Impact chains of drought risks in Europe: tackling complexity to support science and policy

Davide Cotti, Anne-Sophie Sabino Siemons, Gustavo Naumann, Marthe Wens, Hans de Moel, Lauro Rossi, Yvonne Walz, Willem Maetens, Dario Masante, Andrea Toreti and Michael Hagenlocher



The need to disentangle drought risks and impacts

Worldwide, droughts are becoming more frequent and intense, and drought risks and impacts are becoming more diversified and complex to manage. This new reality requires new efforts to understand drought from a systemic perspective, and the first step in this direction is to disentangle the **interconnections** between the multiple **drivers** of drought **risks and impacts**. To do so, in the context of the European Drought Observatory for Resilience and Adaptation (EDORA) project, we have <u>constructed conceptual models of drought risks in Europe using the **impact chains** methodology for seven different systems and sectors in Europe. The models were constructed through literature review and consultations with sectoral experts, and offer an systematic overview of what drives specific drought risks and impacts in Europe.</u>

KEY INSIGHTS

- Drought risks are complex, diverse and changing, as the European case continues to demonstrate.
- Conceptual models can help break down this complexity and guide the design of more effective and systemic risk reduction and adaptation policies
- The models show how tackling drought risks require a concerted efforts across scientific and policy silos

Example: Risk of reduction of crop yield due to drought in irrigated agricultural systems









Forest ecosystems

Impact chains for drought risks provide:

- A tool to identify of **drivers** and **root causes** behind risks
- Entry points for targeted measures, both risk-specific and across risks (through shared drivers of risks)
- A guide to identify and develop **indicators** for <u>risk assessment</u>
- Support **impact-based early warning** by providing risk knowledge (pillar 1, EarlyWarning4All initiative)













- A communication tool for and between experts, stakeholders, and the public (also process-oriented)
- A step towards a **systemic perspective** on drought risks (see *Hagenlocher et al. 2023*)



Learn more about impact chains and their use to assess drought risk in Europe in the **European Drought Risk Atlas:**

- *Multiple sector/systems analyzed*
- Quantitative analysis of current conditions and future scenarios of drought risks

...and in the **upcoming UNCCD's Global Drought Atlas** (launch at the UNCCD COP 16 in December 2024)

<u>See Drought Resilience+10 session</u>: "The Global Drought Atlas – A perspective on drought risks and resilience</mark>" – Wednesday 02/10, 12:25 – 13:25 CET

Contacts Davide Cotti: cotti@ehs.unu.edu









