

EXTHERENCE Climate Living Lab, testing interactive preparedness and disaster management activities – Extreme Weather Catalogue

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The EXTHERENCE Climate Living Lab was implemented within the framework of the Interreg Central Europe LOCALIENICE (LOCAL + RESILIENCE) project, aiming to strengthen local and regional resilience to extreme weather events through the testing of interactive preparedness and disaster management activities and the practical application of the Extreme Weather Catalogue (EWC). The Living Lab approach provided a real-life testing environment in Vas County, Hungary, enabling public authorities, professional responders, civil society actors and local communities to jointly develop, test and evaluate preparedness and response solutions.

Due to its geographical location, settlement structure, transport networks and industrial characteristics, Vas County is exposed to both natural and man-made hazards. While long-lasting large-scale floods are not typical, flash floods may develop rapidly in narrow valleys, leaving very limited time for defence and evacuation. In addition, extreme weather phenomena such as heatwaves, cold spells, windstorms, hailstorms and icing can occur across the entire county. These challenges highlighted the need to improve preparedness, coordination and adaptive response capacities at local and regional level.

The main objective of the EXTHERENCE Climate Living Lab was to reduce vulnerability to extreme weather events by testing risk management methodologies, strengthening institutional cooperation and enhancing the preparedness of both professional organisations and the population. The pilot action sought to identify locally applicable intervention guidelines and a risk management approach that can be adapted to other Central European regions, in line with existing international disaster risk reduction initiatives.

The Hungarian pilot was implemented through five thematic working groups: Water Damage Prevention, Industrial Safety, Fire Protection, Population Protection and a Supporting Working Group. These groups operated in a small-group task-based structure, involving experts from disaster management authorities, partner organisations and external specialists. During the pilot period, location-specific data collection was carried out in municipalities across Vas County, focusing on extreme weather risks, vulnerabilities, existing capacities and identified gaps. The collected data were analysed using both qualitative methods (workshops, expert consultations) and quantitative assessments.

Between 2024 and 2025, a series of interactive preparedness and disaster management activities were organised, including table-top exercises, command post (staff) exercises, field exercises and workshops. Field exercises were conducted in Bajánsénye (26 October 2024) and in the Kőszeg Mountains (18

October 2025), while table-top exercises took place in November 2024 and September 2025. Workshops were organised in Bükfürdő in December 2024 and November 2025. These activities tested early warning systems, public alerting and information mechanisms, drone-based reconnaissance, logistics and cross-border cooperation, including the involvement of Austrian and Slovenian rescue forces.

The Extreme Weather Catalogue played a key role throughout the Living Lab activities. The EWC is a web-based database developed within the LOCALIENCE project, combining typical extreme weather events with locally applicable measures, capacities and resources. During the pilot, the EWC supported scenario development, exercise planning and post-event evaluation, allowing participants to link hazards with concrete response options and available resources. The Living Lab provided valuable feedback on the practical usability of the EWC and its relevance for local decision-making.

Stakeholder involvement was a central element of the pilot action. Local governments, mayors, public utilities, law enforcement agencies, the Hungarian Defence Forces, emergency medical services, voluntary rescue organisations and civil protection units were actively engaged in planning, implementation and evaluation. This multi-level and cross-sectoral cooperation ensured a comprehensive approach and reinforced the Living Lab as an operational environment for joint learning and adaptive preparedness.

The results of the EXTHERENCE Climate Living Lab demonstrated that interactive, practice-oriented testing significantly improves coordination, communication and situational awareness among stakeholders. The pilot confirmed the added value of combining field-based exercises with structured tools such as the Extreme Weather Catalogue. The developed methodologies and tested solutions are transferable to other regions with similar characteristics and contribute to strengthening long-term resilience to extreme weather events in Central Europe.

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