Drought vulnerability in forested cold climates – user-validated perspectives from Swedish water-dependent sectors on governance, policies and plans.

Elin Stenfors[1], Malgorzata Blicharska[2], Claudia Canedo Rosso[3], Thomas Grabs[1], Claudia Teutschbein[1]
contact: elin.stenfors@geo.uu.se

Background

An online survey was conducted in Sweden, targeting stakeholders from seven water-dependent sectors working in authorities, research, private/ public enterprises, NGOs and trade associations. Survey respondents were asked to a list of scientific-literature based vulnerability factors based on their impact on drought risk in their sector as well as for society. The survey included stakeholders working in the agricultural, energy, environmental, forestry, water resource and water supply sector and received over 100 responses - resulting in two papers focusing on sectoral and societal drought vulnerability currently available as preprint [1,2].

Results highlight importance of

1. Adopting policies

such as:
Drought management plan
Clearly defined water use priority classes
Coordinated water strategy
Local water management plan

Policy relevance
Adopting drought- or water-related policies can significantly reduce the risk of negative impacts from drought, benefiting various sectors and society as a whole.

Justification
All factors concerning governance were rated relevant for societal and/or sectoral drought, Factors relating to water and drought policies were highly impactful for the agricultural, energy, water resource, -supply, and environmental sector and society. Having a local water management plan or a coordinated water strategy was important for these sectors.

2. Tailoring policies to consumers

through:
Targeted policies for different water dependencies

Policy relevance
Drought policies and plans should be adapted to address various water needs, considering dependencies on groundwater, surface water, and soil moisture.

Justification
Drought vulnerability differs dependning on water type dependency. At present, mainly respondents dependent on ground- or surface water found water and drought related policies as relevant for drought risk, whereas respondents solely dependent on soil moisture, such as forestry and terrestrial ecosystems, found fewer policies to be relevant. This highlights the need to adapt policies to better target a broader audience.

3. Ensuring drought competence

by increasing:
Drought awareness at authority level
Drought awareness among water users
Authority competence to offer support

Policy relevance
Drought policies and plans should include or be accompanied by efforts to ensure or increase drought awareness and drought compentence at authority levels.

Justification
Competence within authorities to offer drought related support, along with drought awareness within authorities, were seen as impactful for drought risk by a majority of sectors. Likewise, the drought awareness among water users was seen as relevant, as well as including awareness raising measures in drought plans. Also, the coordination and cooperation among authorities was perceived as impactful by the

Key takeaways

Governance, policies, and plans are essential for minimizing drought risk. However, drought-related policies should consider various water sources, including groundwater, surface water, and soil moisture, to be effective for all sectors. It is also important to ensure adequate drought awareness among authorities and water users to better manage the risk in forested cold climate regions.

Afiiliations

1 Uppsala University, Department of Earth Sciences, Program for Air, Water and Landscape Sciences, Villavägen 16, 75236 Uppsala, Sweden
2 Uppsala University, Department of Earth Sciences, Program for Natural Resources and Sustainable Development, Villavägen 16, 75236 Uppsala, Sweden
3 Karlstad University, Faculty of Humanities and Social Sciences, Centre for Climate and Safety

References

[1] Stenfors, E., Blicharska, M., Grabs, T., and Teutschbein, C.: User -Validated Drought Vulnerability Factors in Forested Cold Climates: Multi -Sectoral Perspectives from Sweden, https://doi.org/10.5194/egusphere -2024-1988, 14 August 2024

[2] Stenfors, E., Blicharska, M., Grabs, T., and Teutschbein, C.: Sectoral Vulnerability to Drought: Exploring the Role of Blue and Green Water Dependency in Mid and High-Latitudes, https://doi.org/10.5194/egusphere-2024-2726, 19 Sep 2024