



**RETOUCH
NEXUS**

2023

2026

The RETOUCH NEXUS project promotes a cross-sectoral Water–Energy–Food–Ecosystems (WEFE) Nexus approach to support a resilient EU water economy. It ensures that water governance considers ecological, social, and economic dimensions, fostering coherence and effectiveness across sectors and governance levels.

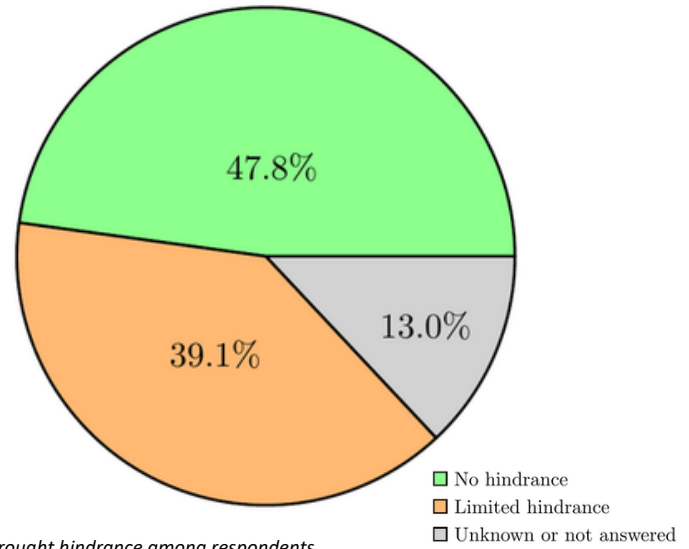


Policy brief | Upscaling of water governance Instruments | Drought-adaptation packages

This policy brief examines methodological approaches to scaling economic instruments and models for water governance. Case studies are illustrative, and broader application is possible through context-specific analysis.

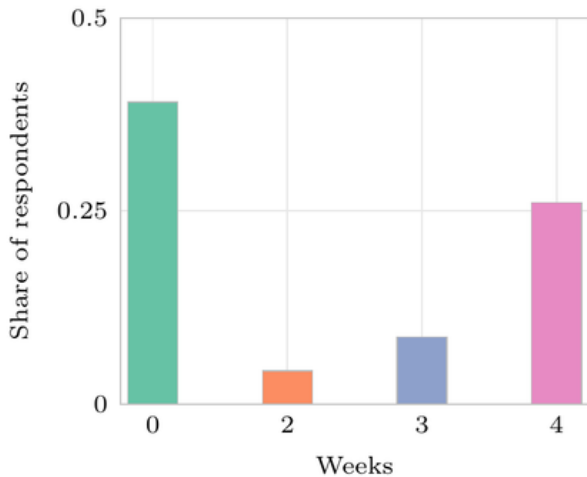
Introduction: Despite increasing water scarcity, farmer investment in adaptation has remained limited, reflecting financial barriers, behavioural biases, coordination challenges, and continued reliance on public water authorities. To address this, we need to develop drought-adaptation instruments (targeted storage subsidies, abstraction regulations, and cooperative schemes) aligned with farmer needs and incentives.

Modelling Approach: Choice experiments ask respondents to choose between hypothetical policy options, while Random Utility Models quantify marginal utilities and willingness to pay for individual components. The results reveal trade-offs across heterogeneous groups and provide quantitative evidence on behavioural and economic drivers of adaptation uptake.



Reported drought hindrance among respondents.

RETOUCH NEXUS CASE STUDIES - LESSONS LEARNED



Desired bridging time from own storage among respondents (NA responses are omitted from the figure).

RETOUCH NEXUS CASE STUDY

The HHNK case study in Noord-Holland (Netherlands) applies a CE among farmers in a low-lying, supply-constrained region, varying four attributes: weeks of abstraction ban, bridging with own storage, cooperation mode (none / with water authority / with other farmers), and annual cost per hectare. Results are linked to farm characteristics and drought experience to capture preference heterogeneity.

Results show that many farmers remain hesitant to undertake lumpy storage investments, even when willingness to pay for measures reducing the cost and risk of on-farm storage is clear. Cooperation and collective solutions should mitigate transaction costs and preserve farm autonomy. Abstraction bans are acceptable only when combined with adequate bridging support.

Indicators (data requirements and resulting insights)

- Willingness-to-pay estimates, with uncertainty caveats.
- Estimated effects of abstraction bans, storage bridging, cooperation, and cost.
- Farm differences: sector, soil, drought experience, salinisation, and existing storage.
- WEFE linkages: water availability, pumping/storage energy use, crop resilience, and ecosystem impacts.

Governance mechanisms

- Water authority-farmer dialogue on feasible drought-adaptation packages.
- Clear operating rules for drought periods and abstraction bans.
- Cooperative storage or sharing arrangements where locally feasible.
- Targeted follow-up with key sectors; co-design of policy packages.

Implications for WEFE Nexus framework

- Farmer preferences are an important input for WEFE policy design.
- On-farm storage has co-benefits.
- Policy packages need to address feasibility, trust, and risk, not only cost.

Potential Economic Instruments

- Targeted support for feasible on-farm or collective water storage.
- Cost-sharing schemes that reduce investment risk.
- Conditional abstraction rules combined with clear communication.
- Advisory services and demonstrations to reduce uncertainty.



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SCALING OUT

TO INCREASE IMPACT BY REPLICATING A MODEL IN SIMILAR CONTEXTS, PROVIDING FLEXIBILITY, RESILIENCE, AND COST-EFFECTIVE GROWTH, OFTEN FOCUSING ON SHARED FEATURES.

MODELLING STRATEGY

Choice experiments for drought-management policy design

The choice experiment (CE) methodology can be replicated in other water-authority regions across the Netherlands and similar European low-lying or drought-prone agricultural areas. The core design (fixed core CE plus local calibration step) is retained while adapting attribute levels to local conditions

Example: Replicate the same CE across 10 neighbouring water board jurisdictions in the Netherlands, or in similar EU regions (Belgian polders, northern German lowlands, East Anglian fens in the UK).

Assumptions & potential Risks:

- Attribute levels may need local calibration.
- Samples may not be directly comparable across regions.
- Governance differences in collaboration arrangements may affect interpretation.



Scaling out general framework.

Mitigation measures:

- Use a fixed core CE plus local calibration step.
- Run short pretests in each region.
- Report both regional and pooled models to enable cross-regional comparison.

SCALING UP

TO INCREASE THE COVERAGE, SIZE, CAPACITY, SCOPE, OR OUTPUT OF A MODEL TO A WIDER CONTEXT, ESSENTIALLY MAKING IT BIGGER AND MORE EFFECTIVE. IT'S ABOUT GROWING SUBSTANTIALLY, NOT JUST LINEARLY, TO PROVIDE MORE COMPREHENSIVE INSIGHTS.



Scaling up general framework.

Assumptions & potential Risks:

- Data harmonisation across basins.
- Governance complexity across institutions.
- Risk of losing local realism with strong standardisation.

ECONOMIC INSTRUMENT

Comprehensive drought-adaptation investment framework

Scaling up means broadening sample coverage to the full HHNK area and multi-basin comparisons across the Netherlands; adding policy scenarios; linking CE outputs to basin-level hydrological indicators; and estimating segmented models to capture heterogeneity by sector and area.

Example: Expanding from the pilot HHNK survey to a national-level stated-preference study feeding into the Dutch Delta Programme's drought adaptation strategy.

Mitigation measures:

- Use a two-tier setup: common core + optional local modules.
- Maintain interactive dashboard for HHNK and partners to explore alternative policy designs.

Conclusions / Final Remarks

- **Preferences drive uptake:** Farmers invest in adaptation when policies reflect what they value.
- **Combined policies outperform:** Integrated packages work better than isolated instruments.
- **Evidence before spending:** Preference studies help calibrate subsidies and cost-sharing.
- **From guesswork to evidence:** Data-driven design improves adaptation outcomes.

