RICCAR

Regional Initiative for the Assessment of Climate Change Impacts on Water Resources and Socio-Economic Vulnerability in the Arab Region

European Experience in Climate Change Vulnerability Assessment

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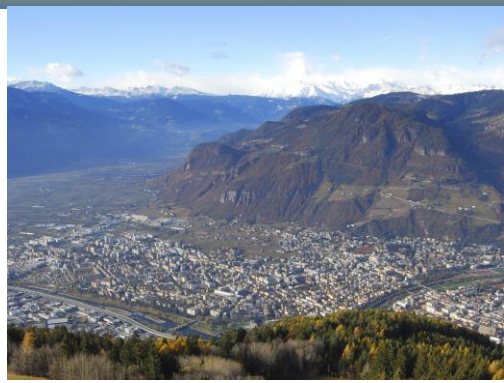
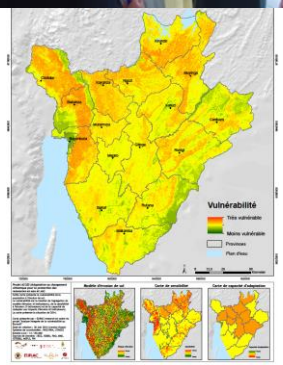
- → private, not-for-profit research centre in the Alps
- → 11 institutes
- → ~ 400 staff
- → centre for climate and disaster risks





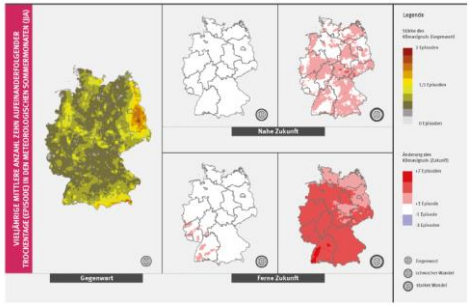


Tabelle 2: Kreuztabelle zur Bestimmung der Vulnerabilität eines Handlungsfeldes

Sektorale Anpassungskapazität	Betroffenheit: gering	gering bis mittel	mittel	mittel bis hoch	hoch
gering	gering	mittel	mittel	mittel bis hoch	hoch
gering bis mittel	gering	gering bis mittel	mittel	mittel bis hoch	mittel bis hoch
mittel	gering	gering bis mittel	gering bis mittel	mittel	mittel bis hoch
mittel bis hoch	gering	gering	gering bis mittel	mittel	mittel
hoch	gering	gering	gering	gering bis mittel	mittel

Vulnerability Sourcebook for GIZ:

→ ISO Norm?

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…reminder….

(some) general challenges of climate change vulnerability assessments

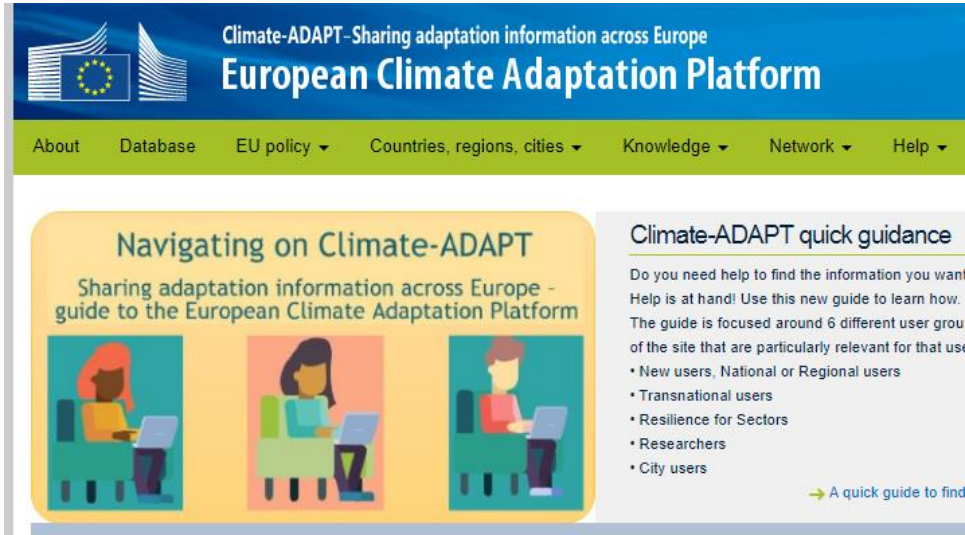
- We assess parameter and parts of complex **social-ecological systems**
- These systems are influenced by a **number of stressors and changes** - of which cc is only one
- We have to determine **the interactions** of the climate and bio-physical systems with the socio-economic systems
- The results of our assessments are needed to **inform adaptation strategies** and we need to design the study and the presentation of the results accordingly
- We need to base our integrated assessments to a certain degree **on normative aspects** since we need to select and prioritize indicators, define thresholds, select experts etc.

the European level – the framework

- → 21 European countries have adopted a **national adaptation strategy** and 12 have developed a **national adaptation plan**
- → at least **20 % of its budget for the 2014–2020** period should be spent on climate change-related action, including mitigation and adaptation
- → **climate Adaptation Platform** (Climate-ADAPT) is up and running

EU Strategy on adaptation to climate change (2013)

- providing **guidance & funding**
- promoting **knowledge generation** and **information-sharing**,
- enhancing resilience of key vulnerable sectors through **mainstreaming**.



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the European level – the assessments

EEA

JRC + ESPON

European Commission

Research, environmental & regional cohesions programs

IMPRESSIONS

European consortia, mainly mono-sectoral

helix
www.helixclimate.eu

RISES-AM-
EU Research Project

.....

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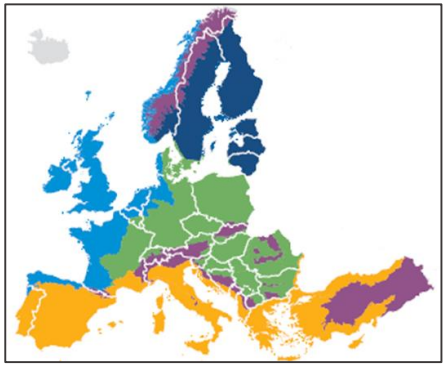
EEA report – the approach

- → Classification in bio-geographical regions
- → Sectoral part: Strongly indicator based using quantitative data → spatial representation / maps
- → Multi-sectoral part → semi-quantitative, descriptive, not spatially explicit
- → Consideration of global developments



Number of very extreme heat waves in future climates

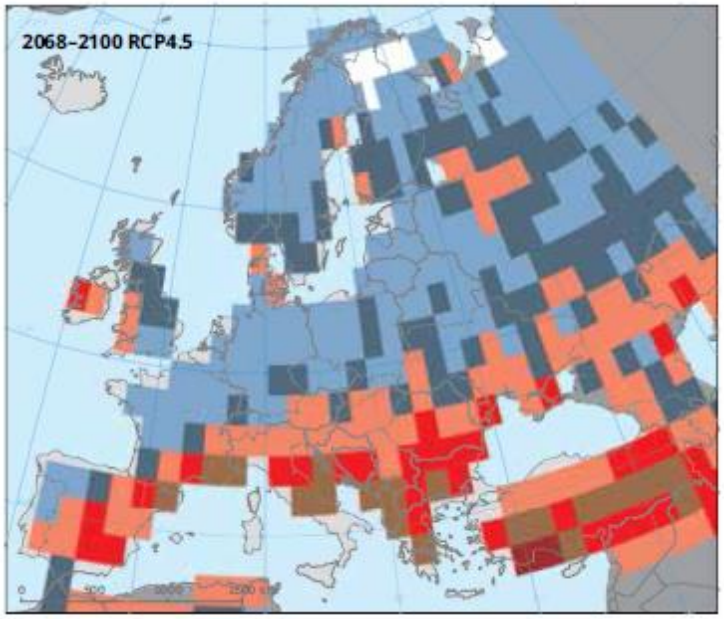


Table 6.3 Overview of the management challenges related to vulnerabilities to climate change for two storylines and four European regions

Topic	Storyline	Northern Europe and Arctic	North-western Europe	Central and eastern Europe	Southern Europe and the Mediterranean
Management of urban areas	Middle of the road				
	Fragmentation				
Management of rural settlements	Middle of the road				
	Fragmentation				
Management of energy consumption in housing	Middle of the road				
	Fragmentation				
Management of hydropower production	Middle of the road				
	Fragmentation				
Power production with boilers	Middle of the road				
	Fragmentation				
Water management	Middle of the road				
	Fragmentation				
Management of agriculture	Middle of the road				
	Fragmentation				
Forest management	Middle of the road				
	Fragmentation				
Coastal management	Middle of the road				
	Fragmentation				
Management of health care	Middle of the road				
	Fragmentation				
Biodiversity management	Middle of the road				
	Fragmentation				
Development and diffusion of green innovations	Middle of the road				
	Fragmentation				

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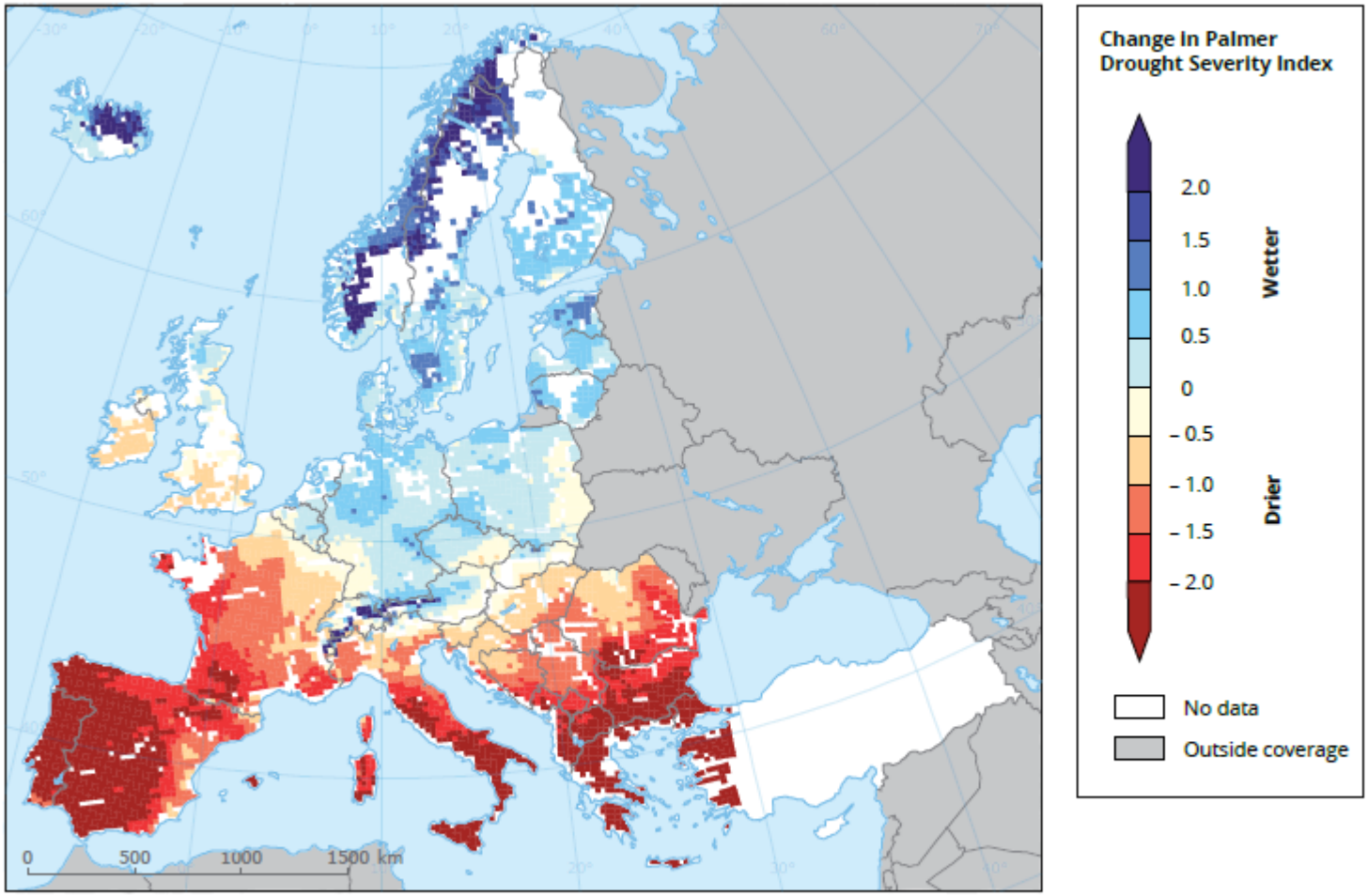
the European level – some results (alone standing)

Map 4.14 **Projected changes in summer soil moisture**

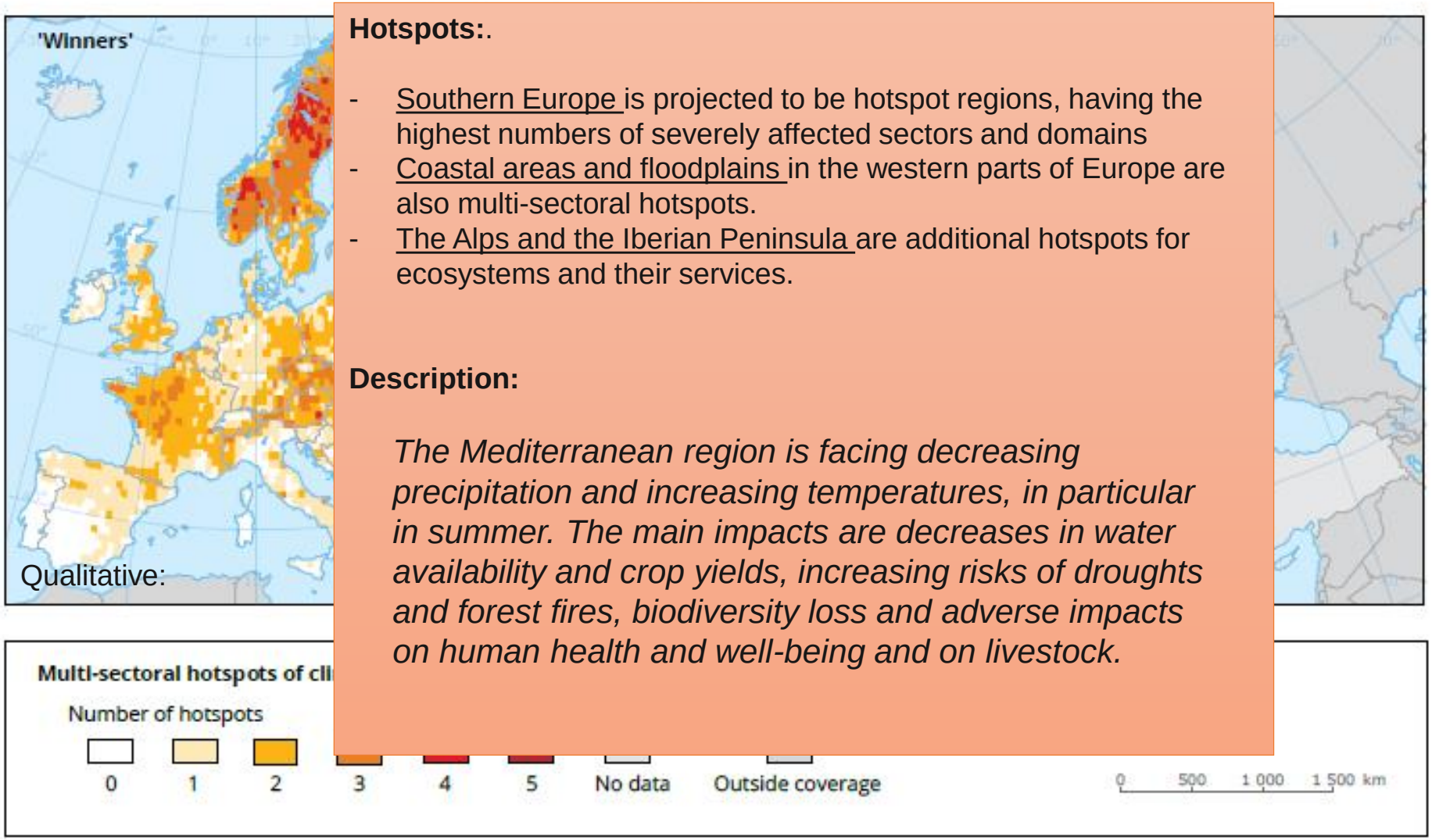


Note: Changes are based on the self-calibrated Palmer Drought Severity Index and presented as mean multi-model change between 1961–1990 and 2021–2050 using the SRES A1B emissions scenario and 12 RCMs; red indicates drier and blue indicates wetter conditions.

Source: Adapted from Heinrich and Gobiet, 2012.

the European level – some results (integrated)

Map 6.2 **Projected 'winners' and 'losers' from climate change**



Hotspots:.

- Southern Europe is projected to be hotspot regions, having the highest numbers of severely affected sectors and domains
- Coastal areas and floodplains in the western parts of Europe are also multi-sectoral hotspots.
- The Alps and the Iberian Peninsula are additional hotspots for ecosystems and their services.

Description:

The Mediterranean region is facing decreasing precipitation and increasing temperatures, in particular in summer. The main impacts are decreases in water availability and crop yields, increasing risks of droughts and forest fires, biodiversity loss and adverse impacts on human health and well-being and on livestock.

Europe - national assessments

- Many climate change risk / vulnerability assessments at national scale in Europe
- No standardized approach, no comparison possible
- Variation: review report (APCC) → quantitative impact → qualitative risk

- ‚good practice' → Network Vulnerability in Germany, participation of network of decision makers from various sectors from the project design on

If possible, a network of experts from responsible institutions should be involved at the working level and most importantly at decision-making level of vulnerability and climate impact assessments because ‣ Value decisions (see Section 2.3) must be made and ‣ Participation implies that decision makers identify better with the assessment and derive actions.

UBA – guideline [2017]

Abbildung 102: Karten zum gebietsbürtigen Abfluss

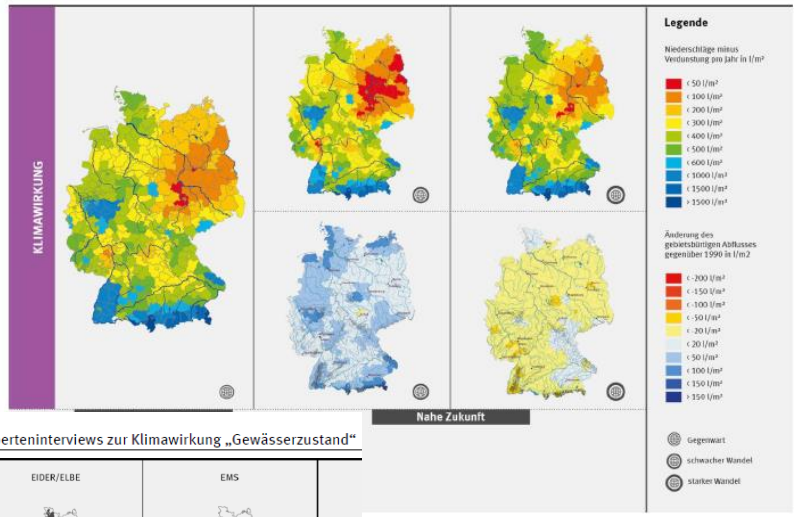


Abbildung 108: Ergebnisse der Experteninterviews zur Klimawirkung „Gewässerzustand"

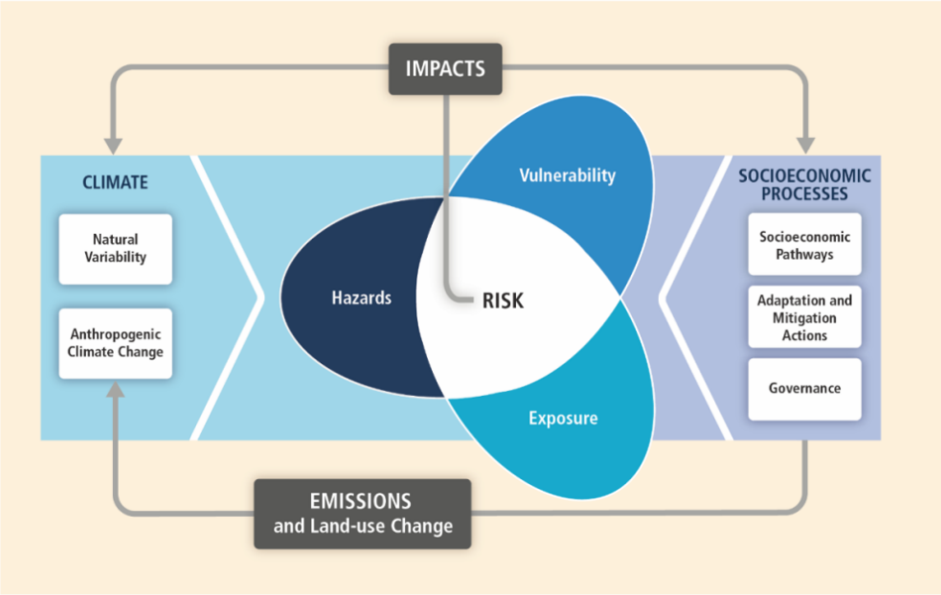
.bmbf.wasserfluesse.de/#1), Datengrundlage: Nilson und

latest developments: from vulnerability to risk

Climate change vulnerability assessment
IPCC AR4 [2007]

SREX report
IPCC [2012]

Climate risk assessment
IPCC AR5 [2014]



→ clearer definition of time references

→ towards convergence of CCA and DRR

→ CC within the context of other changes

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Conclusions
climate change vulnerability assessments

→ The methodology applied and results obtained depend on the **context and the purpose of the assessment**
- Regional studies: strategic, quantitative, top-down
- Local studies: action-oriented, qualitative, bottom-up

→ Different approaches:
- **Research studies** to generate new knowledge
- **Studies of mandated** bodies to directly feed into policies

→ Often the assessments **focus on potential impacts** and less on the further integration towards vulnerability / risk → **less useful for adaptation actions**

→ There are **analytical and normative parts** of a vulnerability assessment → **participatory approach** important

→ After the assessment the challenge is how to **monitor** the success [or failure] **of adaptation**

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Thank you for your attention