- implementing the Sustainable Development Goals (SDGs), in particular SDG 12 'Ensure sustainable consumption and production patterns', as well as the conclusions of the COP21 Paris Agreement[14].

Type of Action: Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

CIRC-02-2016-2017: Water in the context of the circular economy

Specific Challenge: The European water sector has a prominent position in economy and society, but it is very diverse and fragmented. It needs to revolutionise the way public and private actors work together so as to address water-related challenges and seize on opportunities strengthening a demand-driven approach. A systemic approach, incorporating both the physical structure of the system and the rules governing the operation, performance and interactions of its components, could address those issues in an integrated manner. Such an approach should go beyond the pursuit of wastewater treatment and reduction of water use to inspire technological, organisational and social innovation through the whole value chain of water (i.e. water as a resource, as a productive input and as a waste stream), moving towards a circular economy approach.

More specifically, with an increasing global demand for food, feed and fibre, the demand for nutrients is growing. Although increasing food and biomass production necessitates a higher application of nutrients, current fertilisation practices use resources inefficiently. At the same time accumulation of nutrients is causing major environmental problems. The EU legislation is already aiming at regulating nutrient emissions to the environment but more can be done to encourage a transition to an efficient nutrient recovery and recycling. Water is the most used carrier of nutrients and, at the same time, an important resource itself. Water treatment management models and technologies have the potential to create new business opportunities for an extensive nutrient recovery and contribute to the circular economy. However, an extensive implementation of integrated nutrient recovery technologies and the use of the recovered nutrients at European level is still lacking and this is proposed to be addressed in the 2016 call for proposals**.**

HYDROSMART

In addition, today's water services aim mainly to save water and to improve its quality. However, water becomes more and more a scarce resource as a result of urbanisation, increased competition between various uses, economic sectors and extreme weather events. To deal effectively with these pressures, there is a need for improving water systems by considering the whole water-use production chain and by identifying solutions that enhance both the economic and environmental performance of the system. These innovative solutions should be in line with the objectives of the circular economy, contributing to the challenges of

[14] The Paris Agreement was adopted at the 21st Conference of the Parties (COP) of the United Nations Framework Convention on Climate Change, in Paris on 12 December 2015.

a depletion of raw materials (e.g. through the recovery of resources from waste water) and climate change (reducing energy needs or producing energy) and should be demonstrated at large scale. This is proposed to be addressed in the 2017 call for proposals.

Scope: Proposals shall address **one** of the following issues:

a) Demonstrating the potential of efficient nutrient recovery from water (2016): The objective of this topic is to implement large scale demonstration projects to tap the potential of nutrient recovery and to encourage the use of these nutrients throughout Europe. Projects should cover the whole value chain from recovery of nutrients to their recycling. The demonstration may involve recovery technologies implemented in any water sector (i.e. industrial, agriculture, or municipal). Treatment schemes should be optimised to allow better recovery rates and material qualities adapted to users' needs and capacities. A life-cycle assessment approach should be used together with environmental and health risk assessment methodologies. New business models exploiting the benefits associated with nutrient recovery and recycling should also be implemented and tested. The proposals should include an outline business plan which can be developed further in the course of the project. Relevant legal, societal and market challenges affecting the recycling of recovered nutrients and their market uptake should be addressed. Involvement of social sciences and humanities disciplines is deemed necessary, for instance to address issues such as attitudes to and acceptance of recycled products. Prospective end-users need to be involved in the projects, informing them about the quality and safety requirements to be met by the products derived from nutrient recovery, thus ensuring the involvement of the demand side to increase market success. Proposals should include participation of industry partners from relevant sectors, and active participation of SMEs where relevant.

This topic supports the implementation of the EIP Water, addressing several priority areas such as water and wastewater treatment, including recovery of resources, and water reuse and recyling.

Where technological innovation is concerned, TRL 5-7 should be achieved.

The Commission considers that proposals requesting a contribution from the EU of between EUR 6 million and EUR 8 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

HYDROSMART

b) Towards the next generation of water systems and services – large scale demonstration projects (2017): The objective of this topic is to demonstrate innovative solutions at a large scale (i.e regions, cities and/or river basins), in line with EIP Water priorities and the objectives of the Water Framework Directive. Proposals should focus on developing the water services of the future, going beyond water supply sustainability addressing the different water value chains. They should integrate, for instance, the management of water resources and the provision of water services, expanding the re-use of treated waste water and the use of desalinated water (where appropriate), ensuring carbon

neutral water services, and closing the water cycle by increasing the efficiency of wastewater treatment plants, including the recovery of energy and the re-use of chemicals and nutrients.

Projects should build on experience already gained in areas where integration of various aspects of water management and other economic and social activities is already taking place at different levels, with replication potential in other areas of Europe or at wider scale, thus demonstrating a real added-value at EU level. Successful projects should engage all relevant stakeholders, especially user communities, at an early stage in the co-creation process, bringing together technology push and application pull. This is also necessary to show the potential of using systemic eco-innovative approaches in water, to overcome related barriers and bottlenecks and to create new opportunities for jobs and growth in various regions and river basins. Participation of industry partners from relevant sectors is considered essential and the active participation of SMEs is encouraged. The application of new business models and new value chains is encouraged. The proposals should include an outline business plan which can be developed further in the course of the project. Where relevant, integrated environmental impact assessments and risk assessment of potential harmful substances should be considered. Relevant socio-economic issues, in particular, regulatory/governance issues, social behaviour and acceptability should also be addressed, requiring the participation of social sciences and humanities disciplines such as political sciences, economics, governance and business studies. To enhance the systemic approach and the transformation of water services toward a more circular economy approach, digital technologies and ICT tools should be also considered. Activities aiming at facilitating the market uptake of innovative solutions, including standardisation, should also be addressed.

WWT INDUSTRY
TOURISM INDUSTRY
Agricultural INDUSRY

NEW MANAGEMENT NORM BY HYDROSMART

Within the projects funded, additional or follow-up funding should be sought, be it private or public, so as to achieve a more effective implementation and deployment at larger scale and scope of the innovative solutions addressed. Additional funding sources could include relevant regional/national schemes under the European Structural and Investment Funds (ESIF), such as under the European Regional Development Fund (ERDF), or other relevant funds such as the Instrument for Pre-accession Assistance (IPA II). In these cases, contacts could be established with the funds' managing body during the duration of the projects. In case of relevance for the Research and Innovation Smart Specialisation Strategies, the project proposals could already indicate which interested regions/countries have been pre-identified. Please note, however, that reference to such additional or follow-up funding will not lead automatically to a higher score in the evaluation of the proposal.

Where technological innovation is concerned, TRL 5-7 should be achieved.

US-O3 et al.

The Commission considers that proposals requesting a contribution from the EU of a range of EUR 10 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

For both (2016 and 2017): Within the projects funded, possible regulatory barriers should also be addressed, as appropriate. In particular 'Innovation Deals' may be proposed. By

'Innovation Deal' an innovative better regulation instrument is understood, in the form of voluntary agreements with external stakeholders to identify and overcome regulatory barriers to innovative solutions that would enable policy or legislative objectives to be better achieved.

Expected Impact: Projects are expected to contribute to:

a)

- decreasing the dependency on primary nutrient resources and increasing the supply security at European level;
- reducing the adverse effects of nutrient emissions on the environment;
- closing the water and nutrients cycles in the whole production and consumption value chain;
- improving the quality of data on nutrient flows, thus providing important information for investments into the recycling of recovered nutrients;
- creating new green jobs and industries around nutrient recovery and recycling, including exports;
- creating new business opportunities for industry and SMEs in the EU, contributing to the exploitation of EU innovative solutions, and improving the competitiveness of European enterprises in the global market for eco-innovative solutions;
- improving the policy and market conditions in Europe and globally for large scale deployment of innovative solutions;
- providing evidence-based knowledge regarding the enabling framework conditions (such as the regulatory or policy framework) that facilitate a broader transition to a circular economy in the EU.

b)

- significant reduction of the current water and energy consumption at regional and/or river basin scale by closing the cycles of material, water and energy, using alternative water sources and supporting the transition towards smart water services; HYDROSMART
- interconnectivity between the water system and other economic and social sectors;
- increased public involvement in water management; WrC-UNIUD
- increased citizen satisfaction with water services;
- replication of new business models in other areas and replication of models for synergies between appropriate funding instruments at regional, national or European level;
- closing of the infrastructure and investment gap in the water service sector;

- creation of new markets in the short and medium term;
- providing evidence-based knowledge regarding the enabling framework conditions (such as the regulatory or policy framework) that facilitate a broader transition to a circular economy in the EU;
- implementing the Sustainable Development Goals (SDGs), in particular SDG 12 'Ensure sustainable consumption and production patterns' and SDG 6 'Ensure availability and sustainable management of water and sanitation for all', as well as the conclusions of the COP21 Paris Agreement[15].

Type of Action: Innovation action

The conditions related to this topic are provided at the end of this call and in the General Annexes.

CIRC-03-2016: Smart Specialisation for systemic eco-innovation/circular economy

Specific Challenge: Regions are key players in the transition to a circular economy and can together create new circular economy value chains with critical mass. However, knowledge of each other's strengths and the available resources and services is often limited. Developing joint strategies, built on complementarities and respective strengths, can therefore be valuable for better realising their individual and combined potential.

Scope: The purpose is to support a transition towards the circular economy in European regions in synergy with Smart Specialisation strategies. A systemic approach should be adopted that seeks connections between sectors, value chains, markets, natural resources and relevant societal actors. The project should develop a coherent EU reference framework enabling and encouraging regions and Member States to establish operational synergies between R&I investments from Horizon 2020 and the European Structural and Investment Funds leading to market uptake and replication of innovative solutions. The developed reference framework should include recommendations for policy makers, in particular in EU Cohesion countries, providing guidance on how to invest European Structural and Investment Funds to support the transition to a circular economy within the context of existing smart specialisation strategies.

Participants must be regional authorities and/or national/regional/local structures responsible for the implementation of Smart Specialisation strategies.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1 million and EUR 1.5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

[15] The Paris Agreement was adopted at the 21st Conference of the Parties (COP) of the United Nations Framework Convention on Climate Change, in Paris on 12 December 2015.