Interreg Sudoe

Co-funded by the European Union

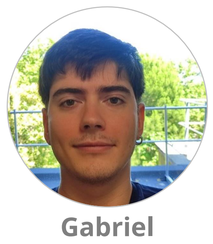
TARGET

TerritoriAl stRateGy for watEr scarciTy

Ready to Reuse ?

Public acceptance and economic externalities of reclaimed water in Portugal, Spain and Southwestern France


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MAIN OBJECTIVES

- Study the mental models of experts as a way to understand the context for the project.
- Study the social acceptability and risk perception of the population across the SUDOE area.
- Identify main externalities and valuation methods.

MAIN OUTCOMES and LESSONS

- **Expert's mental model** treat water reuse as a **unified system.**
- **Experts** overestimate public resistance.
- **Medium-High acceptability** across Spain, France, and Portugal.
- **Acceptability differences between countries** varies significantly depending on the end use, Spain shows differences in agricultural use.
- **Governance** policies must adapt to national narratives.
- **Externalities of water reuse** identified and classified by type (environmental/economic) and sign (benefits/costs).

EXPERT MENTAL MODEL

Water Scarcity

Climate change · Drought · Increasing water demand

↓

Need for Alternative Water Resources

↓

Reclaimed Water Reuse (REUT)

Technical System
Treatment processes
Water quality
Monitoring
Safety
Infrastructure

Governance
Regulation
Institutions
Stakeholders
Policies
Water management

Social dimension
Public awareness
Trust
Communication

Water Reuse Applications

Agriculture | **Urban use** | **Recreational**

↓

Sustainable Water Management

RISK PERCEPTION AND SOCIAL ACCEPTABILITY

General Risk (0 – 100)

	Agriculture	Urban	Recreational
ES	46.9^{a}*	37.3^{ab}	30.4
FR	38.6^{b}†	30.6^{b}	31.3
PT	36.8^{b}	43.0^{a}†	33.0

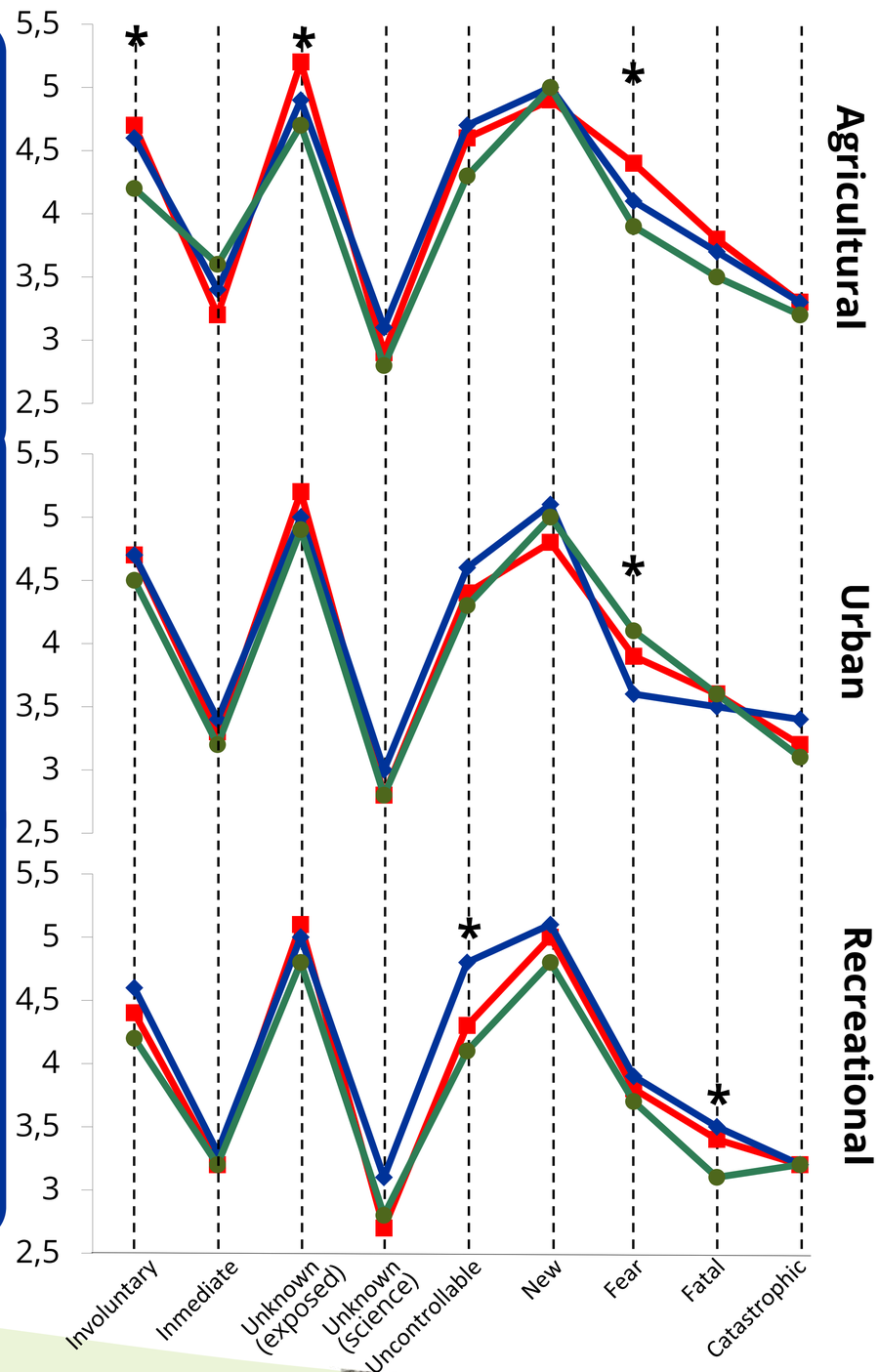
Health Risk (1 – 7)

	Agriculture	Urban	Recreational
ES	3.88^{a}*	3.31^{a}	3.05
FR	3.53^{ab}†	2.81^{b}	3.17
PT	3.33^{b}	3.46^{a}	3.01

Social Acceptability (1 – 7)

	Agriculture	Urban	Recreational
ES	4.51^{a}‡	5.24	5.03
FR	5.12^{b}	5.37§	4.96
PT	5.08^{b}	5.19	5.23

Different letters within a column: differences between countries for that use ($p < .05$, Bonferroni; acceptability in agriculture, ES vs FR and PT, $p = .002$).
* Higher than the other two uses in the same country.
† Higher than one use (urban in FR; recreational in PT).
‡ Lower than the other two uses in the same country.
§ Higher than recreational use (FR, $p = .038$).
Country × use interaction: magnitude, $F(4, 1296) = 4.93$, $p = .001$, $\eta^2p = .015$; health, $F(4, 1296) = 4.16$, $p = .002$, $\eta^2p = .013$; acceptability, $F(4, 1296) = 3.39$, $p = .009$, $\eta^2p = .010$.



EXTERNALITIES AND ECONOMIC VALUATION

Externalities: Indirect costs and benefits not accounted for in markets

No market price. Difficult to value.

	Positive	Negative
Environmental	• Save water • ↓ pollution • Biodiversity	Remaining • Microorganism • PPCPs • Heavy metals
Economic	• Save water • Other inputs • ↓ cost • ↓ Uncertainty	• Yuck factor • Resource-allocation conflicts

Valuation methods

- **Demand side**
  - **Revealed Preferences**
    - Travel cost method
    - Hedonic price method
  - **Declared Preference**
    - Contingent valuation
    - Discrete choice experim.
- **Supply side**
  - Distance function and shadow pricing
  - Cost-based and life-cycle methods

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