

RURACTIVE OPEN CALL - CHALLENGE 29

Title of the challenge	The Commons of Törbel: efficient water usage for agricultural irrigation
Dynamo (pilot location)	Törbel-Moosalp region, Switzerland
RDD (Rural Development Driver) <i>addressed by the challenge</i>	Sustainable agri-food and ecosystem management
Overall context description and specific context to be addressed by the challenge	<p>Törbel, a small Swiss mountain village in the Moosalp region of the Canton of Valais, is situated at an altitude of 1,200 to 2,000 meters above sea level on a south-facing mountain slope, near the famous Matterhorn Mountain. The village with approximately 500 inhabitants is surrounded by meadows and forests and features several moor biotopes protected under national nature conservation laws. The people of Törbel maintain traditional farming practices, which shape both the landscape and their cultural identity, while tourism, including hiking and skiing, also plays a significant role.</p> <p>As the region is characterised by long hours of sunshine and relatively little rainfall, along with increasing climate fluctuations, Törbel is facing a growing water shortage that affects agricultural irrigation. Water distribution relies on historic irrigation channels, known as “bisses” (German: Suonen), which were studied in Törbel by Nobel Prize winner Elinor Ostrom in the 1980s for their unique communal management. However, the water for the existing irrigation system, which mainly uses meltwater to irrigate meadows and pastures (including biodiversity areas), is limited due to changing climate (longer dry seasons in summer) and absence of water storage facilities. Additionally, the irrigation system is regulated manually, which makes it time-consuming and inefficient.</p>
Scope of the Challenge	<p>The challenge in Törbel is to optimise the current watering system through an automated and efficient irrigation system to ensure sufficient water availability year-round for agricultural activities.</p> <p>Constraints to be taken into account are:</p>

	<ul style="list-style-type: none"> • Topography: hilly landscape with limited space for infrastructure. • Ecology: protection of the local flora and fauna. • Cultural heritage: preservation of the traditional bisses (Suonen).
Solution requirements	<p>This challenge seeks innovative, landscape-compatible solutions that optimise the use of existing water resources and support sustainable agriculture.</p> <p>Technical focus: Solutions could include smart and mobile water storage systems, sensors for real-time tracking of water consumption, and automation of the existing irrigation system for efficient demand management, as well as IoT technology to measure the locations and amounts of lost excess meltwater.</p> <p>The solution should be easy to use and intuitive, low-cost, ensure open access, and utilise open data sources.</p>
Specific objectives and expected outcomes	<ul style="list-style-type: none"> • Secure water supply: ensuring a reliable and sustainable water supply for agriculture guarantee year-round availability. • Efficient use of resources: optimising the current irrigation system and improving the use of excess meltwater and rainwater to avoid water waste. • Integration into nature and landscape: ensuring that the water system is harmoniously embedded in the landscape while protecting and promoting local flora and fauna and meeting the specific needs of the Törbel-Moosalp region. • Community acceptance: promoting the acceptance and participation of residents and farmers through transparent planning and involvement in the implementation of solutions. • Preservation of cultural heritage: preservation of traditional bisses (Suonen) and sustainable water use to promote the region's cultural heritage and revive the hiking trails near the bisses as an attractive tourist offer.
Available resources	<ul style="list-style-type: none"> • Existing water catchments on the bisses and streams as a water source and existing sprinkler system for the irrigation of agricultural meadows and pastures • Mapping of bisses

- [Mapping of the irrigation network and irrigation schedule](#)

Illustration

One of the bisses (Suonen)
in Törbel ©[Musée des Bisses](#)

