

Cross-sectoral impact assessment of droughts in complex European basins (CROSSDRO)

The CROSSDRO project conducted research into the impacts of droughts across various sectors and geographical scales. It employed diverse methodologies, including meteorology, hydrology, and remote sensing, to analyze drought effects regionally and continentally. The findings revealed the intricate nature of drought impacts, which varied depending on sectors, geographic locations, and climatic conditions.

Key Findings

- Vegetation activity and growth have limited influence on explaining the interannual variability of water resources, particularly in Mediterranean headwater catchments.
- Future projections using climate models indicated an expected increase in drought risk over large areas of Europe in response to climate change processes.
- Drought impacts vary significantly across different sectors, with meteorological droughts having a more pronounced role in hydrological systems compared to ecological systems.
- Hydrological droughts are strongly affected by precipitation variability, exhibiting seasonal differences and sensitivity to different time scales of drought.
- The impact of drought is highly complex, sector-dependent, and influenced by system characteristics, including human management practices.
- Conservation agriculture practices, such as crop rotation, have demonstrated efficiency in water storage and crop water use, reducing the need for supplementary irrigation.
- The project highlighted non-market impacts of drought in Spain, including negative effects on health, recreation, biodiversity, water use restrictions, and water quality changes.

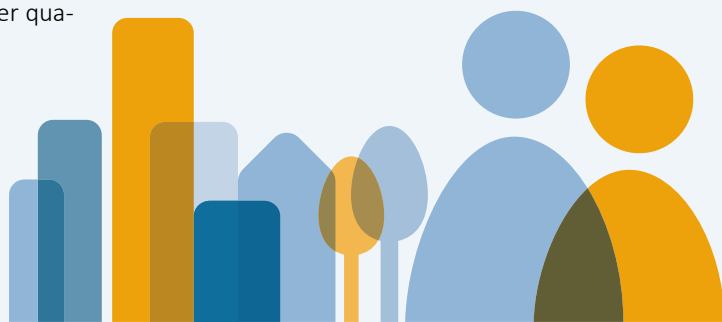


Source: unsplash/Giada Venturino

- Historical analysis in Ireland revealed a history of significant hydrological and agricultural impacts due to drought dating back to 1850.
- At the European level, CROSSDRO analyzed hydrological droughts and their control by vegetation processes, showing the influence of vegetation changes on the intensification of droughts in southern European basins.

Transformative Implications for Drought Management and Beyond

The results of the CROSSDRO can provide information for drought management, climate adaptation, and water resource allocation. Additionally, the findings may influence agricultural practices and policies by promoting water-efficient techniques and enhancing resilience to droughts. The project's research on health impacts can improve healthcare planning and awareness campaigns. Water resource management strategies can benefit from insights into hydrological droughts, while conservation efforts may be bolstered to protect ecosystems and biodiversity. Overall, these results offer opportuni-



ties for inclusive stakeholder engagement, international collaboration, and adjustments in business practices to cope with changing water availability.

Insights and Engagement: Advancing Drought Understanding and Preparedness

The project has produced novel and outstanding results that contribute to a better understanding of the complex impacts of droughts at different scales, and how these advances can contribute to improved economic and environmental adaptation to these events. Stakeholder engagement has been very active in the different basins, building networks of participants and conducting in-depth interviews with local and national stakeholders to understand the perceptions and impacts of drought and to identify future adaptation needs to climate variability and change. Of particular relevance was the study conducted in Ireland, where a new interest in drought severity has emerged.

About AXIS

The ERA-NET Consortium AXIS (Assessment of Cross(X) - sectoral climate Impacts and pathways for Sustainable transformation) aims to promote cross-boundary, cross-community research with the overall goal to improve coherence, integration and robustness of climate impact research and connect it to societal needs. To this effect, AXIS aims to overcome boundaries between science communities through inter- or transdisciplinary research projects. <https://jpi-climate.eu/programme/axis>

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Project Duration

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