

## Objectives

The main objective of the Action proposal is to develop a multi-disciplinary network to provide insight into which of the current challenges related to the wastewater reuse practice, are the most concerning from both public health and environmental perspectives (e.g. chemical and biological hazards, crops' uptake), and how these can be overcome. The Action proposal will a) deliver best-practice advice to practitioners, and solid scientific knowledge to decision makers/public, b) develop uniform means for assessing the quality of the wastewater in respect to contaminants of emerging concern and also ARB&Gs, c) establish specs for technologies able to produce wastewater with minimal levels of such contaminants, and d) compile valid and reliable information to be used in regulatory frameworks. This way the COST Action proposal aims to enhance and valorize wastewater reuse, contributing to European scientific and technological excellence, to the society and economy.

## Abstract

Wastewater reuse is currently considered globally as the most critical element of sustainable water management. Water scarcity, foreseen to aggravate, pushes for maximum utilization of non-conventional water. Although reuse is accompanied by a number of benefits, several potential drawbacks still puzzle scientists. The applied treatments fail to completely remove microcontaminants, antibiotic-resistant bacteria and/or their genes (ARB&Gs). Knowledge on the actual effects of reuse with regard to these aspects is currently not consolidated.

This Action proposal will answer critical questions through a European multidisciplinary network, structured in interactive Working Groups (WGs), to achieve:

- identification of the microbiome and mobile antibiotic resistome in treated wastewater,
- assessment of the potential for uptake/transmission of microcontaminants and ARB&Gs in crops,
- determination of effect-based bioassays required for wastewater reuse,
- identification of efficient/economically viable technologies able to meet the current challenges and,
- development of a relevant risk assessment and policy framework.

The Action proposal intends to establish criteria on technologies/assessment methods for wastewater treatment, and suggest new effluent quality criteria to overcome current barriers and safeguard the reuse practice. The Action is expected to have a major impact on the enhancement of sustainable wastewater reuse in light of current challenges at technological, economical and societal level.

## Keywords

wastewater treatment and reuse, microcontaminants, antibiotic-resistant bacteria and genes, crops' uptake, quality standards and risk assessment

## Working Groups

WG1: Microbiome and mobile antibiotic resistome in treated wastewater and in downstream environments

WG2: Uptake and translocation of organic microcontaminants and ARB&Gs in crops

WG3: Effect-based bioassays required for wastewater reuse schemes

WG4: Technologies efficient/economically viable to meet the current wastewater reuse challenges

WG5: Risk assessment and policy development

## Action Proposer

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## International Partner Countries

Australia, Singapore, South Korea, USA



## Participants

Interested Countries: 26

Proposer: **CY**

AT, BE, CH, CZ, DE,  
DK, EE, EL, ES, FI,  
FR, HR, IE, IL, IT, LU,  
NL, NO, PL, PT, RS,  
SE, SI, SK, TR, UK



## Action website

[http://www.cost.eu/domains\\_actions/essem/Actions/ES1403](http://www.cost.eu/domains_actions/essem/Actions/ES1403)