TRUST CONSORTIUM

Management of industrial **T**reated wastewater **R**e**U**se as mitigation measures to water **S**carcity in clima**T**e change context in two Mediterranean regions

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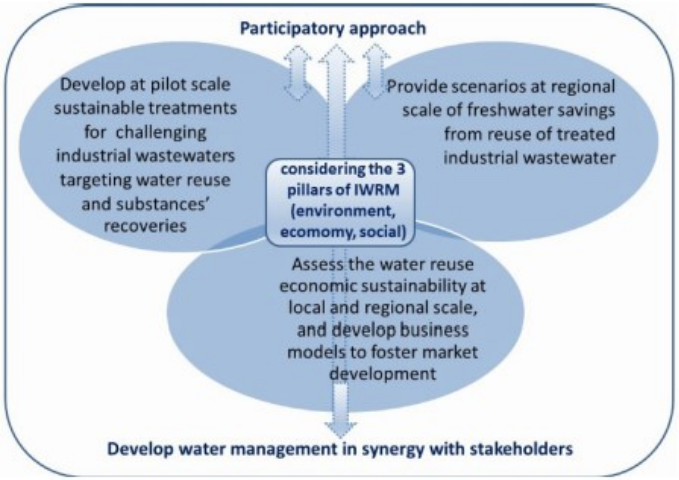
THE PROJECT

TRUST will focus on challenging cases in terms of efficient wastewater treatment of the textile and pharmaceutical industries from Tunisia and Turkey where water scarcity is a major concern and irrigation is a large water-consuming sector. By implementing appropriate advanced treatment to achieve TRL 6-7, TRUST will not only reduce the environmental impact but also save water resources by allowing reuse after pollution control. Indeed, non-conventional water such as wastewater is currently only partially reused in these regions (about 20%) but appropriate treatment would generate a new source of clean water to be used and an opportunity to enhance water security.

TRUST's water reuse strategy will also contribute reducing business instability by developing the market. In this perspective new business models will be developed according to site specific socio-economic and legal constraints and the economic assessment of the different water allocation ways will be performed.



OBJECTIVES

TRUST's specific objectives addressing the aforementioned challenges are:

1. Provide novel, environmental and economic sustainable wastewater treatment solutions for challenging industrial wastewaters, applying a circular economy approach and in a synergic collaboration between technology providers, economists and LCA expert.

2. Propose optimal management strategies based on reuse of water at multiple allocations levels, in partnership with water utilities, industries, local and regional water authorities including policymakers.

3. Present concrete scenarios highlighting the impact of water reuse and thus water resource saving in the light of climate change, taking into account the regional constraints identified by hydrologists and hydrogeologists.

4. Identify business models based on a regional approach in order to contribute in sustainable resources management and sustainable business operations through saving of fresh water, reducing operating expenses and developing regional-scale facilities.

IMPACT

TRUST's expected added values from the technical solutions are multiple: a) to close the loop in case of water and valuable substances (for example, to allow water reuse allocation for different purposes (irrigation, in industrial process, in aquifer recharge); to use the recovered salt further in textile dyeing processes; to combine recovery/savings of valuable resources and energy, b) enhance the use of chemicals with less environmental impacts while efficiently depolluting wastewaters, and c) to give clues to adapt these innovative treatment processes to other industries' wastewaters in a circular economy approach.

Turkish textile industry case study- Recovery

Resource	Recovery targets	WarUsers/End-users
Water from textile industry treated effluent	70% Class B* water reuse	Texile Industry Agriculture
Water from textile industry treated effluent	30% Class A* water reuse	Agriculture
Salt	100% recovered	Textile Industry
Catalyst and clay Adsorbent	100% recovered	Ceramic Bricks Cement Industry
Sludge***	00% OM** reused	Fertilized Industry

*In Turkey, the permissible maximum concentrations and the limits of hazard degree were determined according to the irrigation system and the irrigated area; **OM: organic matter; *** 60% decrease of volume

Pharmaceutical industry case study- Recovery

Resource	Recovery targets	Water Users/End-users
Water from textile industry treated effluent	100% water reuse	Water Utility Farmers
Adsorbent from hybrid Ads/UF step	100% reuse of adsorbent clay	Ceramics Industry Brick manufacture

Benefits: *no-loading to sewer of industrial textile effluent, **freshwater savings