

**Thematic Annual Programming Action (TAP)  
AquaticPollutants  
Implementation Plan for cluster of excellence  
RedCoPollutants**

**October 2022**

# Table of Contents

<b>List of Abbreviations</b>	3
<b>1. Joint Programming Initiatives</b>	4
<b>2. Thematic Annual Programming Action</b>	5
<b>3. AquaticPollutants TAP Overview</b>	5
Expected Impact of AquaticPollutants TAP	7
<b>4. Implementation Plan</b>	7
4.1.TAP Kick-off	9
4.2 TAP Alignment and Implementation Plan	9
Building a critical mass cluster (cluster of excellence)	9
Mapping national core activities and outputs	10
Definition of specific outcomes	11
Alignment of activities	11
Development of the Implementation Plan	12
4.3 Sustainability of RedCoPollutants	15
<b>ANNEX 1</b>	17
<b>ANNEX 2</b>	18

## List of Abbreviations

ARB:	Antimicrobial resistant bacteria
BAP:	Best Available Practices
BAT:	Best Available Technologies
CEC:	Contaminants of emerging concern (including chemicals, pharmaceuticals, microplastics, pathogens, ARB and antimicrobial residues)
EAP:	Environmental Action programme
EAA:	Environmental Agency
ERA:	European research Area
EU:	European Union
JPI:	Joint Programme Initiative
RDI:	Research, Development and Innovation
SRIA:	Strategic Research and Innovation Agenda
STV:	Short term Visits
TAP:	Thematic Annual Programming
UN-SDG:	United Nations Sustainable Development Goal

# 1. Joint Programming Initiatives

One of the ambitions of the European Union (EU) is to build a strong European Research Area (ERA). This concept was launched in 2000 to achieve a single, borderless market for research, innovation, and technology across the EU. The ERA helps countries to be more effective together, and enables a better cross-country cooperation, building a critical mass and favouring a continent-wide competition<sup>1</sup>.

To support the ERA, the European Commission fosters synergies between research, development, and innovation (RDI) programmes of the EU countries and its own programme. With this aim the Joint Programming Initiative (JPI) concept was launched in 2008. JPI are intergovernmental collaborations created to tackle major societal challenges. JPIs mobilise existing national and regional RDI programmes trying to define a unified focus on a specific RDI priority theme across Europe that cannot be addressed by individual European and international countries alone. The final idea is to harmonise the national and regional research agendas of their members and to promote cross-border collaboration and cooperation for a higher RDI efficiency and effectiveness. In this way, synergic results and mutual benefits can be achieved while duplication is minimized.

The JPIs identify relevant specific topics as well as experts and stakeholders from different countries and regions to discuss their challenges and findings looking for sustainable solutions as well as to identify knowledge gaps for future research activities. Based on this Vision, the Strategic Research and Innovation Agendas (SRIA) are developed, which include the core research themes and priorities to be addressed through coordinated actions.

One of the identified priorities is the quality of water since it is expected to deteriorate substantially over the next decade, leading to impacts on human health, water security, the environment and affecting sustainable development. Three JPIs have identified in their SRIA the presence of pollutants and pathogens in water resources, as a priority research challenge:

- The JPI on “Water challenges for a changing world” (JPI Water) aims to achieve sustainable water systems for a sustainable economy in Europe and abroad<sup>2</sup>. According to the Water JPI Vision 2030<sup>3</sup> “Together for a Water-secure World” there is a roadmap of activities to achieve safe, clean, and sustainably managed water resources for all.
- The JPI on “Healthy and Productive Seas and Oceans” (JPI Oceans) aims to increase the efficiency and impact of research and innovation for sustainable healthy and productive seas and oceans<sup>4</sup>. The JPI Vision establishes that together we can enable the transformation towards a sustainable blue economy whilst fostering the health and productivity of seas and oceans. The mission is to facilitate the efficient provision of expert knowledge and innovative solutions to enable informed policy delivery and economic development that ensures sustainably healthy and productive seas and oceans.
- The JPI on “Antimicrobial Resistance” aims to curb antimicrobial resistance with a One Health perspective<sup>5</sup>. It supports the development of solutions to decrease the transmission of resistant bacteria. The role of the environment in the persistence, selection and spread of antimicrobial resistance is highly important.

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<sup>1</sup> [https://ec.europa.eu/info/research-and-innovation/strategy/strategy-2020-2024/our-digital-future/era\\_en](https://ec.europa.eu/info/research-and-innovation/strategy/strategy-2020-2024/our-digital-future/era_en)

<sup>2</sup> <http://www.waterjpi.eu/>

<sup>3</sup> <http://www.waterjpi.eu/water-jpi-vision>

<sup>4</sup> <https://www.jpi-oceans.eu/en/about>

<sup>5</sup> <https://www.jpiamr.eu/about/who-we-are/>

## 2. Thematic Annual Programming Action

Each of the JPI defines a strategic roadmap of activities to facilitate the cooperation between the Member States and Associated countries involved in the JPI. In particular, the strategic roadmap identifies specific goals, in the form of activities, for an agreed timeline and for a defined RDI priorities in line with the SRIA. In this context, Thematic Annual Programming (TAP) Action is one of the alignment tools.

The TAP Action enables to establish a network or cluster of excellence with experts from several national projects focussed on the same specific RDI priority topic to create a critical mass in Europe. Participation in a TAP topic is on a voluntary basis in order to integrate and share knowledge, infrastructure, data and modelling tools, training and capacity building, as well as improved communication and networking with stakeholders and the scientific community. This cluster will allow coordination between the individual projects, lead to a greater impact at the European level, addressing research gaps and avoiding duplication.

In this context, the ERA-NET Cofund AquaticPollutants TAP Action has been created following the priorities identified in the SRIAs of three JPI on Water, Oceans and Antimicrobial Resistance. The key challenges that require a coordinated multidisciplinary effort to tackle them are:

- Deterioration of water quality and quantity
- Sustainable use and management of water resources
- Transmission of antimicrobial resistance bacteria
- Impacts on human, animals, plants and ecosystems

The participating funding agencies invited national funded projects to join a TAP Action considering:

- Participating funding organisations include the same topic description in their own national calls for 2020-2022. A part of the national project budget would be dedicated to networking activities with the other projects funded under the TAP action. Participating national research funding agencies will then select projects interested in the TAP action according to their national criteria, or
- Participating funding agencies identify national research projects awarded from their running national projects, which are relevant to the theme of the TAP Action and will be running until the end of 2023. Funding organisations invite the coordinators of these projects to join the TAP Action with either additional new national funding or using their existing budget to cover the TAP Action-related activities.

TAP activities include working meetings which will allow exchange on approaches, methods, and data, as well as any other cooperation activity defined for the benefit of the TAP.

## 3. AquaticPollutants TAP Overview

The ERA-NET Cofund AquaticPollutants aims at pooling resources from participating research programme owners / managers from European, associated and third countries to implement a joint transnational call for proposals with European Commission co-funding (Call 1) and two additional calls (Call 2 and 3) with European Commission support for implementation. All three calls are interconnected by mutual complementarity.

The AquaticPollutants TAP Action has the role of the third ERA-NET Cofund AquaticPollutants call (second additional call). It is a network of national projects focussed on the specific RDI needs that addresses topics close to the AquaticPollutants call content. This TAP Action is open to all members of

ERA-NET Cofund AquaticPollutants and members of the participating JPIs. To participate in the Action, interested funding organisations have selected projects within the RDI theme to build the TAP cluster of excellence on emerging pollutants and pathogens. Thereby, the Action will create an opportunity for broader cross-border cooperation, greater collaboration, and a more unified focus on water quality RDI across Europe and beyond. It will allow coordination between the individual projects, lead to a greater impact at the European and global level, and address research gaps whilst avoiding duplication of Research and Innovation efforts.

AquaticPollutants integrates the needs considered in SRIAs of JPIs on Water, Oceans and Antimicrobial Resistance and creates a critical mass of experts with a multi-disciplinary approach including economic, ecological, societal, and technological disciplines and perspectives. Within AquaticPollutants the **RedCoPollutants Cluster** is integrated, whose overview is summarized in table 1.

Table 1.- General TAP overview (information extracted from [the TAP call text](#)).

Fields	<ul style="list-style-type: none"> <li>✓ Clean and healthy aquatic ecosystems (freshwater, groundwater, marine).</li> <li>✓ Risk management of contaminants of emerging concern (CEC)</li> <li>✓ Control of CEC spread in the environment “from the source to the mouth”.</li> </ul>
Theme	Measuring inputs and taking actions to reduce CEC in aquatic ecosystems (inland and marine) and subsequent impacts on human, animal, plants and ecosystems.
Ultimate goal	Broaden and/or transfer knowledge on the characterization and CEC transformation, physical, chemical or biological, and methodologies and strategies to monitor, remediate or reduce these contaminants in aquatic ecosystems.
Duration	January 2022 to December 2023
Funding Agencies of the cluster RedCoPollutants	<ul style="list-style-type: none"> <li>✓ Czech Republic, CZ (represented by TA CR)</li> <li>✓ France, FR (represented by ANR)</li> <li>✓ Ireland, IE (represented by EPA)</li> <li>✓ Spain, ES (represented by AEI)</li> </ul>
Coordination	TA CR in the Czech Republic
Scientific coordination	Angeles Blanco Complutense University of Madrid, Spain
Goals	<ul style="list-style-type: none"> <li>✓ Broaden and/or transfer knowledge on the characterization and transformation of CECs (physical, chemical, or biological).</li> <li>✓ Methodologies and strategies to monitor, remediate or reduce CECs in aquatic ecosystems.</li> <li>✓ Alignment between the individual projects, avoiding duplication across Europe.</li> <li>✓ Greater impact at the European level, and beyond.</li> <li>✓ Identifying research gaps.</li> </ul>
Activities	<ul style="list-style-type: none"> <li>✓ Creating an international network of national projects.</li> <li>✓ Exchange of knowledge, data and results.</li> <li>✓ Find collaboration opportunities and synergies.</li> </ul>
Outcome	<ul style="list-style-type: none"> <li>✓ Creation of a leveraging network, which would not exist without this action – increasing transnational synergies of projects funded in national schemes.</li> </ul>

## *Expected Impact of Aquatic Pollutants TAP*

To achieve the Water JPI Vision "Together for a Water Secure World" urgent RDI actions are needed to develop smart solutions, at the European level, to ensure the protection of water bodies and ecosystems and their biodiversity in a Changing World. In this context, relevant research for minimizing the discharge of new CEC, including chemicals, pharmaceuticals, microplastics, pathogens, antimicrobial resistant bacteria, and antimicrobial residues, are needed.

The conservation of ecosystems and their biodiversity is required to support the implementation of the United Nations (UN) Sustainable Development Goals (SDGs), especially SDG 6 with its objective to "ensure availability and sustainable management of water and sanitation for all by 2030", SDG 14 focuses on "life below water", and SDG 15 related to "life on land". For example, indicators of the SDG 6 in target 6.3-Water quality and wastewater and 6.6-Water related ecosystems, shows that the situation is critical and it is needed to better understand new pollutants, impacts, fate in the environment; integrate water quality in hydrological models; nature based solutions; product replacement; incentives cost recovery; feedback from down-to up-stream; understand multiple stresses, tolerance limits, tipping points and fragmentation; valuation of ecosystem services, etc.

Generated knowledge will contribute to policy development and implementation affecting a relatively wide range of European initiatives such as the 8th Environment Action Programme (EAP); the EU Biodiversity Strategy; the Water Framework Directive; the Marine Strategy Framework Directive, the EU Nature Directive or the EU Green Deal, among others. For example, sustainable water use is required to decouple economic growth from resource use as an important part of the EU Green Deal strategy of transforming the EU into a modern, resource-efficient and competitive economy to fight against climate change and environmental degradation. Furthermore, the identification of knowledge gaps will be taken into consideration in new RDI work programmes of Horizon Europe and the Water4All Partnership, which will complete the revision of its SRIA by 2025.

## 4. Implementation Plan

The success of the TAP Cluster is determined by the commitment, involvement and contribution of all participants in the Implementation Plan. Coordination of each task falls to the Scientific Coordinator with support from the TAP Facilitator and national funders. Specific roles and responsibilities and the modus operandi are identified in the TAP Terms of Reference.

The TAP Cluster will bring added value by generating high added value knowledge to reduce the impact of CEC on humans and ecosystems and in specific for researchers, funders, policy-makers and stakeholders:

### Added-Value for Researchers

- Foster knowledge exchange and transfer.
- Build the researchers' capacity through integrated, transnational and multi-disciplinary approaches and exchanges of Good Practices.
- Provide the researchers with enhanced opportunities for mobility and sharing of/access to infrastructure.
- Allow researchers to inform the contents of the Strategic Research & Innovation needs for future funding.
- Provide researchers with opportunities for networking inside and outside the TAP.

- Integration within other formal Networks as for example NORMAN that enhances the exchange of information on emerging environmental substances and encourages the validation and harmonisation of common measurement methods and monitoring tools.
- Facilitate the application for other funding at international and national level.
- Facilitate cooperation resulting in high-impact publications.
- Improve the researchers' awareness of research priorities in other countries and how their needs overlap.

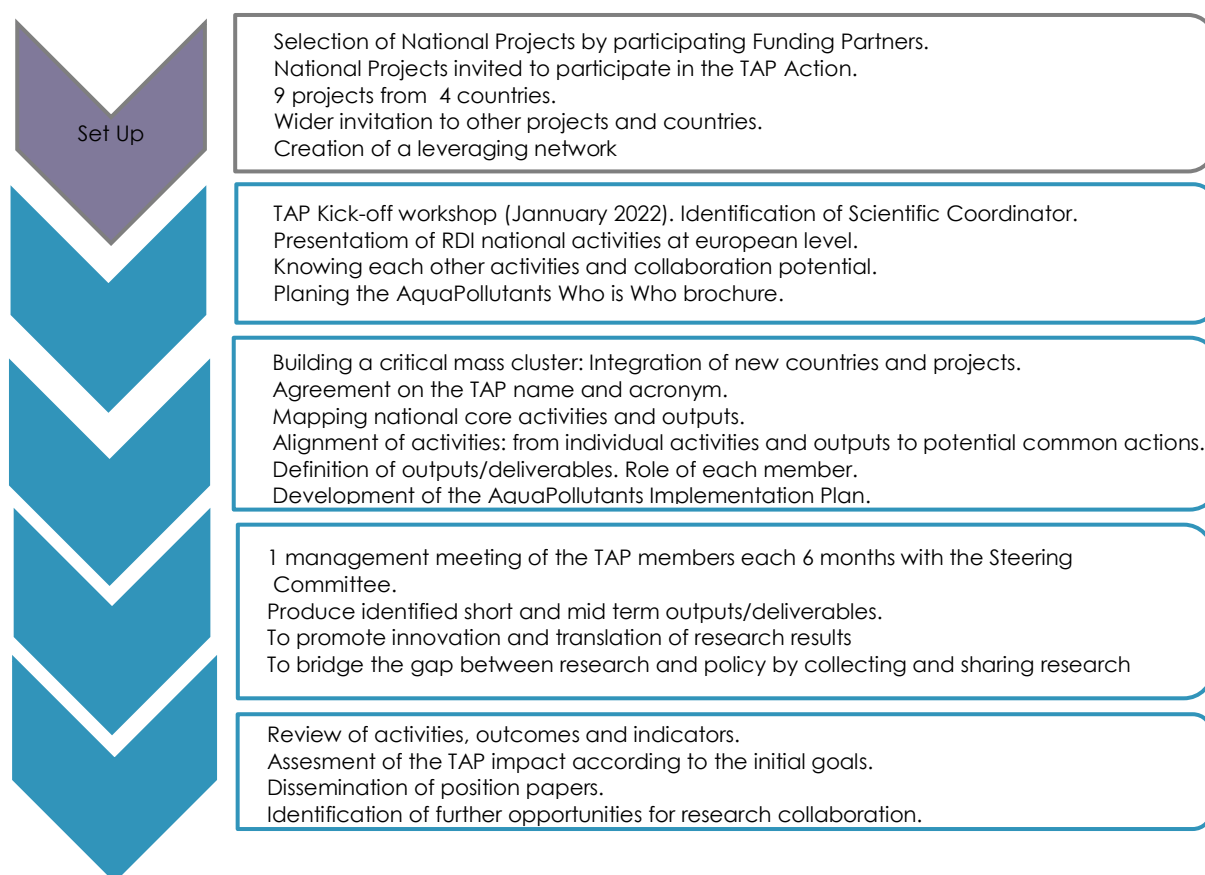
#### Added Value for Funders

- Ensure that the solutions developed by nationally funded research and innovation have a greater impact on & greater relevance to stakeholders and society.
- Benefit from other national programs to contribute to Global Societal Challenges.
- Bring together researchers in a more collaborative manner.
- Contribute to alignment at project, researcher and institution level.

#### Added Value for Policy-Makers and Stakeholders

- Provide policy briefs on which they can rely.
- Narrow the gap between science and stakeholders<sup>6</sup>.
- Provide a more holistic view of water challenges based on multi-stakeholders' approach.

The TAP Cluster has five phases as outlined in Figure 1.



**Figure 1:** Description of the phases of activity of the TAP Cluster.

<sup>6</sup> Stakeholders in this case may include for example: RDI funding bodies & programmes, enterprises, Water utilities & river basin management bodies, EC, policy makers, public.



## 4.1. TAP Kick-off

The kick-off meeting took place on-line, on January 20<sup>th</sup>, 2022. Twenty participants connected to the workshop from 5 European countries: 4 Steering committee organisations and 9 national projects from Czech Republic, France, Ireland, and Spain and 3 external organisations from Czech Republic and Germany. Among the external organisations there were representatives of the AquaticPollutants Transfer Project (TP), the second AquaticPollutants joint call.

Nine nationally-funded projects were invited to present a summary of their activities and outputs:

- ANTARES, Universidad de Compostela, Spain by Francisco Omil (drop out after the meeting)
- ARG Tech, University of Chemistry and Technology, Prague, Czech Republic by Jan Bartáček
- Change4Water, T. G. Masaryk Water Research Institute, Czech Republic by Lada Stejskalová
- CHYPSTER, INRAE, UR RiverLy, Villeurbanne, France by Marina Coquery
- CYTOSREMOVAL, Complutense University of Madrid, Spain by Angeles Blanco
- HOPEM T. G. Masaryk, Water Research Institute, Czech Republic by Přemysl Soldán
- Pharma\_CARE, LIEC Lorraine University, CNRS, France by Laetitia Minguez
- PIER, National University of Ireland Galway, Ireland by Dearbháile Morris
- Mic Giver, CEDRE, France by Stephane Le Floch (presented after the meeting)

The role of the TAP members is to actively find collaboration opportunities and synergies to broaden the impact of the individual projects including activities for sharing of knowledge, data, tools, collaborative RDI, dissemination, mobility and infrastructure sharing activities.

Angeles Blanco was elected Scientific Coordinator with the mandate of creating the network and to start working on an **Implementation Plan**, considering the results and target audience that the cluster members would like to reach out. The specific role of the Scientific Coordinator is:

- Ensure the scientific coordinator of the TAP Action activities
- Lead the work in developing:
  - the TAP Implementation Plan
  - the proposed TAP Action outputs
  - the final follow up of the TAP action Implementation Plan
- Represent the cluster at the midterm guided dialogue with the TAP Steering Committee
- Support additional foresight exercises carried out by the JPIs in the scientific area of the TAP

According to the expected TAP outputs the first activity has been to better know each project:

- [Who is Who brochure](#) based on the summaries of the national RDI projects.

## 4.2. TAP Alignment and Implementation Plan

According to the TAP objectives, several tasks have been considered in the Implementation Plan.

### *Building a critical mass cluster (cluster of excellence)*

A network with a critical mass of experts from different disciplines, covering several areas, has been created. Members have looked for additional potential participants that could be integrated in the TAP. Thus, one additional project from Spain has joined the TAP Cluster.

- 1) Advanced adsorption-oxidation technologies for the removal of emerging contaminants from wastewater by 3D-structured carbon materials (CATAD3.0)

Additionally, the Environment Agency (EAA) from Austria has been invited to participate in June and two additional projects have been invited to participate into the TAP, although at this moment we do not have a positive answer:

- 2) MibiDU - Microbial dynamics in river filtrates: Occurrence from microorganisms in surface waters to near-bank extraction -and which factors influence the occurrence.
- 3) WHAM - Waterborne Heterotrophic Analysis with MALDI-TOF-MS: Connects to MibiDU, and aims to improve the applicability of the MALDI-TOF-MS

In September, the Swedish Research Council was invited to participate, and three additional projects were contacted. A funding call with approximately 50.000€ will be open to cover the extra cost of the participant projects. At this moment an alignment of activities is being carried out.

- 4) I-CRECT - Interventions to decrease CRE colonization and transmission between hospitals, households, communities, and domesticated animals.
- 5) APRIAM V - Antibiotic resistance: Preventative measures and minimising consequences through risk mitigation and targeted interventions in the context of India.
- 6) Antibiotic resistance: The role of chemical pollution in urban wastewater.

Cluster members have discussed and agreed on the Cluster name and acronym:

- Revised TAP Cluster name: **Risk management to reduce the impact of contaminants of emerging concern on aquatic ecosystems and health.**
- Acronym: **RedCoPollutants**

### Mapping national core activities and outputs

Three mapping meetings have been carried out in March to **identify potential common activities** which have been collected to define the scope of the TAP Cluster which is presented in Figure 2.

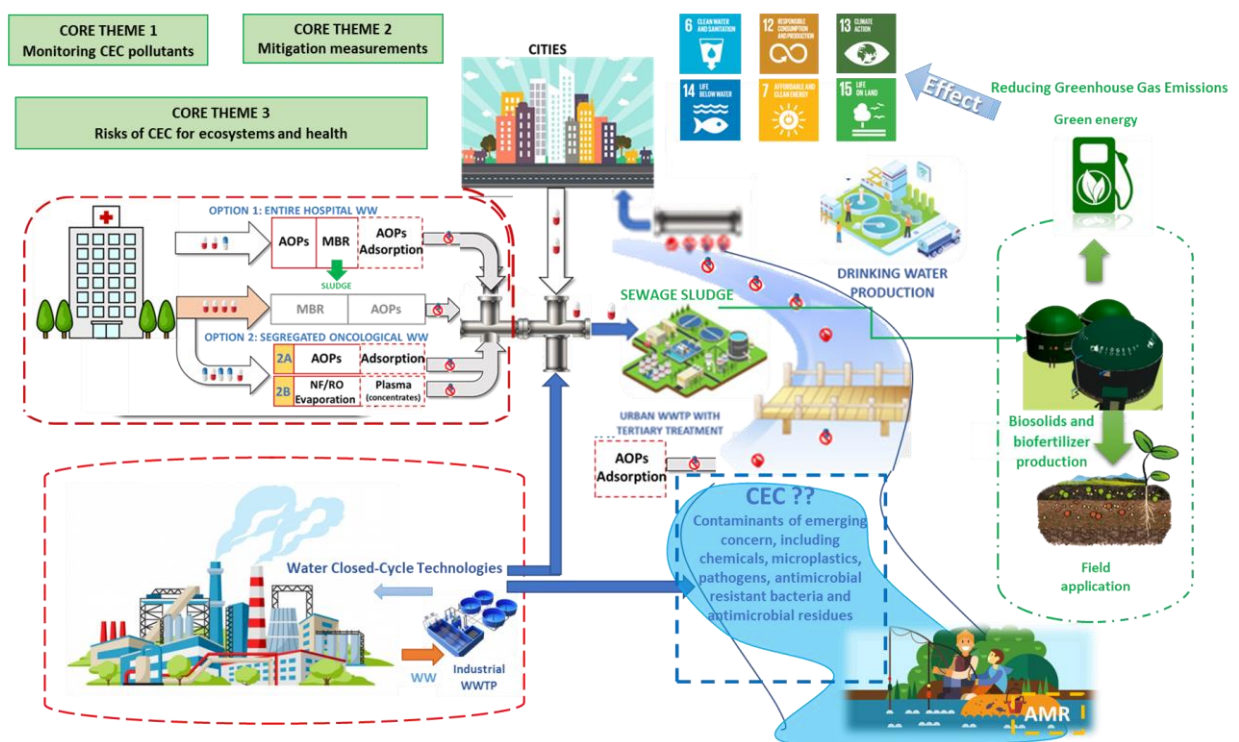


Figure 2.- Scope of RedCoPollutants.

Based on national activities the CEC research areas have been grouped into **3 main core topics (CT)**:

- **CT1- Monitoring aquatic pollutants:** characterization (methodologies, practices, new approaches to detect sources, data management, monitoring, ..).
- **CT2- Mitigation measurements:** technologies, best practices, limitations, barriers, recommendations.
- **CT3- Risks of aquatic pollutants** for different water uses: long term effects on health, ecotoxicity, hazards; water soil interactions.

The activities on water, sludge and soil are complementary. Although most of the projects focus only on one topic, results need to be integrated. Monitoring and data management includes chemical and microbiological characterization; assessing the presence of different contaminants and the colonization with resistant organisms and examining differences between water users and non water users; toxicity studies, studying the sources of pollutants, etc. Mitigation measures include the study and comparison of different CEC removal technologies in water, among them advanced oxidation processes, adsorption, membrane treatments, bioremediation or disinfection technologies; and in soils, comparing green treatments versus land excavation. CT on risks of aquatic pollutants will focus on risk assessment considering chemical and ecotoxicological data and on water management to facilitate solutions to decrease the current impact of CEC. The detailed grouped activities of national RDI projects is presented in Annex 1.

All CTs are interconnected. It is important to identify these interconnections and synergies and work in an integrated way to avoid the current fragmentation of knowledge. It is decided to not work in different working groups but to work collaboratively on different topics, where different leaders will coordinate the specific tasks.

### *Definition of specific outcomes*

Following the TAP general output, the Cluster members have defined the following RedCoPollutant specific outcomes:

- Fostering research coordination by promoting networking for sharing of results, data and other resources.
- Interdisciplinary and transdisciplinary training.
- Fostering mobility.
- Sharing of infrastructure.
- High added value knowledge and scientific support for strategic and political decision making.

### *Alignment of activities*

Several alignment meetings have been carried out to define potential common actions from the individual activities of the national projects. The 1<sup>st</sup> meeting (23<sup>rd</sup> March was focused on the type of common activities that can be carried out within the AquaticPollutants TAP). Alignment meetings as well as parallel meetings have been carried out in May/June to define the specific TAP activities to be included in the TAP Implementation Plan:

- Alignment of the language in the field of CEC.
- Discuss on common methodologies and protocols for CEC monitoring.
- International discussion of preliminary outputs of ongoing national research to reduce the content of CECs.

- Discussion on the research priorities in different countries and regions.
- Exchange of knowledge on Best Available Technologies and Practices (BAT/BAP)) for CEC mitigation.
- Share knowledge and data including good and bad experiences.
- Prepare joint publications.
- Bring together expertise from different disciplines (chemistry, chemical engineering, biology, environment, toxicology, ...) and areas (water, soil, ecosystems).
- Align approaches of the different projects maintaining its diversity.
- Exchange of knowledge on assessment of CEC risks.
- Promoting interaction with international researchers in the field.
- Identifying new knowledge gaps.
- Identification of pillars for a long term network for future cooperation at senior and PhD level.
- Mobility as a networking tool.

### *Development of the Implementation Plan*

Based on the alignment phase discussions and agreements, the implementation plan has been designed in June 2022. The Implementation Plan version 2 has been finalized taking into consideration the recommendations from the TAP Steering Committee.

Face-to-face and on-line general coordination meetings will take place twice in each year (provisionally 4 meetings: July 2022, November 2022; May and November 2023). The main function of these meetings is to coordinate and monitor the advanced work on the TAP proposed outputs and activities detailed in the next section. A lead for each of the outputs is identified. Additional technical working meetings will be organised every 3 months in the different core groups to advance the work on each topic and to generate the defined outputs. Additional members from each project will participate in these meetings, including young researchers and PhD students. Special attention is given to develop a research mobility plan (Annex 2) and infrastructures sharing plan (Annex 3) as tools to foster networking. Dissemination activities and external strategic communication for the TAP Cluster will be an ongoing process across the full action duration with the intention to raise awareness of the TAP cluster (and associated nationally funded projects), its objectives, partnership, activities and intended impacts.

A shared Google drive is used to communicate between TAP members and to store related documents. Final versions of TAP documents will be provided for the Water JPI Intranet as appropriate.

A summary of the RedCoPollutant Cluster potential common specific outputs, activities and indicators is presented in Table 2. For each one a responsible person will be selected during the next months.

Table 2.- RedCoPollutants, specific outputs, activities and indicators.

<b>LEVERAGE NETWORK</b>			
CEC Expert Cluster	Critical mass	8 + 1 projects from 4 countries	May 22
		>20 involved researchers	July 22
		Extending the TAP: +1	July 22
	Involvement of young researchers	>4 young researchers/PhD students	July 22
	Knowing each other	Who is Who brochure	July 22

		Expertise inventory	Sep 22	
	Equality	Good gender balance	July 22	
	Inter/intradisciplinary network	>4 disciplines and 3 areas/topics	July 22	
<b>R+D COORDINATION</b>				
Networking: Promoting transfer of knowledge, results, and data	Alignment meetings	4 meetings	July 22	
	Expertise core themes	Identification of 3 common core themes	May 22	
	Alignment of CEC language	Glossary	Nov 22	
	Discuss the best methodologies and protocols for CEC monitoring and mitigation	Cohesive protocol for cytostatics characterization in water samples		Jan-23
		Cohesive protocol for CEC quantification/monitoring in water/sludge		May 23
		Common methodology for CEC adsorption experiments		Jan 23
		Practices for the removal of CEC		May 23
	Exchange of knowledge on assessment of CEC risks	Common methodologies for CEC risk assessment (water/soil/ecosystems)		March 23
	Align approaches of different projects maintaining its diversity and extending their limits: complementary R+D	Integral chemical and toxicological approach. Exchange of samples		July 23
		Extend the number of studied compounds		July 23
		Water and sludge management		Nov 23
		Water and soil management		Nov 23
		Bibliometric analysis via VOSviewer on “emerging contaminants” and “antimicrobial resistant bacteria”		Feb 23
		Discussion on environmental thresholds (EQS, PNEC) of micropollutants		Dec 23
	Presentation of results of national projects to reduce the content of CECs	BAT for water treatments		Dec 22 June 23 Dec 23
		BAT for soil treatments		Dec 22 June 23 Dec 23
		Identification of failure research		June 23
		BAP for CEC mitigation		Dec 23
	Scientific/technical meetings	2 Monitoring		Feb 23 Nov 23
		2 Mitigation		Feb 23 Nov 23
2 Risks			Feb 23 Nov 23	
Technical visits	2 visits		Jan 23	

			May 23
Discussions on research priorities	Workshop	List of RD priorities	Dec 23
	Assessment of CEC quantification in different countries and regions. Reports may be focused on different chemicals, microplastics, pathogens, ARB and AMR ⇒ Assessment of research priorities on CEC	Report	Oct 23
<b>INTERDISCIPLINARY AND TRANSDISCIPLINARY TRAINING</b>			
Training activities	Internal webinars	Webinar on closure of water circuits in industry	Jan 23
		Webinar on quantification of cytostatics	Jan 23
		Stimulation of anaerobic digestion of wastewater and sewage sludge	
		Webinar on PFAS	
		Webinar on adsorption and photocatalytic systems	
		Webinar on Aquatic Toxicology	
	External webinar	CEC trends	Nov 23
	External workshop	CEC session in the congress WCCE11-IICIBIQ 2023 in Argentina	June 23
Virtual visits			
<b>FOSTERING MOBILITY</b>			
Technical and research visits	Short Term visits	1-2 Training missions to use new equipment	2023
		1-2 Complementary experiments	2023
<b>SHARING INFRASTRUCTURE</b>			
Collaboration between organizations	Inventory of relevant infrastructures	Report	Sep 22
	Sharing infrastructures	2 sharing activities	
<b>NEW HIGH ADDED VALUE KNOWLEDGE AND SCIENTIFIC SUPPORT</b>			
Promoting innovation	Best practices to reduce the risks of CEC	Audience WWTPs	Nov 23
Expertise support	Policy briefs	What is viable and reliable	Dec 23
	Stakeholders briefs		Nov 23
Identifying knowledge gaps	Position paper on scientific and technological challenges and gaps	Inputs for Horizon Europe work programmes and Water4All Partnership.	Sep 23
		Preparation of a new collaborative proposal	
Dissemination activities	Write 1-2 joint Scientific publications	Review on CEC removal technologies	March 23

		Challenges on CEC quantification in water/sludge samples	
		Effects and risks of CEC	
	Infographics for the Society in 5 languages		Nov 23

As it has been discussed different outputs are expected which may be grouped in the Gant chart of figure 3. They can be classified at short and medium term:

#### Short-term (July 2022)

- ❖ Mapping of the TAP expertise: Who's Who template.
- ❖ Mapping of the TAP impact: participants to complete the TAP project database. Compiled documents will be made available to AQUATAP-ES members. **Deadline**: July 2022.
- ❖ Alignment of national projects: Definition of CT and outlining the opportunities of the TAP collaboration and detailing the common activities for minimizing the risks associated with CECs. **Deadline**: July 2022.
- ❖ Proposal of outputs: Table of indicators in relation to the different TAP outputs to facilitate the monitoring and assessment of the TAP progress. **Deadline**: **July 2022**.

#### Medium term (August 2022 – December 2023)

- ❖ Compilation of methodologies and protocols: Selection of best practices and gaps. **Deadline**: March 2022.
- ❖ Compilation of data on CEC quantification in water and sludge. Output to be made available to key stakeholders concerned with environmental data collection/monitoring. **Deadline**: SEptember 2023
- ❖ Guidance on CEC characterization. Those with expertise in this area will host a workshop/webinar with RedCoPollutants members to share expertise. **Deadline**: 2023
- ❖ Guidance on CEC risks. Those with expertise in this area will host a workshop/webinar with RedCoPollutants members to share expertise. **Deadline**: 2023
- ❖ Best practices for removal of CECs. Those with expertise in this area will host a workshop/webinar with RedCoPollutants members to share expertise. **Deadline**: December 2023
- ❖ Mobility activities. Senior, PhD students and graduate students will realize short term visits to new complementary techniques and use additional equipment.
- ❖ External expert sessions: CEC session in the WCCE11 in June 2023.

Evaluation of the Cluster activities will be carried out internally every three months according to the activity plan. Activities and dead-lines will be adjusted if necessary. The activities will be flexible to adjust them to both partners needs and availability with the final aim of getting the maximum benefit from the available resources at national level in each project.

### 4.3 Sustainability of RedCoPollutants

Options for sustaining and possibly enlarging the TAP after the initial 24-month period are being considered to promote a long term network. Based on the results achieved in the identification of knowledge gaps, new RDI activities will be proposed. Those activities will be considered for a potential collaborative proposal within the Horizon EU Program as well as for a new networking proposal within the Water4All Partnership.

**Table 3** Gantt Chart presenting the phases, task and main outputs of the TAP action. (T=3 months)

Phases/Task	2022							
	T1	T2	T3	T4	T5	T6	T7	T8
<b>Kick-off</b>	X							
Meeting	X	Brochure v1		Brochure v2				
<b>Alignment</b>								
Critical mass	X	Inventories		new projects				
Mapping national activities/outputs	National RDI	RDI interactions						
Alignment of activities	Core themes	Common activities						
Definition of outputs	National outputs	TAP Indicators						
Implementation Plan		X TAP-IP draft	X TAP-IP final					
<b>Implementation</b>								
Management meeting		X		X		X		X
Technical meetings			X	X	X	X	X	X
Produce outputs		Inventories		Protocols Methodologies	1 Papers Protocols MethodologiesX	Protocols Methodologies	1-2 Papers	X
Training Innovation & translation				Webminar	Webminar Adaptation needs	Webminar	Webminar	
Bridge RDI-policy	1				X			Best practices for CEC removal
Mobility					STV			Position paper
Dissemination		Target audience		CEC risks		STV WCCE11-CEC Symposium		TAP outputs
<b>Evaluation &amp; Next</b>								
Internal review					X			X
Sustainability actions				X		New proposal		RDI gaps



# ANNEX 1

Annex 1 presents the grouped RDI activities of the national projects.



Grouped activities of national RDI projects. Colors refers to the different projects: CATAD3.0, Cedre, CHANGE4WATER, CHYPTER, Cytostatics, Hopem, PHARMA\_CARE, PIER, ARG Tech

## ANNEX 2

Annex 2 shows the Researcher Mobility Plan and the Infrastructure Sharing Plan.

Members of the cluster have identified the potential benefits from a mobility specific plan within RedCoPollutants with the following objectives:

- Skills training
- Harmonization of methods
- Scientific collaboration and network building
- International/intercultural experience for young researchers

To benefit from this plan the following actions are required:

- Identify synergies between partners
- Propose research/training missions
- Leverage funding from national projects or external schemes

Several actions have been already identified although they will be updated when necessary or every 4 months:

- TAP partners list external schemes they could apply through
- TAP partner PhD/Postdoc researchers join [PhD Forum](#)
- Potential virtual visits
- Explore Erasmus+ options

### **Infrastructure Sharing PPlan**

Member have identified the potential benefits:

- Skills training
- Methods harmonization
- Complementary research
- Scientific collaboration and network building

The identified required actions are:

- Elaboration of an inventory of relevant (specialist) expertise and infrastructure.
- Identify synergies between partners
- Quid pro quo activities to collaborate in mutual benefit by exchanging a service or knowledge by others.

Based on a list of member specialist infrastructure the potential activities will be generated with a bottom-up approach.