coping capacities

Government and authorities

- A Corruption Perceptions Index
- B Good governance (Failed States Index)

Disaster preparedness and early warning

National disaster risk management policy according to report to the United Nations

Medical services

- C Number of physicians per 10,000 inhabitants
- D Number of hospital beds per 10,000 inhabitants

Social networks

Neighbors, family and self-help

Material coverage

- E Insurances (life insurances excluded)

4. Adaptive capacities

Education and research

- A Adult literacy rate
- B Combined gross school enrolment

Gender equity

- C Gender parity in education
- D Share of female representatives in the National Parliament

Environmental status / Ecosystem protection

- E Water resources
- F Biodiversity and habitat protection
- G Forest management
- H Agricultural management

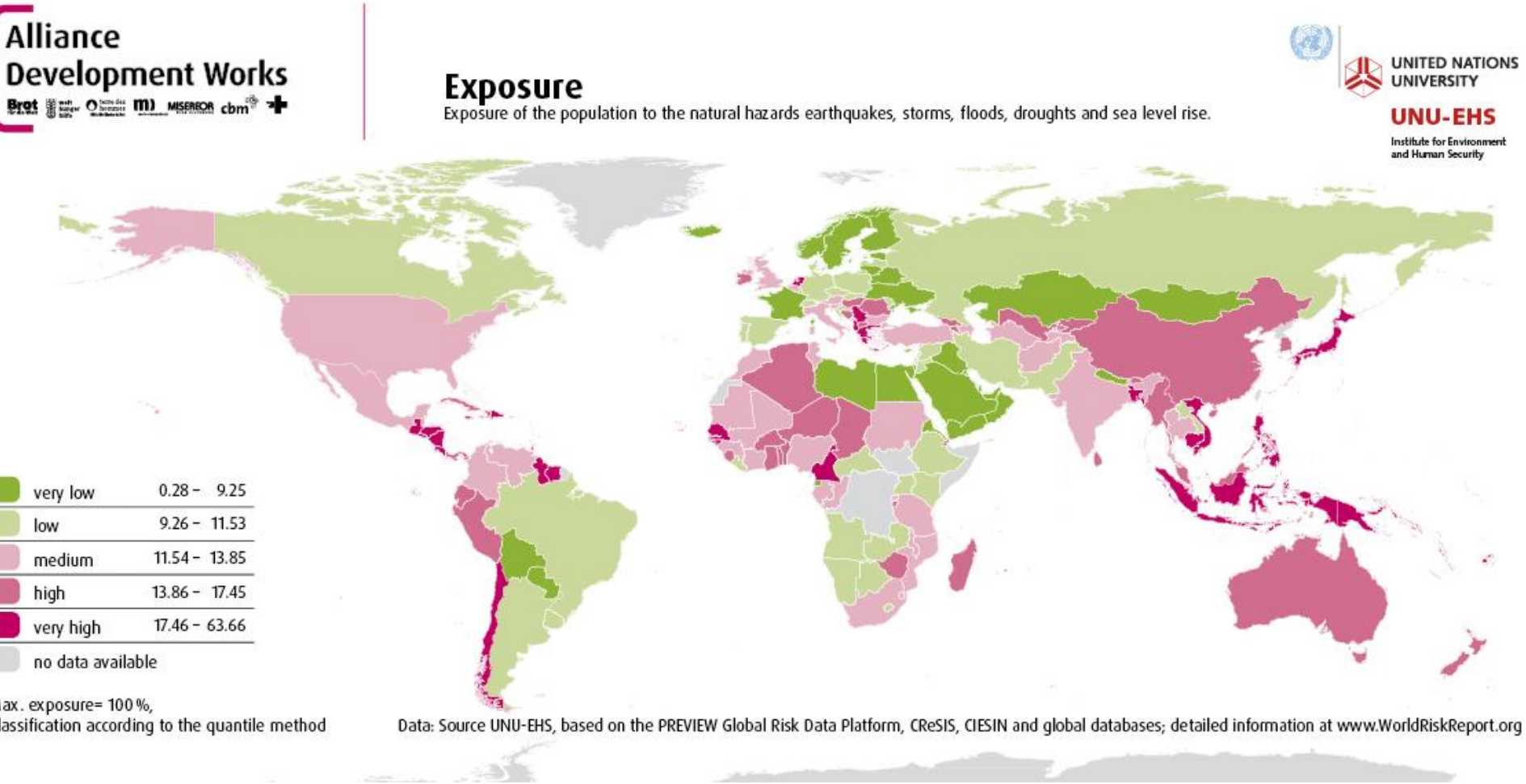
Adaptation strategies

Projects and strategies to adapt to natural hazards and climate change

Investment

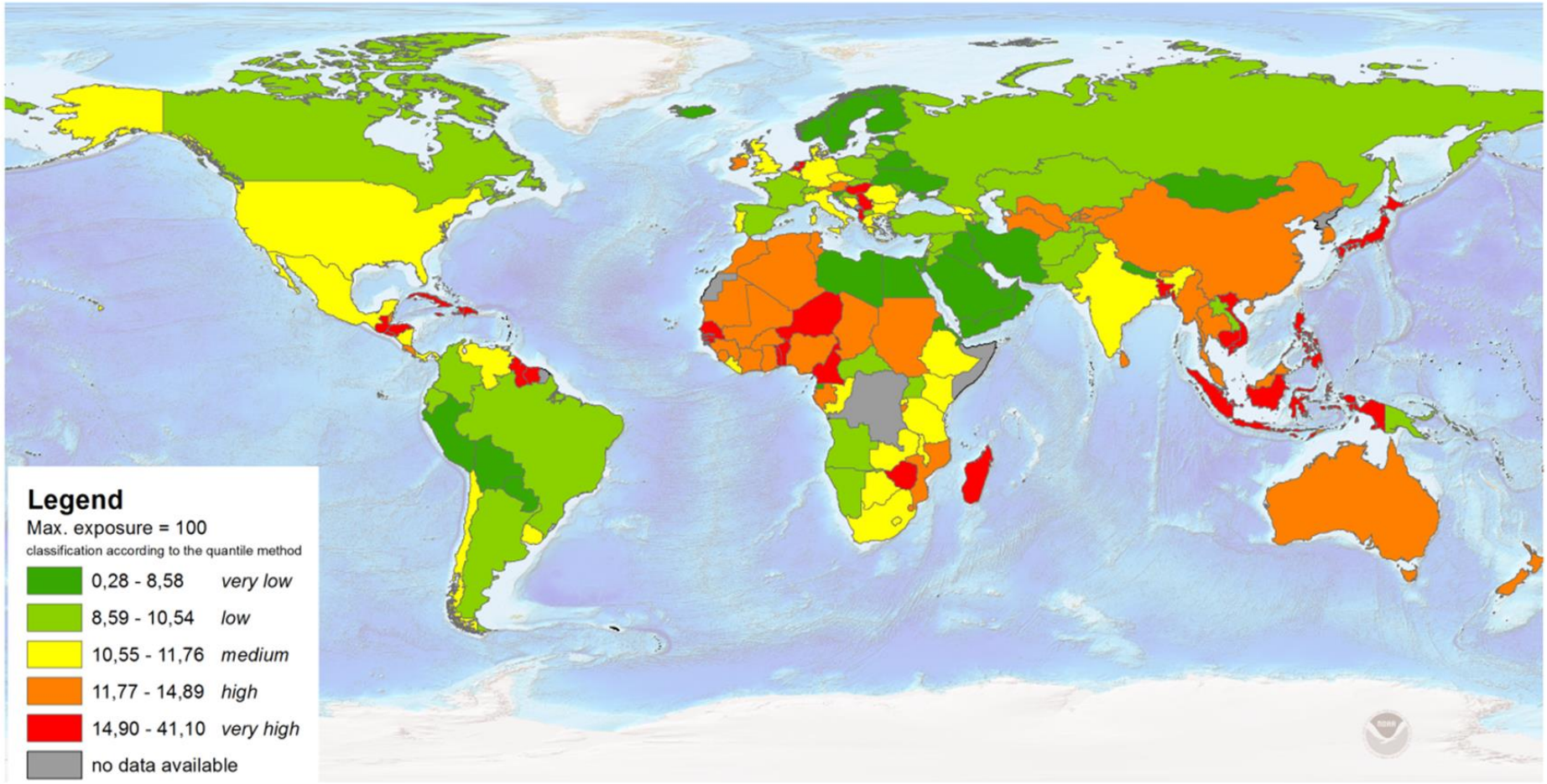
- I Public health expenditure
- J Life expectancy at birth
- K Private health expenditure

Global EXPOSURE Patterns to Hazards



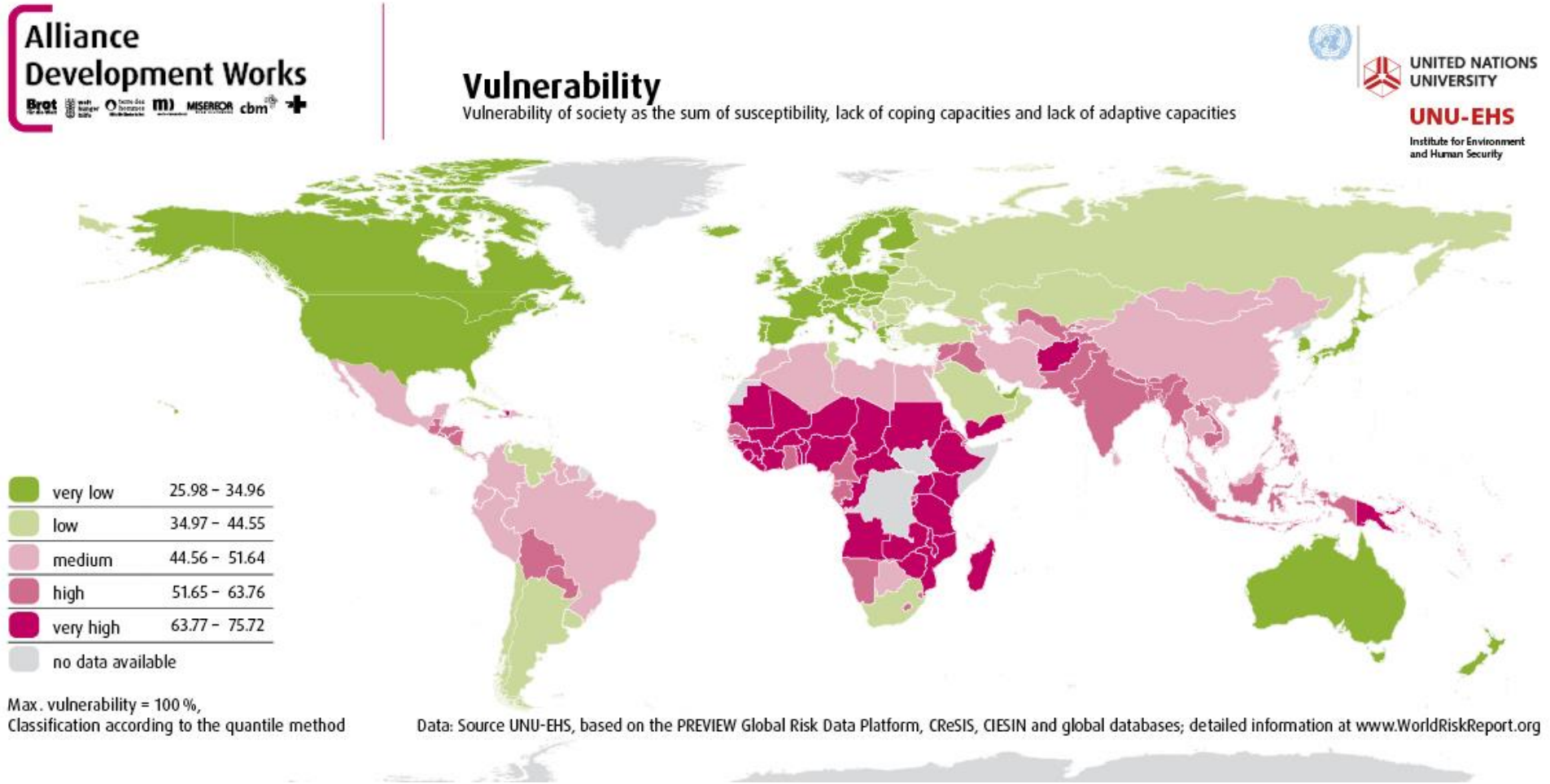
Exposure

Exposure of the population to climate related natural hazards (storms, floods, droughts and sea level rise)

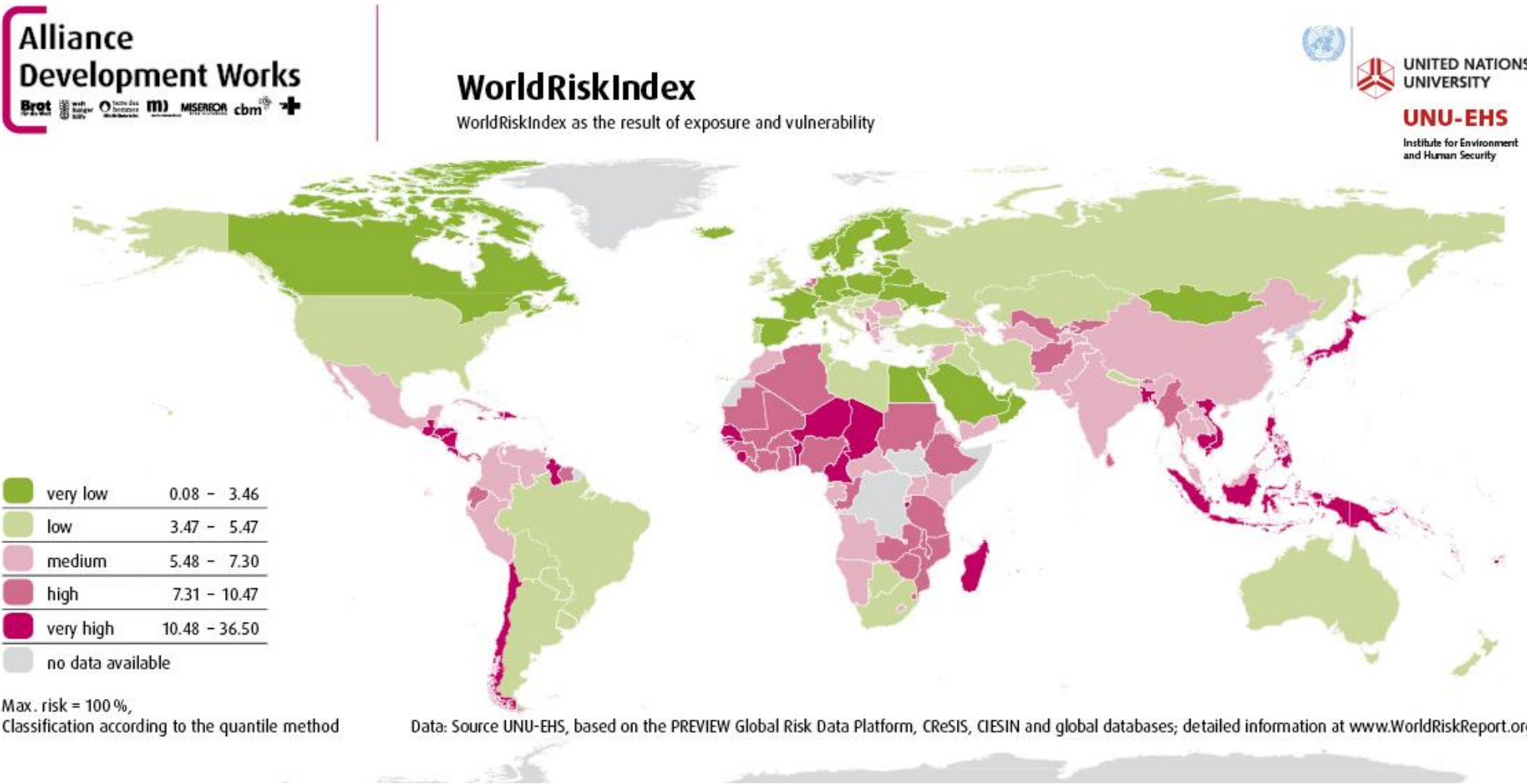


Birkmann and Welle 2014: Assessing the risk of loss and damage: exposure, vulnerability and risk to climate-related hazards for different country classifications, In: International Journal of Global Warming (online first)

Global VULNERABILITY Patterns

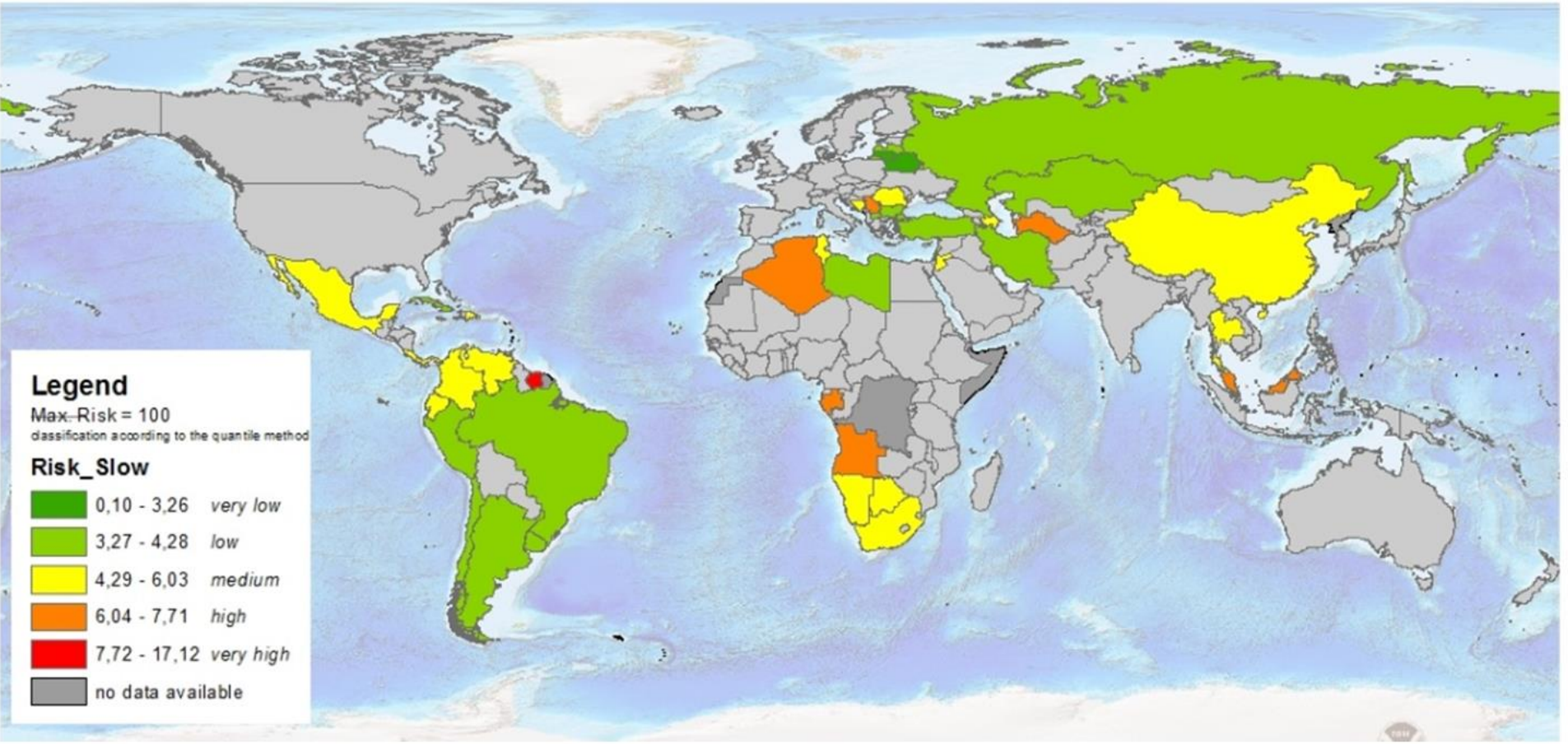


Global RISK Patterns



WorldRiskIndex (slow climate related hazards) in upper middle income countries

Risk towards slow onset climate related natural hazards (droughts, sea level rise)



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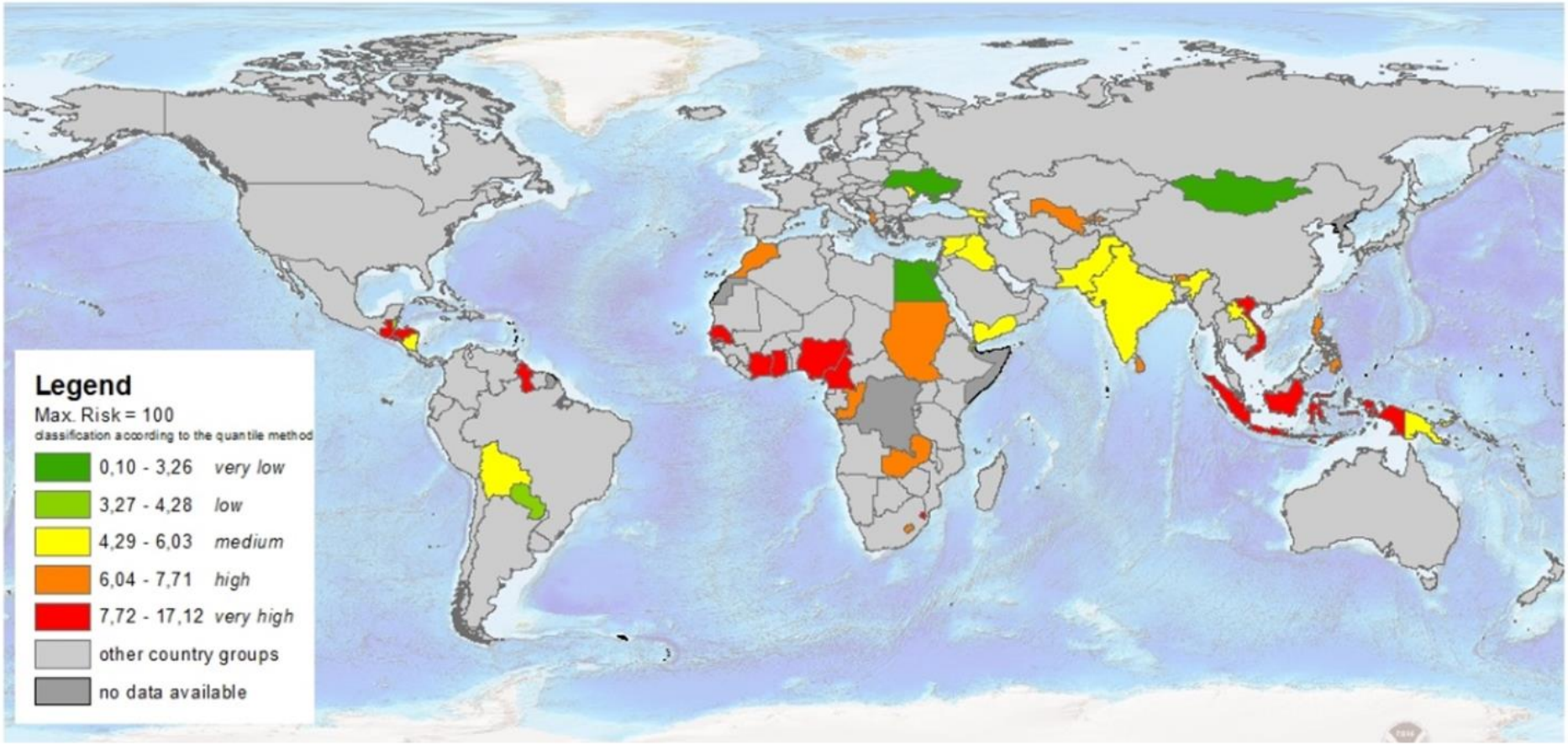
WorldRiskIndex (slow climate related hazards) in lower middle income countries

Risk towards slow onset climate related natural hazards (droughts, sea level rise)



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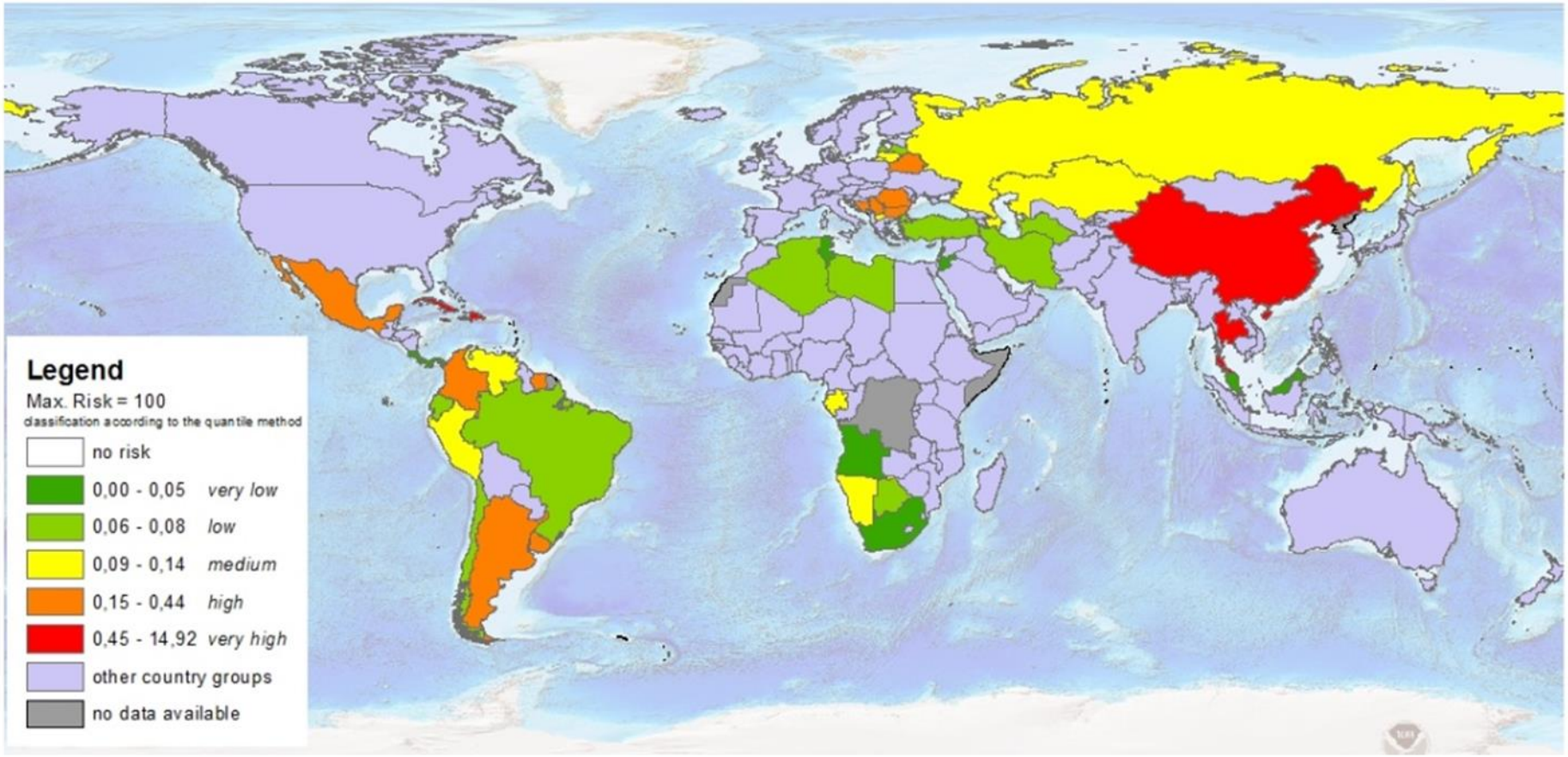
WorldRiskIndex (sudden climate related hazards) in upper middle income countries

Risk towards sudden onset climate related natural hazards (storms, floods)



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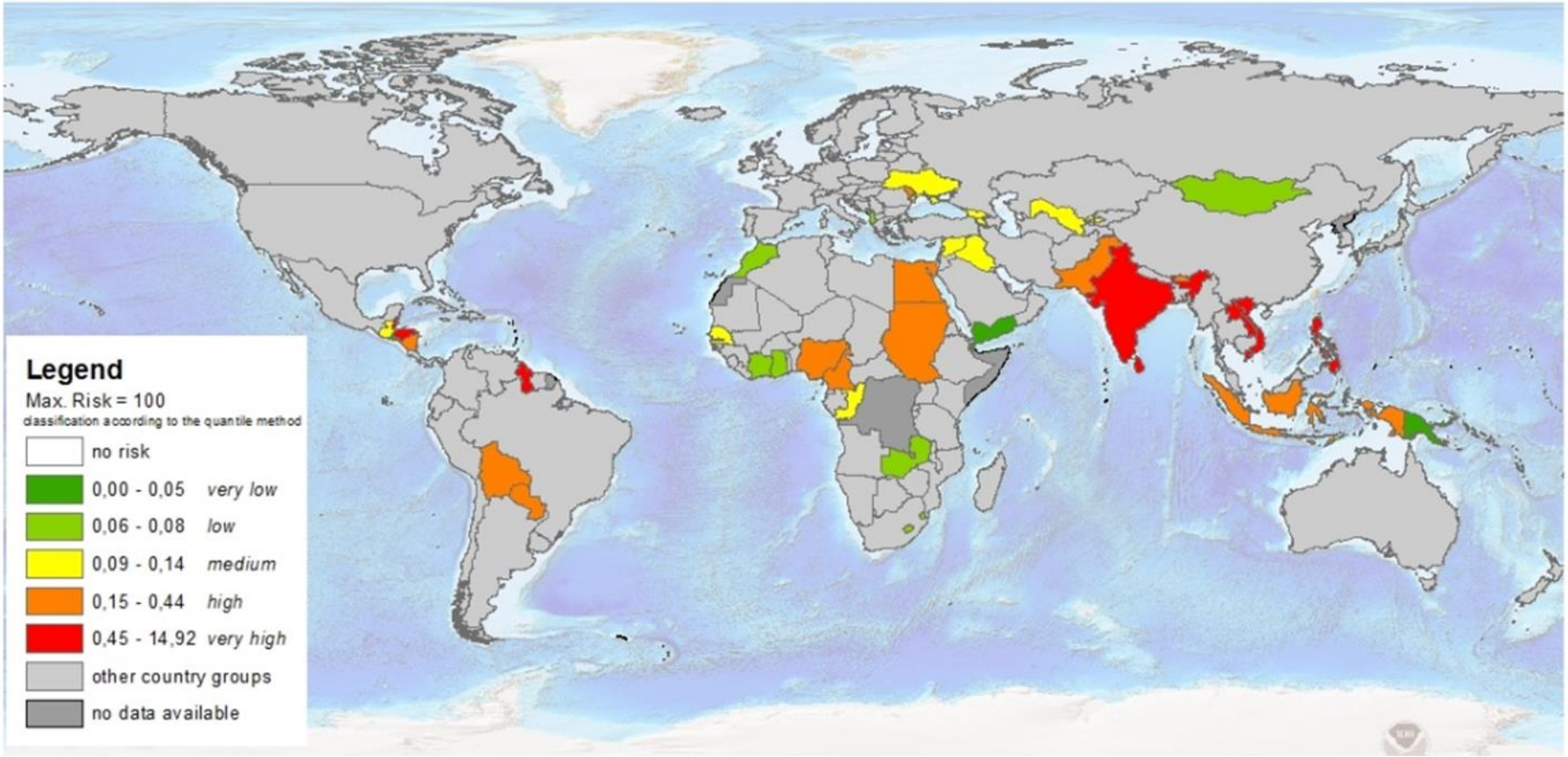

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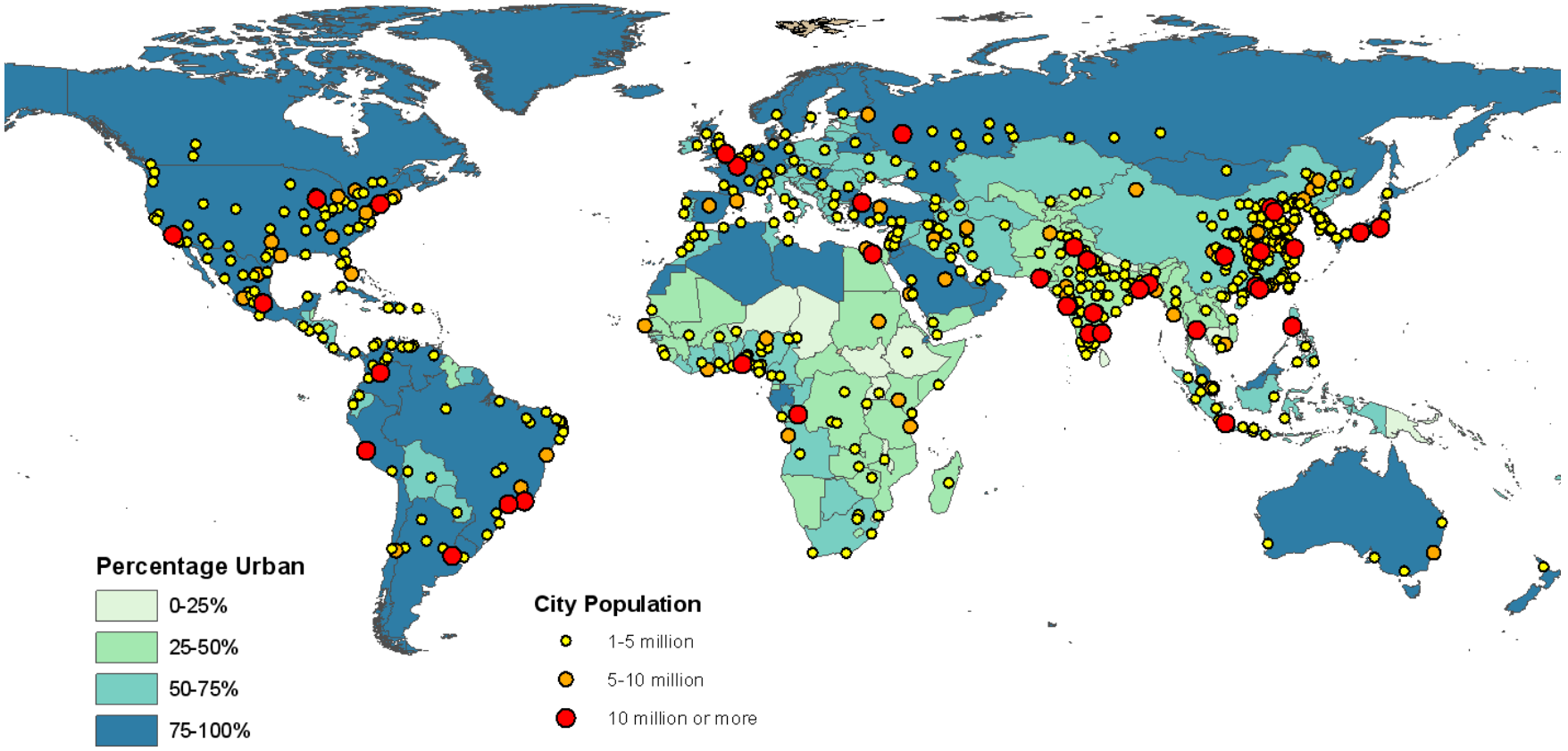
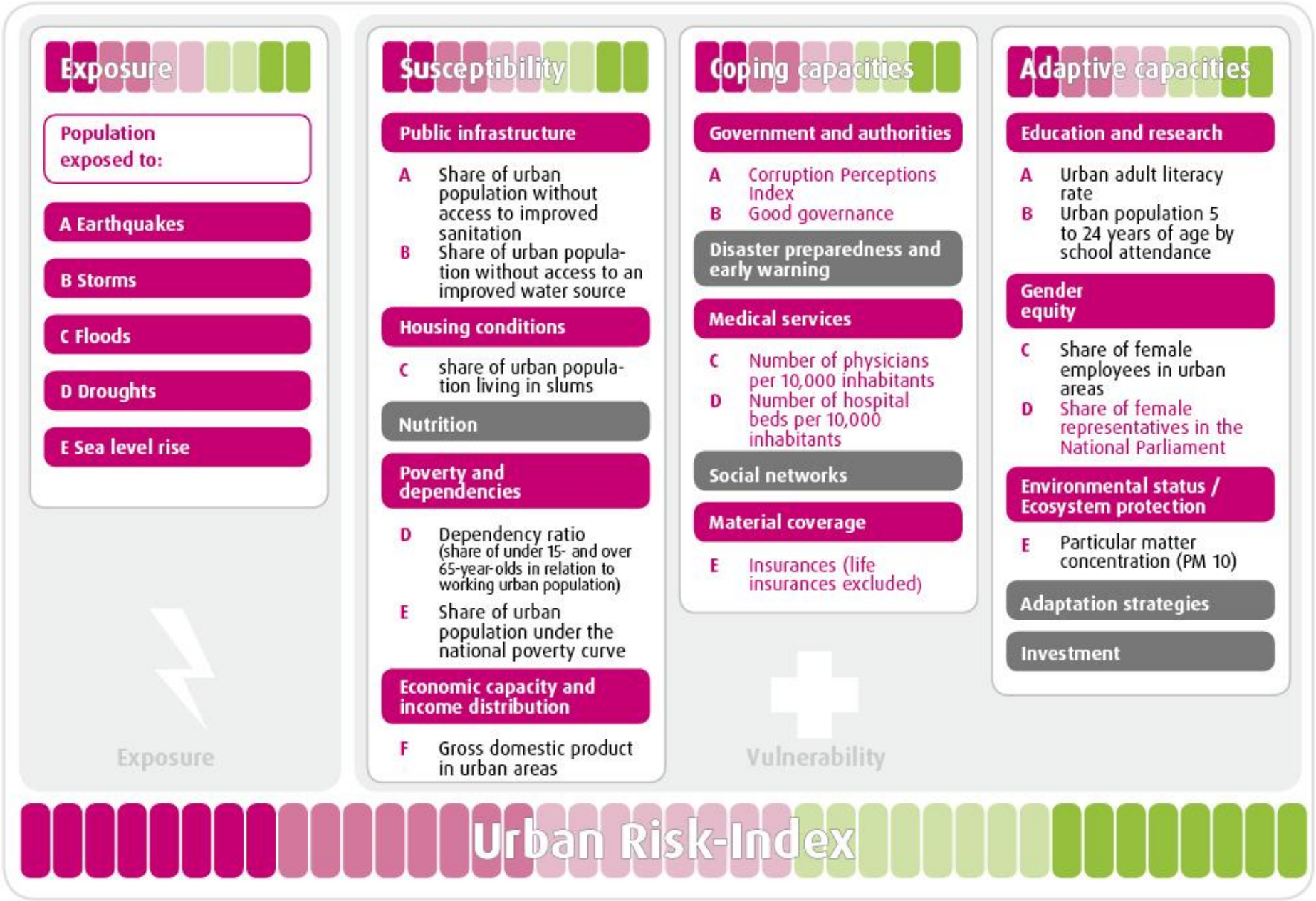
Rank	Country	WorldRiskIndex	Exposition	Vulnerability	Susceptibility	Lack of coping capacities	Lack of adaptive capacities
1.	Vanuatu	36.50 %	63.66 %	57.34 %	36.40 %	81.16 %	54.45 %
2.	Philippines	28.25 %	52.46 %	53.85 %	33.35 %	80.03 %	48.17 %
3.	Tonga	28.23 %	55.27 %	51.08 %	29.15 %	81.80 %	42.28 %
4.	Guatemala	20.68 %	36.30 %	56.98 %	37.92 %	80.84 %	52.19 %
5.	Bangladesh	19.37 %	31.70 %	61.10 %	40.28 %	86.05 %	56.96 %
6.	Solomon Islands	19.18 %	29.98 %	63.98 %	45.37 %	85.44 %	61.12 %
7.	Costa Rica	17.33 %	42.61 %	40.68 %	22.98 %	64.61 %	34.46 %
8.	El Salvador	17.12 %	32.60 %	52.52 %	32.10 %	75.35 %	50.13 %
9.	Cambodia	17.12 %	27.65 %	61.90 %	41.99 %	86.96 %	56.74 %
10.	Papua New Guinea	16.74 %	24.94 %	67.15 %	56.06 %	84.22 %	61.16 %
81.	Georgia	6.80 %	14.69 %	46.30 %	28.19 %	64.81 %	45.91 %
82.	Central African Republic	6.78 %	9.39 %	72.22 %	61.54 %	89.14 %	65.99 %
83.	Turkmenistan	6.76 %	13.19 %	51.24 %	27.83 %	75.68 %	50.21 %
84.	Uganda	6.69 %	10.16 %	65.90 %	56.05 %	87.68 %	53.95 %
85.	Angola	6.67 %	10.18 %	65.51 %	50.26 %	84.89 %	61.37 %
86.	Belize	6.59 %	13.31 %	49.52 %	28.18 %	74.23 %	46.14 %
87.	Romania	6.55 %	15.77 %	41.52 %	22.12 %	61.36 %	41.08 %
88.	Malaysia	6.51 %	14.60 %	44.60 %	19.65 %	67.56 %	46.59 %
89.	Cuba	6.42 %	17.45 %	36.79 %	19.62 %	57.20 %	33.56 %
90.	Thailand	6.38 %	13.70 %	46.61 %	19.87 %	75.46 %	44.50 %
162.	Sweden	2.19 %	7.97 %	27.49 %	15.39 %	40.90 %	26.18 %
163.	United Arab Emirates	1.91 %	5.93 %	32.27 %	10.47 %	56.51 %	29.84 %
164.	Bahrain	1.78 %	4.27 %	41.56 %	13.04 %	66.57 %	45.07 %
165.	Kiribati	1.72 %	3.05 %	56.45 %	42.31 %	83.69 %	43.36 %
166.	Iceland	1.56 %	5.67 %	27.46 %	15.00 %	43.15 %	24.21 %
167.	Grenada	1.44 %	3.13 %	46.15 %	24.99 %	69.03 %	44.43 %
168.	Barbados	1.21 %	3.46 %	34.95 %	16.85 %	50.36 %	37.63 %
169.	Saudi Arabia	1.17 %	2.93 %	39.82 %	15.19 %	70.05 %	34.22 %
170.	Malta	0.62 %	1.65 %	37.67 %	15.28 %	59.58 %	38.16 %
171.	Qatar	0.08 %	0.28 %	30.30 %	8.97 %	44.76 %	37.16 %

Trends of Urbanization estimates for 2025



Percentage of urban population and agglomerations by size class
World Urbanization Prospects, the 2011 Revision

URBAN RISK ASSESSMENT



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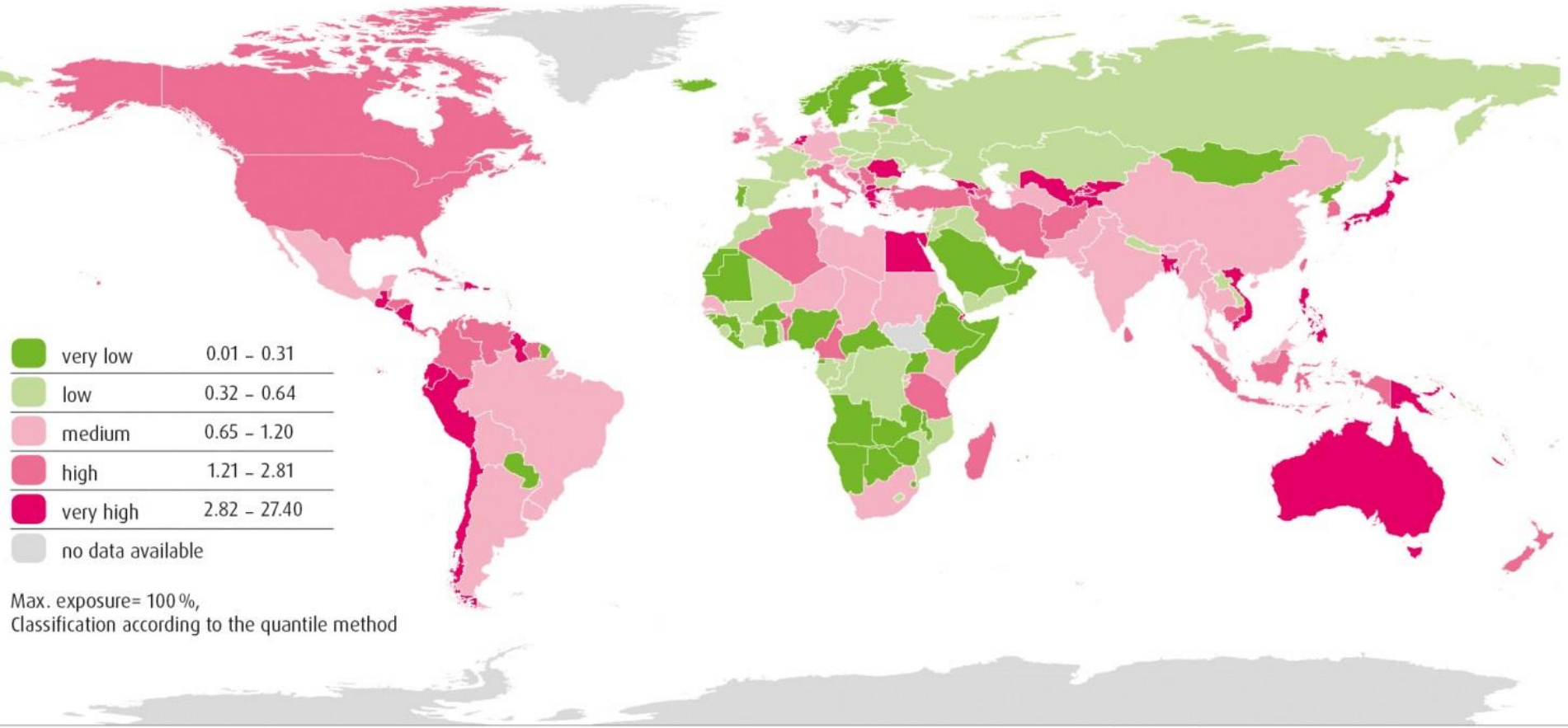
Results for urban exposure

Urban exposure

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



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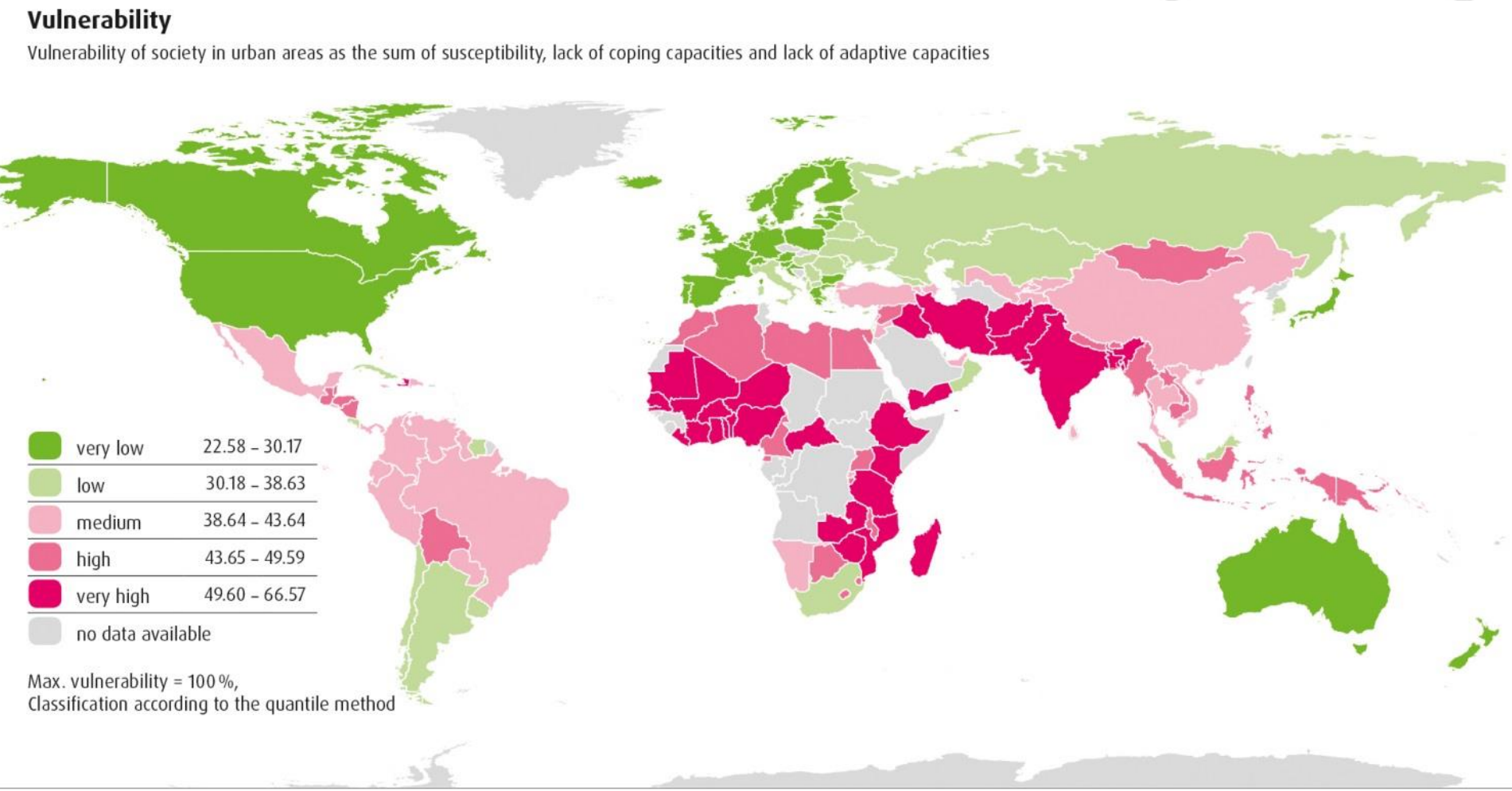
Results for urban vulnerability



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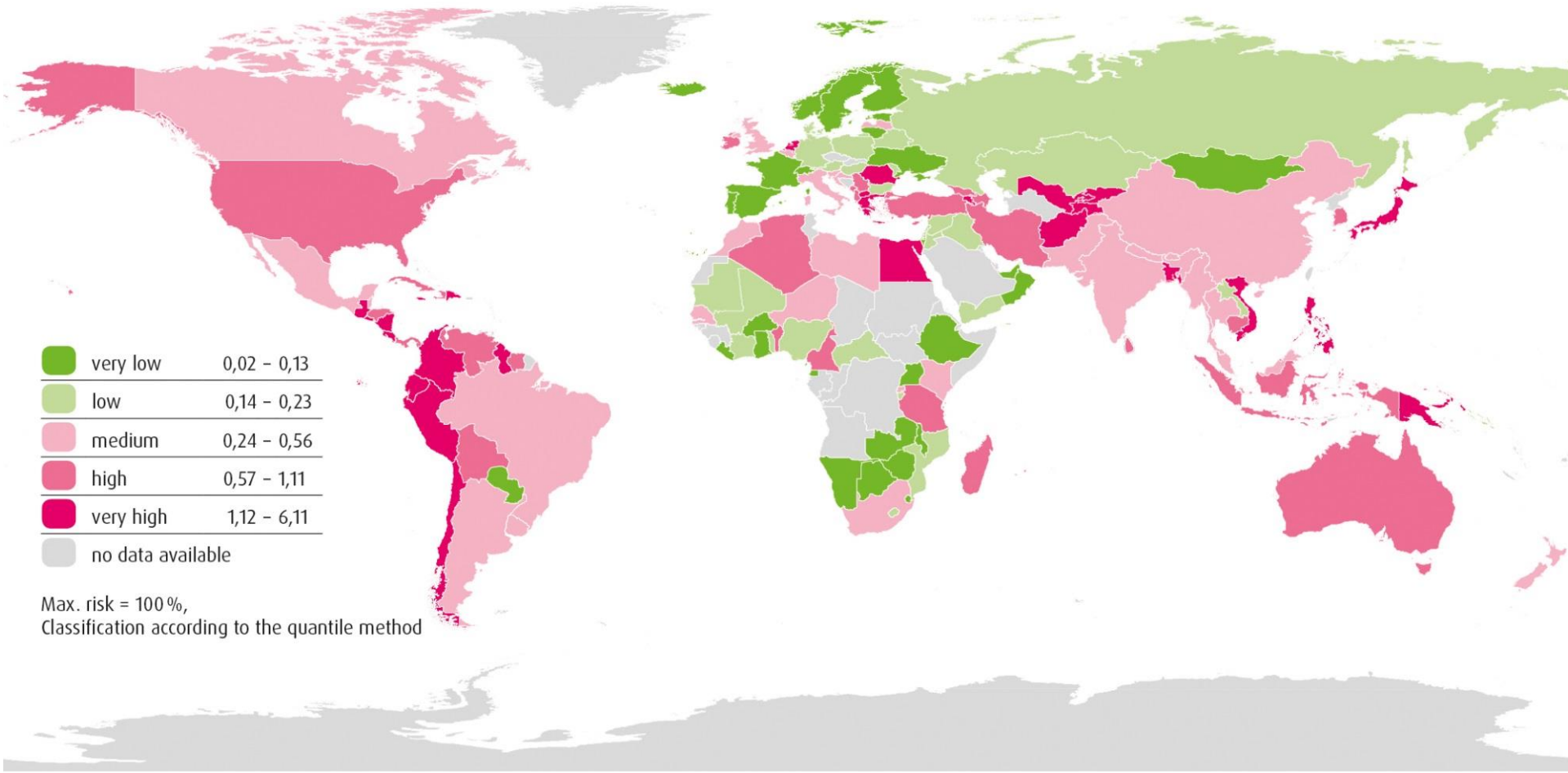
Results for urban risk



Challenge and Question

- **Challenge:**

  Identification and characterization of complex and cascading risks in the context of extreme weather events influenced by climate change

- **Question:**

  How to improve the **assessment of exposure** and vulnerability to different climatic stressors at sub-national scale?

Thank YOU

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