

Using Treated Wastewater for Agriculture in Tunisia

Farmers' and Consumers' Perspectives

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Problem Statement

- Low expected water availability by 2030: < 350 m³/year/capita (absolute water scarcity: 500 m³/year/capita)
- Agricultural irrigation accounts for more than 80% of total water consumption
- Long history of wastewater reclamation, yet reuse in agriculture still very low (< 7% of treated wastewater)

Research Objectives

- Understanding *farmers' perception and willingness* to reuse treated wastewater (TWW) for irrigation
- Understanding *consumers' acceptance* to purchase food crops produced with TWW
- Exploring *favourable conditions* to increase acceptance on farmer and consumer level

Research Questions

- What are *institutional, social, economic, and governance drivers* pertinent for farmers' perceptions of TWW reuse?
- What *factors affect consumers' acceptance* of food crops irrigated with TWW?

Empirical Approach

- Extensive literature review
- 12 semi-structured interviews at national and local levels
- Focus group with more than 22 participants
- Consumer survey at local weekly food markets (n=100)



Study location

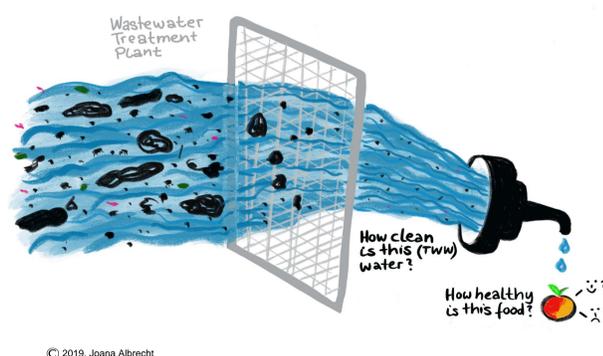
Island of Djerba and Medenine



Results

Factors influencing farmers' perception and willingness

- Institutional and coordination deficits due to multiple involved administrations and unclear working rules
- Technical inefficiency of treatment plants leads to poor TWW quality and high contamination risk
- Low trust in treatment plant operators
- Low economic incentives because of irrigation restrictions for cash crops
- Lack of awareness of benefits
- Perception of health risks



Factors influencing consumers' acceptance

- Mainly disgust & perceived health risks
- Low level of knowledge on TWW irrigation
- Over 20% living near treatment plant
 - Most claim land degradation due to effluents out of control
 - Against irrigation with TWW
 - Distrust towards plant operators and authorities monitoring plants
- 30% would not object irrigation with TWW if safety was guaranteed
- Yet, no efforts made by authorities to inform public about health risks

Conclusions

Farmers' level:

- TWW-related sectors involve many actors with different perceptions and incentives → complex governance
- Ineffective coordination and exchange of data between authorities
- Poor technical efficiency of treatment plants as source of insecurity
- Economic uncertainty as result of technical and coordination impediments and restriction for cash crop
- Social, cultural, and religious aspects are of secondary relevance for farmers' decision

Consumers' level:

- High resistance to products irrigated with TWW
- Perception of health risks causes insecurity
- Low trust in operators of treatment plants and authorities monitoring plants

Difference between perceptions of TWW:

- Farmers' attitude is driven by freshwater scarcity and need for alternatives
- Consumers show high level of awareness, perception of health risks, and insecurity about product quality

Policy Recommendations

- Ensuring transparent and reliable communication of environmental, health, and economic aspects to improve farmers' and consumers' perceptions of TWW
- Involving the public and farmers in planning, implementation, and monitoring of TWW reuse projects to increase trust in plant operators and monitoring authorities
- Improving TWW quality and removing irrigation restrictions to increase acceptance of TWW reuse by farmers
- Better defining and allocating responsibilities in wastewater management between environmental, health, and agricultural authorities to reduce conflicts, increase TWW reuse rates, and improve governance

