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JRC




**GROW**  
WATER AS A GLOBAL RESOURCE

## Global Expert Survey: Global-scale, sectoral drought vulnerability indicators

2<sup>nd</sup> EDO User Meeting | 11 October 2018 | JRC, Ispra, Italy

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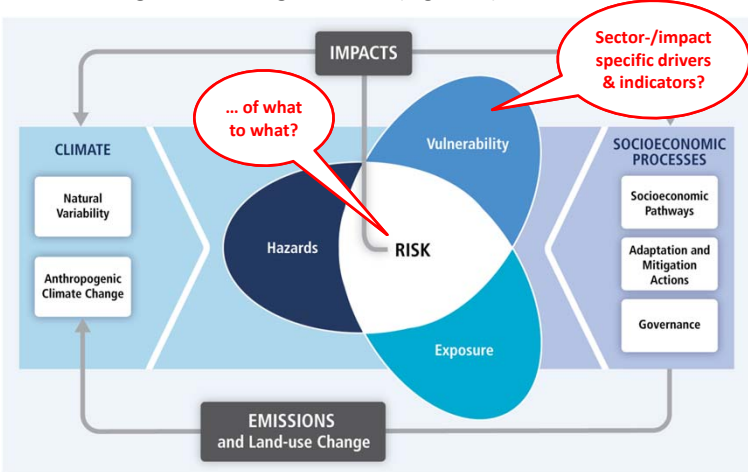
Background



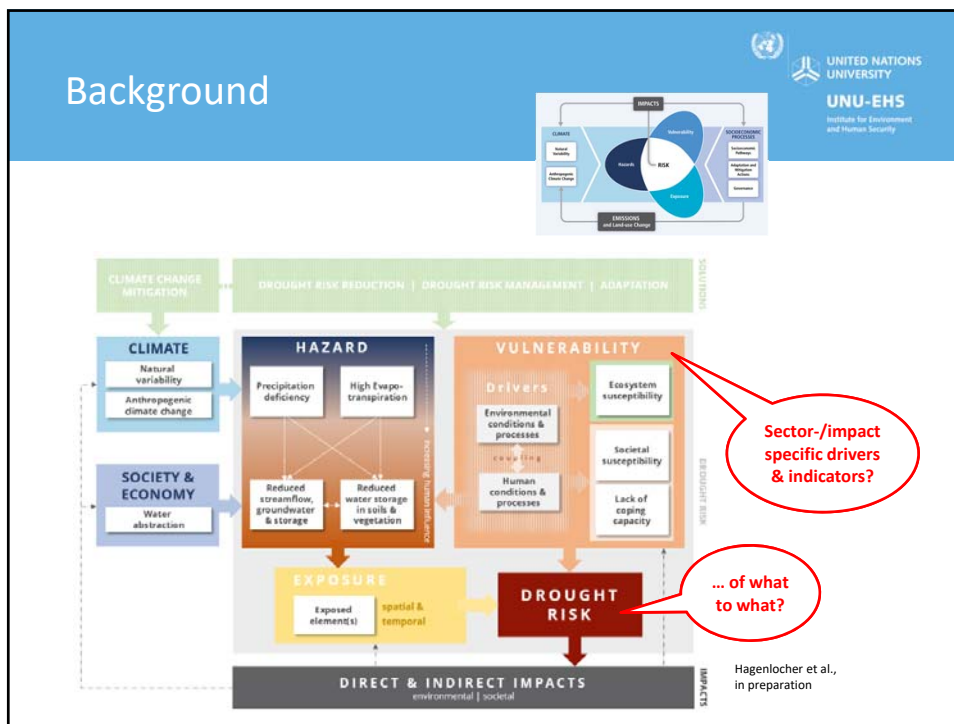
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- Articulated need and increasing efforts to **characterize, assess, monitor & forecast sectoral drought risk at the global scale** (e.g. GDO)



The diagram illustrates the complex interplay between climate and socioeconomic factors in determining drought risk. On the left, 'CLIMATE' is driven by 'Natural Variability' and 'Anthropogenic Climate Change'. On the right, 'SOCIOECONOMIC PROCESSES' include 'Socioeconomic Pathways', 'Adaptation and Mitigation Actions', and 'Governance'. At the bottom, 'EMISSIONS and Land-use Change' influences both climate and socioeconomic processes. In the center, 'Hazards' and 'Exposure' combine to form 'RISK', which is also shaped by 'Vulnerability'. 'RISK' leads to 'IMPACTS'. Two red callouts highlight key research questions: '... of what to what?' pointing to the transition from risk to impacts, and 'Sector-/impact specific drivers & indicators?' pointing to the vulnerability component.



# Global expert survey

## Drought vulnerability indicators

Global survey on **drought vulnerability indicators** for **global-scale, sectoral drought risk** assessments

- **AIM:** evaluate their **relevance** on a **scale from 0 (not relevant) to 4 (highly relevant)**
- Focus on vulnerability indicators that are contributing to the risk of negative impacts of droughts on **agricultural systems** (incl. crops, livestock, people) & **domestic water supply**
- **Target group:** drought experts across the globe

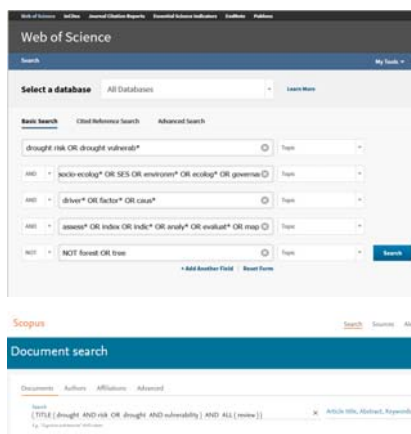
**Global Expert Survey**  
Drought vulnerability indicators for global-scale sectoral drought risk assessments  
October 2018

## How were indicators identified?

- **Systematic review** of peer-reviewed literature on drought vulnerability and risk using pre-defined search terms (Hagenlocher et al., in preparation)

- Web of Science & Scopus
- English articles | 01/1970 - 12/2017

	Initial Search	1st review			Final review	
		Yes	No	Perhaps	Yes	No
Scopus	167	90	62	13	90	75
Web of Science	464	21	420	20	27	433
Combined	631	111	482	33	117	508
Double included	6					

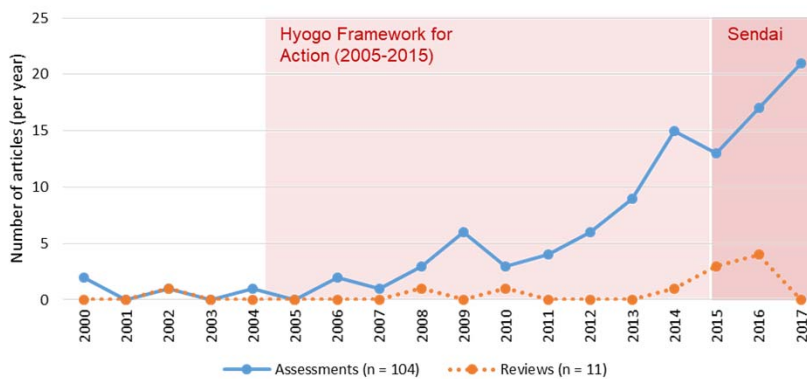


- **118 papers** reviewed and coded



## Review of existing assessments

Drought risk assessments and review articles



# Global expert survey Drought vulnerability indicators



- Indicators identified from the systematic review of drought risk assessments (n = 117 papers) and expert consultations
- Structured along 7 dimensions:
  - social
  - economic
  - infrastructure
  - crime/conflict
  - governance
  - environmental
  - farming practices

Drought vulnerability indicators	Contribution to drought vulnerability						
	Not relevant	Low reference	Medium reference	High reference	Very high reference	Not relevant	Not relevant
<b>SOCIAL</b>							
51	0.11	1.11	2.11	3.11	4.11	5.11	Agriculture systems
52	0.11	1.11	2.11	3.11	4.11	5.11	Water supply
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# Example: social dimension



Table SMII.2: Vulnerability factors and indicators (incl. potential proxy indicators)

Sub-dimension	Factors (from review)	Indicator (from review)	Proxy indicators
<b>Social dimension</b>			
Education	Education / illiteracy	Illiteracy rate (%)	Education (years); Literacy rate (%); Lack of investment in education; Adults without primary education (%); Households having below primary education (%)
	Indigenous and local knowledge	People using local knowledge (%)	n/a
Gender	Gender	Female headed households (%)	Sex ratio; Females in labor force (%); Female headed households (%); Female literacy (%); Gender Inequality Index (categorical)
Social capital	Social capital	Social capital index (categorical)	Lack of social integration; participation in organizations (%); households whose heads are engaged in associations or unions (%)
Health status	Alcohol & substance use	Population with alcohol and substance abuse (%)	Alcohol consumption liters per capita (people aged 15 years and older)
	Restricted mobility / disability	Population with restricted mobility (%)	Disabled persons (%); Days a year household head remains physically fit to carry out livelihood activities (# days per year); Years of health lost due to disability (YLD)
	Malnutrition	Meals skipped per month (#)	Households with insufficient food for consumption in a year (%); Stunting children under age 5 (%); Food supply and consumption (grams per capita per day); Population undernourished (%); Access to nutritious food (%); Caloric intake per capita (kcal)
	Mental health	Farmers/laborers	Government expenditures on mental health (% of

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## Global expert survey Drought vulnerability indicators



- **3 options to participate in the survey**
  1. Digital copy (PDF)
  2. Hardcopy
  3. Online survey: <https://www.e-encuesta.com/s/qS6J2GNOaj9L2lwQ1RC0jA/>
  
- Results will inform global-scale, sectoral risk assessments at JRC (GDO) and within the GlobeDrought project

## Thank you for your participation! Grazie!



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