



PRIMA
PARTNERSHIP FOR RESEARCH AND INNOVATION
IN THE MEDITERRANEAN AREA

CALL TEXT AND SUPPORTING INFORMATION

Call: Section 1 – Management of Water 2018

RIA Call – Topic 1: Water reuse and water desalination for agricultural and food production

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Challenge

In a scenario where the fresh water available for agriculture and food processing industries is not enough to cover the current demand and additional gains in the water use efficiency are difficult to achieve, re-using water for multiple purposes is a possible solution. The challenge, in this sense, is to provide end-users with new more economically feasible water treatment technologies, taking into account the main environmental, socio-economic and legal and/or institutional constraints regulating the adoption of these technologies.

Scope

The reuse of wastewater is one of the main options available for water-supply decision-makers in the field of a sustainable water and soil management, of agro-food chain production and agriculture. However, in the Mediterranean, water reuse faces numerous barriers. Among them, regulatory, safety risks, economic including energy concerns and social acceptance can be currently defined as the main barriers considering that 1) safety risks (environment, human health) have been linked to the use of improperly treated wastewater; 2) treatment costs particularly linked to the energy and 3) public acceptance of reclaimed water varied according to its potential use. In addition, in the Mediterranean area treated wastewaters usually have the drawback of their salinity levels, which might limit the mid, long-term crop productivity. As a consequence, energy-efficient desalinization and other treatments, comprising technological and nature-based solutions (NBS), should be developed for treating both wastewater from municipal and industrial use. The seawater desalinization is an important source of water resources in certain areas of the Mediterranean region. Issues regarding the disposal and treatment of brines after seawater or wastewater treatment should be considered to ensure a low impact of water treatment on the environment, or in the fishery practices. On the other hand, treated wastewater can be also a source of nutrients, particularly for crop production, which should be better valorised and wastewater treatment technologies able to selectively maintain important macro-nutrients should be promoted. Innovative technologies, including those based on bioengineering and advanced materials such as nano-materials, and techniques like NBS and ecosystem-based approaches, may be developed to increase energy efficiency reduce pollutants loads including pathogens and emergent pollutants (i.e. pharmaceutical residues), in order to produce water of appropriate quality regarding the uses. For irrigation, appropriate practices and techniques should also promoted to ensure good water reuse applications conditions at field level, to avoid clogging of drip irrigation systems, soil degradation and nutrient leaching to the environment. In addition, wastewater treatment techniques have to be developed not only for a direct reuse of water for agriculture, but also for an indirect use, considering hybrid approach including aquifer storage recovery. The recharge of reclaimed water into the subsoil can be considered as an additional treatment, reducing the cost and energy needs. Recharge into coastal aquifers may be considered as a hydraulic barrier against salt water intrusion. Finally, multidisciplinary studies should be enriched by analysing the economic and environmental suitability of the current implementation of the system, taking also into account the agronomic and food processing validation needed for its implementation, as well as the public acceptance. Under this proposed multi-actor approach, different type of entities should be involved in the proposals; industrial entities (including SMEs) should play an important role, having a great potential for further replication and market uptake of the solutions developed. Innovative development of circular economy (i.e. zero waste concept, nutrients reuse) could also be proposed in the field of agro food chain production, considering the recycling of production water, in terms of quantity and quality.

Expected impact

Depending on the specific approach to be defined by the submitted proposal, some of the specific expected impacts should be achieved:

- Increasing the quantity, quality and safety of non-conventional water use for agriculture and food processing (direct use and indirect use of reclaimed water, i.e. artificial recharge, aquifer storage recovery approach)
- Increasing the efficiency of water management systems with particular regard to energy and water smart infrastructures
- Decreasing the cost of treating wastewater and, particularly, desalination by using more energy-efficient processes
- Obtaining socio-economic, environmental (soil conservation and nutrient pollution in particular) and technical information to influence Mediterranean countries policies in terms of wastewater use
- Deriving new solutions for brine disposal considering a holistic approach for desalination water

Supporting information for the Section 1 Call for Proposals, Topic 1: “Water reuse”

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| Type of action | Research & Innovation Action (RIA) |
| Total indicative amount allocated to this Call | € 6,1 million |
| Funding level | According to Horizon 2020 rules <i>Funding rate: 100%</i> |
| Technology Readiness Levels (TRL) | 3 to 5 |
| Expected number of grants | Up to 3 (projects up to € 2,033 million each, – indicative amount) |
| Eligibility conditions for participation | Please refer to the Guidelines for Applicants – Section 1 2018 |
| Submission and evaluation procedure | Two-stage application procedure. For the first stage, a short proposal (maximum 10 pages) must be submitted by the first deadline. Successful applicants in the first stage will be invited to submit a full proposal (maximum 70 pages) for the second stage. A timeline for the submission and evaluation of applications can be found in the Guidelines for Applicants – Section 1 2018. |

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| Evaluation rules | The award criteria, scoring, thresholds and weightings for RIAs are listed in the Guidelines for Applicants – Section 1 2018. |
| Grant agreement | PRIMA grant agreement (multi-beneficiary), based on Horizon 2020 Model Grant Agreement |
| Consortium agreement | Participants in projects resulting from this Call for Proposals will be required to conclude a consortium agreement prior to the conclusion of the PRIMA grant agreement. |