EUROMONTANA

For a water resilient Europe

Proposals for sustainable water management in the mountains and beyond

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Euromontana's position on the EU Water Resilience Initiative

Europe's water towers in the face of climate change

Mountains provide many ecosystem services to our society, including water supply. **The Alps alone provide 40% of Europe's freshwater**[1]**.** Our territories play an essential role in the great water cycle, storing water in the form of snow, ice or lakes in winter and draining it into rivers from spring onwards. Europe's supply of fresh water for its ecosystems, citizens and the industries that depend on it largely relies on run-off from the mountains. Our regions therefore have a central role to play in a water-resilient Europe.

However, climate change is causing glaciers to retreat and rainfall to become more erratic and scarcer in summer. This puts the mountain water supply at risk. In the face of climate change, the quality and quantity of water supplied by mountains is at risk, and their resources must be sustainably managed.

Reduced drinking water resources

In Europe, the mountains are veritable natural water towers and key provider of freshwater. 125 million cubic meters are for instance annually abstracted from Lake Constance for drinking water, a lake that is 78% supplied by rainwater and meltwater from the Alps. The extracted water is distributed to approximately 4 million people in Baden-Württemberg living in 320 cities and municipalities[2].

However, climate change is greatly affecting the water cycle and raising concerns over access to drinking water for many citizens, including in mountain villages across Europe, where cases of access being cut off in summer have been multiplying in recent years. Above a temperature rise of 1.5°C, **access to fresh water will become a challenge for regions that depend on glaciers and snow melt**[3].

Increased climate risks

Water-related challenges are driving an increase in climate risks in Europe. On the one hand, **drought** is already affecting many mountain areas, particularly in the Pyrenees, the Iberian mountains and the Mediterranean mountains. In addition to the consequences for ecosystems, the shortage of water is increasing the **fire risk**, with Europe breaking records in recent years for the number of hectares of land affected by fires. In the mountains, a large proportion of these fires occur in Natura 2000 areas, which are rich in biodiversity but difficult for the fire service to reach[4]. In addition, the risks in the mountains vary from water scarcity to water excess. Some regions are hit harder by one than the other, others can experience both severe drought and sudden flooding within a few weeks as a result of climate change. In the future, the risk of **landslides and floods**, is expected to also increase.

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[1] European Environment Agency, Water resources across Europe — confronting water scarcity and drought, 2009.
[2] Schirpke, U., Tappeiner, U. & Tasser, E. A transnational perspective of global and regional ecosystem service flows from and to mountain regions. *Sci Rep* 9, 6678 (2019). https://doi.org/10.1038/s41598-019-43229-z
[3] Adler, C., P. Wester, I. Bhatt, C. Huggel, G.E. Insarov, M.D. Morecroft, V. Muccione, and A. Prakash, 2022: Cross-Chapter Paper 5: Mountains. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 2273–2318, doi:10.1017/9781009325844.022.
[4] European Commission, Joint Research Centre, San-Miguel-Ayanz, J., Durrant, T., Boca, R. et al., *Forest fires in Europe, Middle East and North Africa 2022*, Publications Office of the European Union, 2023, https://data.europa.eu/doi/10.2760/348120

Challenged water dependent economic sectors

Changes in water availability in the mountains will not only impact people and ecosystems but also specific economic sectors in most mountain areas[5]. Tourism, agriculture, and energy production are among the strategic sectors that will be most affected.

Tourism

Winter tourism in the mountains is particularly affected by climate change, due to the decline in snow cover, with greater changes and uncertainties related to winter conditions especially evident at medium altitudes. Future climate projections indicate that the duration of the snow season in the northern hemisphere could decline further up to 40 days[6] while snow cover is expected to decrease 50% by 2050 in the Pyrenean mountains at altitudes between 1,800 and 2,200 meters[7].

In some regions, winter tourism, especially skiing, still highly contributes to local economies dynamism and provides jobs. That is why; to remain attractive and maintain their economic viability, ski resorts are sometimes opting for artificial snow production, which requires a high amount of water. Almost 1000 litres is needed to produce around 2.5 cubic metres of artificial snow, or **around one million litres of water for one hectare of ski slope**[8].

As an example, 48 million cubic metres of water are for instance used each year to make artificial snow in Austria[9]. As snow cover diminishes, the use of artificial snow is steadily increasing. In France, artificial proportion of snow cover in skiable areas rising from 19% to 35% between 2010 and 2019[10]. Yet it is estimated that with global warming of more than 2°C and without the use of artificial snow, 53% of the 2,234 ski resorts studied in 28 European countries would experience a "very high risk of snow supply" (which rises to 98% with warming of 4°C)[11]. **This raises the prospect that the use of artificial snow in winter tourism practices, and therefore the pressure on mountain water resources, will continue to increase in the future.** Faced with the urgent need to adapt to climate change, the coherence of different policies (e.g. climate, cohesion, agriculture) is being challenged, and EU funding for this type of infrastructure is increasingly being questioned[12].

Agriculture

Farming is one of the key economic sectors in mountain areas. **Mountain farming practices**, such as permanent grasslands, crop-livestock systems and diversification **contribute to good water management**. Within the Common Agricultural Policy, the payments for Areas with Natural Constraints are recognised for their beneficial impact on water management. The ANC represented 31.8% of the total EU budget allocated to water management in 2014-2022 Rural

[5] Adler, C et al, op cit.
[6] European Environment Agency, Water resources across Europe — confronting water stress: an updated assessment, 2021.
[7] OPCC-CTP (2018). Climate change in the Pyrenees: Impacts, vulnerabilities and adaptation Bases of knowledge for the future climate change adaptation strategy in the Pyrenees
[8] Agence nationale de la cohésion des territoires, Climate change in mountain areas: meeting the challenge of adapting water management and tourism, 2023
[9] Agence nationale de la cohésion des territoires, ibid
[10] Agence nationale de la cohésion des territoires, ibid
[11] François, H., Samacoïts, R., Bird, D.N. et al. Climate change exacerbates snow-water-energy challenges for European ski tourism. Nat. Clim. Chang. 13, 935–942 (2023). https://doi.org/10.1038/s41558-023-01759-5
[12] EU Court of Auditors (2024), Special report 15/2024 : Climate adaptation in the EU — Action not keeping up with ambition.

Development Programmes, just behind agri-environment-climate measures (33.4%) and organic farming for (12.5%)[13].

Mountain farming is not the most water intensive agricultural model but yet depends on water resources as any other agricultural system. In view of the reduction in water resources, mountain farming is under pressure. Both crop and livestock farming are impacted by decreasing water resources. In the Alps, where pastoralism is central, livestock have already been partially removed from mountain meadows in the summer of 2022 because of an **early water shortage**. Beyond mountain areas, this raises a wider issue for the whole sector, since **68% of the world's irrigated agricultural land in the plains directly depends on mountain run-off**[14]. In addition, water shortages for agricultural purposes fuels conflicts over the use of the resource[15]. This is why a strategic vision of water should help to prioritise uses.

Energy production

Hydropower is the second largest renewable electricity source in the European Union. In 2022, it accounted for 29.9% of the EU's renewable electricity production and provided 12% of the EU's electricity[16].

Mountain areas are central to the hydropower infrastructure. However, climate change is threatening production. Loss of snow and glacial retreat in the Alps will limit hydropower generation during some seasons, especially spring[17]. In the Pyrenees **the hydroelectric power generation capacity could fall** by an average of 10% and reach a reduction of 35% during the summer season in 2070 compared with the current period[18].

Recommendations for water resilience in the mountains and beyond

In the light of the challenges facing Europe in terms of access to water in sufficient quantity and quality, Euromontana stresses the crucial role of mountains in building water resilience. We call for the adoption of an **ambitious and science-based EU Water Resilience Strategy** which, by tackling different policies, must preserve our water resources and ensure their sustainable management. We also call on the different national, regional and local authorities to act and cooperate to ensure more coherent policies.

Addressing water challenges within agricultural, cohesion and climate policies

Euromontana advocates for a comprehensive approach to water issues. Given the considerable efforts required to achieve resilience, policy efforts should go beyond the environmental policies and LIFE funding alone. Euromontana therefore calls on European decision-makers to strengthen the contribution of agricultural, climate and territorial cohesion policies to sustainable water management in Europe.

[13] European Commission, Directorate-General for Agriculture and Rural Development, Schwaiger, E., Pierrepont, A., Rosell, J. et al., *Evaluation of the impact of the CAP on water – Final report*, Publications Office, 2020, https://data.europa.eu/doi/10.2762/63371
[14] Adler, C et al, op cit.
[15] OPCC, op cit.
[16] Eurostat, Electricity from renewable sources up to 41% in 2022, 21 February 2024
[17] European Environment Agency, European climate risk assessment report, 2024
[18] OPCC, op cit.

We call for:

- Strengthening water management measures in the **post-2027 Common Agriculture Policy** by:
    - Improving the consideration given to mountain areas in the post-2027 CAP Strategic Plans. Mentions to mountain areas should become compulsory in the concerned Member States and **payments for Areas with Natural Constraints**, which have a positive impact on water management, therefore activated.
    - Encouraging the implementation **of eco schemes promoting the preservation of wetlands** in mountain areas, in particular in grasslands.
- Reinforcing the contribution of the **post-2027 Cohesion Policy** to sustainable water management, by:
    - **Ensuring that European structural and investment funds (ESI) are invested in tourism infrastructures contributing to a smart and rational use of water resources**, in line with the EU "do no significant harm" principle. The completion of site-specific impact assessments should be used to assess the impact on water resources (e.g. ClimSnow and ClimEau assessments in the French Alps or similar science-based tools). Similarly, ESI funds should only finance multi-use water reservoirs.
    - **Promoting investments to reduce water waste**, including in more remote areas. In region Aragon, almost a quarter of the total volume of water supplied to the networks is lost along the way. Remote municipalities are often the hardest hit by leaks, ruptures, or breakdowns in water pipes, caused by the deterioration of infrastructure. Investments, especially through the Cohesion Policy, should support leakage control and investments in water collection facilities.
- Strengthening the EU's climate action to reduce the impact of climate change on glacier melt and on the hydrological cycle as a whole, by:
    - **Boosting climate change mitigation** to limit its impact on the hydrologic cycle. The EU has set itself a target of reduction net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels and to become climate neutral by 2050. However, implementation and the associated funding are still too timid to significantly mitigate global warming. In mountain areas, meadows, forests and wetlands are important carbon sinks. Their effective and sustainable management should be further encouraged in order, among other things, to preserve their capacity to mitigate climate change.
    - **Supporting Member States in adapting to the impacts of climate change on water** – especially water associated climate risks - thanks to the upcoming **European Climate Adaptation Plan**. This plan must also ensure that **mountains are taken into account in national plans** which is still far from being the case, as the EU's Court of Auditors has shown.
    - **Taking advantage of the International Year of Glaciers' Preservation in 2025** to strengthen the Europe's commitment to preserve glaciers, whose melting, particularly in the Alps, poses a serious threat to Europe's water supply.

Building resilience locally hand in hand with local communities

A comprehensive approach to water resilience cannot be achieved without awareness and action at national, regional and local levels. Water related matters deserve an informed and inclusive debate but yet remain overlooked in some territories.

We call for the implementation of national, regional and local strategies adapted to mountain areas by:

- **Analysing precisely current and future water resources at catchment scale** and identifying the associated climate risks and socio-economic impacts in the mountains and lowlands.
- Adopting **placed based adaptation strategies**, which can help raise awareness of sustainable water management and prioritise its uses. On the basis of the mapped resources and needs, a **prioritisation of uses** could support the long-term sustainability of the resource, as Romania did in Article 13 of its 2018 Mountain Law.
- **Co-constructing** these adaptation strategies with local communities. Water policies and **orientations can only be socially accepted** and observed if they are developed using a collective approach.

Promoting the role of mountains in water supply and management

Euromontana stresses the role played by the mountains in the water cycle and especially in the provision of fresh water, with the Alps alone providing 40% of Europe's freshwater. However, the importance of these areas in the hydrological cycle and in the proper management of water resources is all too often neglected.

We call for further consideration to mountain areas by:

- **At national level and regional, fairly compensating mountain areas** for providing ecosystem services to society as a whole, including for the water use made out for energy production.