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Co-producing demand-driven EO-based climate services for water resilience: insights from the PCP WISE initiative

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The Horizon Europe PCP WISE project investigates how participatory co-production can enhance the societal value and uptake of climate services supporting water-related climate adaptation. The project aims to develop pre-operational Earth-Observation-based “water intelligence” services that monitor soil-water-vegetation (SWV) dynamics and anticipate risks such as drought, flooding, heat stress and wildfire impacts across diverse European regions.

A structured co-production methodology, based on participatory sensemaking and user-driven approaches, is implemented to collect operational user requirements and analyse climate-data gaps across five urban and rural use-case regions. Multi-stakeholder workshops combined qualitative user-storyline approaches with systematic mapping of environmental data availability, governance contexts and decision-making workflows. This process enabled locally expressed needs to be translated into functional and technical specifications and solution requirements aligned with operational user workflows for innovative climate-service solutions procured through a pre-commercial procurement mechanism.

Results reveal persistent barriers to climate-service uptake despite regional diversity. These include fragmented data ecosystems, limited interoperability of environmental datasets, challenges in cross-actor coordination and integration into existing workflows, and insufficient spatial and temporal resolution of indicators related to soil moisture, evapotranspiration and groundwater dynamics. Such gaps constrain the operational integration of climate-risk intelligence into daily water management and crisis preparedness, as well as their alignment with regional and local climate adaptation plans and strategies. The co-production process therefore prioritised integrated information products combining satellite observations, in-situ measurements and modelling approaches to deliver continuous monitoring, sector-specific risk indicators and early-warning insights tailored to decision needs. For instance, in the Netherlands and Belgium, close cooperation between water and nature managers and meteorologists at the PCP WISE Kalmthoutse Heide test site has led to the co-creation of a daily ‘Hydromet’ alerting system. This system supports short-term wildfire risk assessment while feeding into long-term climate-resilience measures, reducing the impacts of prolonged drought on the SWV system.

The preliminary findings illustrate how procurement-driven co-creation can act as a governance innovation for climate-service development by aligning technological innovation pathways with

validated societal demand. The PCP WISE experience provides evidence on how demand-side innovation instruments can accelerate the operational uptake and long-term impact of climate services for regional climate-resilience planning across Europe.