

**BOARD FOR DETECTION AND ASSESSMENT OF  
PHARMACEUTICAL DRUG RESIDUES IN DRINKING  
WATER - CAPACITY BUILDING FOR WATER  
MANAGEMENT IN CE**

**NEWSLETTER 03 July 2021**



# FACTS & FIGURES

Budget: 2.328.141 €  
ERDF co-funding: 1.938.208 €

Duration: 04.2019 - 03.2022

Granted within 3<sup>rd</sup> call of Interreg CE 2014-2020 programme:

Priority Axis 3 : Cooperating on natural and cultural resources for sustainable growth in CENTRAL EUROPE;

Specific objective 3.1: To improve integrated environmental management capacities for the protection and sustainable use of natural heritage and resources.

36  
PROJECT MONTHS

12  
PROJECT PARTNERS

7  
ASSOCIATED PARTNERS

7  
COUNTRIES

2.3  
MLN EURO PROJECT BUDGET

TAKING COOPERATION FORWARD

# AFTER THE MIDTERM OF THE PROJECT

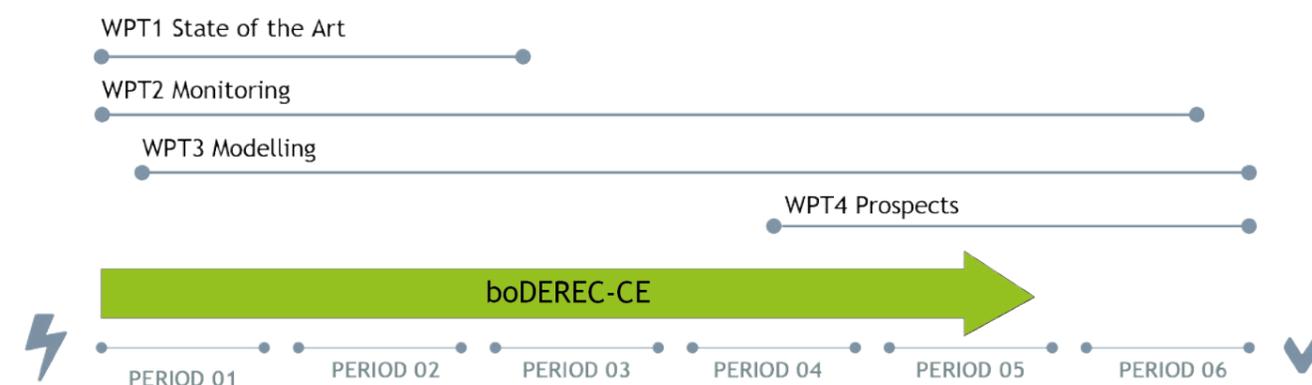
boDEREC-CE successfully crossed the half-life of the project. Even though still affected by the COVID-19 pandemic, partners are working together to obtain project outcomes.

We can boast of completing WPT1: State-of-the-art and publishing its most important results. We believed that the collected information on the problem of pharmaceuticals and personal care products in drinking water resources in the Central European will support water-oriented institutions in increasing their knowledge.

We have been also working on collection of the information on PPCP in water within 8 Pilot Action Areas under WPT2.

At the same time, the boDEREC-CE team is still working on transport modelling of substances to complement information on the behavior of these, still not fully investigated, pollutants. At the same time we preparing a tool to support water actors in selection of modelling approach - modePROCON.

## boDEREC-CE timeline



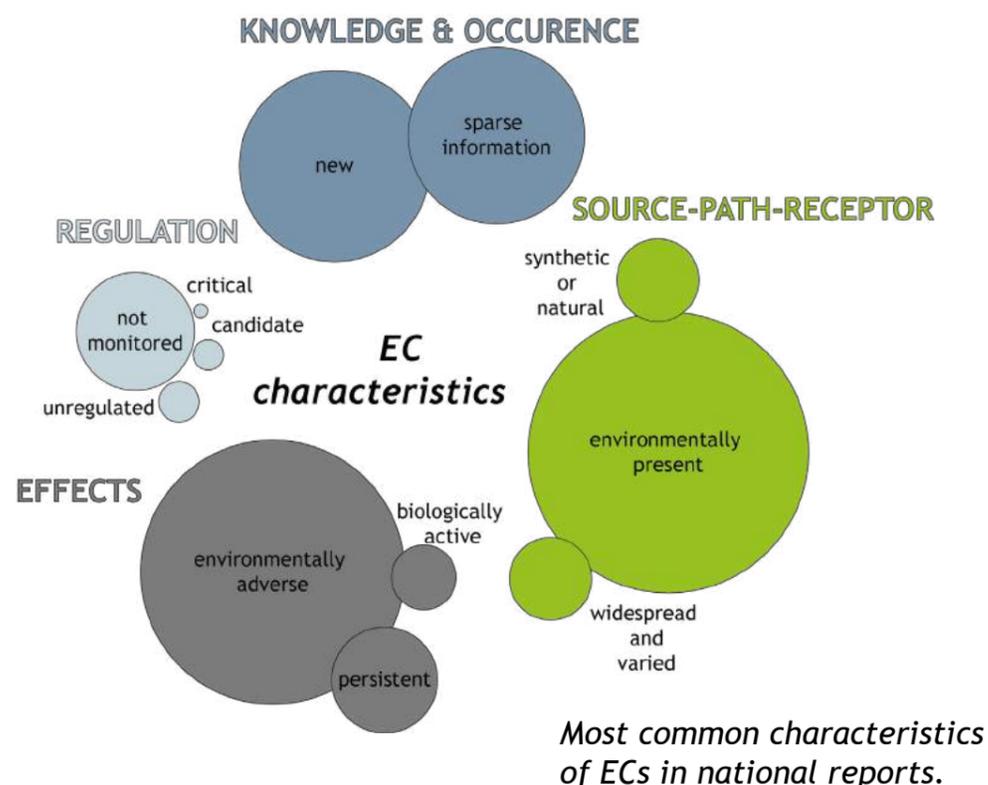
The timeline shows that we are slowly approaching to the project end. We are in the middle in realisation of three WPTs. Last phase of the project will deliver a lot of finding and tools supporting water-oriented actors.

At the beginning of the year, we started working on WPT4, to prepare tools supporting the work of waterworks in dealing with Pharmaceutical and personal care products/ Emerging contaminants pollution. Currently intensive works are ongoing on, among

others, the catalog of possible solutions that can be used in the water treatment process. Moreover, we put a lot of effort to ensure capacity for the boDEREC-CE project findings and results to be commonly used in the future.

The consortium worked on WP T1 entitled Discovering emerging contaminants in the water environment -State-of-the-art, between April 2019 and September 2020. During this period we worked on the following topics; on identifying problems related to emerging contaminants (ECs) in the environment, review on policies and legislation, on ECs appearing in the water environment, state-of-the-art in monitoring and attenuation strategies. All national (35) and transnational (7) deliverables were done on time.

The main outcomes of the WP are two outputs. The first is "State-of-the-art of current practices in relation to emerging contaminants in the water environment" and is understood as a learning tool. It is a collection and analysis of available data from literature and other public information sources on emerging contaminants with a focus on the countries of the project partners.



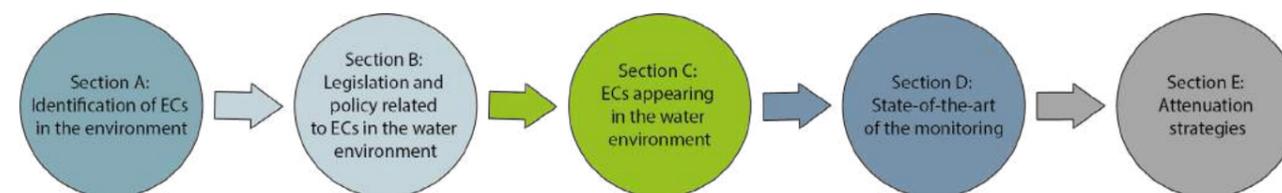
In the national reports Partners used varied definitions to describe characteristics of ECs. The figure above presents most commonly used definitions in national reports with relative sizes corresponding to the number of times they were mentioned in all of the reports.

Currently, issues related to emerging pollutants in the aquatic environment are high on the agenda, but paradoxically there are many open questions about what emerging pollutants are and how they are defined. There are many definitions of emerging contaminants available. In output a new definition of emerging contaminants was proposed: Emerging contaminants represent a group of potential pollutants that are either newly created, newly identified, newly detected or newly researched.

The second output is "Data collection tool for emerging contaminants" and is understood as a data collection tool. The tool is closely related to the previous tool. The

tool is a synthesized collection of data on emerging contaminants data in the aquatic environment from the partners' national sources and illustrates the methodology of data collection, including the data collection tool in the form of an annexed questionnaire.

The results of both outputs, the learning and data collection tool, formed the basis for further work in the boDEREC-CE project. It also provides a wide range of synthesized knowledge and information for stakeholders at transnational level from which they can start their own activities.



The data collection tool focuses on national sources of information on emerging contaminants. On the one hand, it collects data at the national level, and on the other hand, it investigates the country's relationship with the European and international levels in terms of understanding and answering open questions related to emerging contaminants. Tool not only examines research information (e.g. results of chemical analyses), but is also interested in further socio-economic implications of emerging contaminants. The questions are related to policy, administration, management and legislation. However, the main focus has been on the investigation of emerging contaminants occurrence in the aquatic environment. The tool is divided into 5 sections as presented above.

Both outputs are available online on the boDEREC-CE website. To download the outputs please use links below or QR code:

[O.T.1.1: STATE-OF-THE-ART OF CURRENT PRACTICES IN RELATION TO EMERGING CONTAMINANTS IN THE WATER ENVIRONMENT](#)

[O.T.1.2 DATA COLLECTION TOOL FOR EMERGING CONTAMINANTS](#)



## WPT2 MONITORING SHORT SUMMARY

The implementation of monitoring during 2020 was negatively affected by the CORONA pandemic, which to some extent disrupted the regularity of sampling. However, in the final balance, it can be stated that the original sampling plan was met. During 2020, a total of 126 samples were taken from a number of antibiotics, hormones and drugs. Since the beginning of the monitoring, there are 175 complete analyzes in the project database. During the 2021, according to the compiled plan, another 172 samples should be realized, this time in most cases only in the field of pharmaceuticals.

Preliminary results show that the network of pilot sites and monitoring points has been adequately selected and provides high-quality data characterizing the behavior of PPCP substances in the aquatic environment. It is already clear today that most Central European watercourses, whose water is used for the production of drinking water, contain more or less identical substances from the PPCP category in very close concentrations. The technologies used for the treatment of drinking water in individual countries also work with a similar efficiency of their removal.



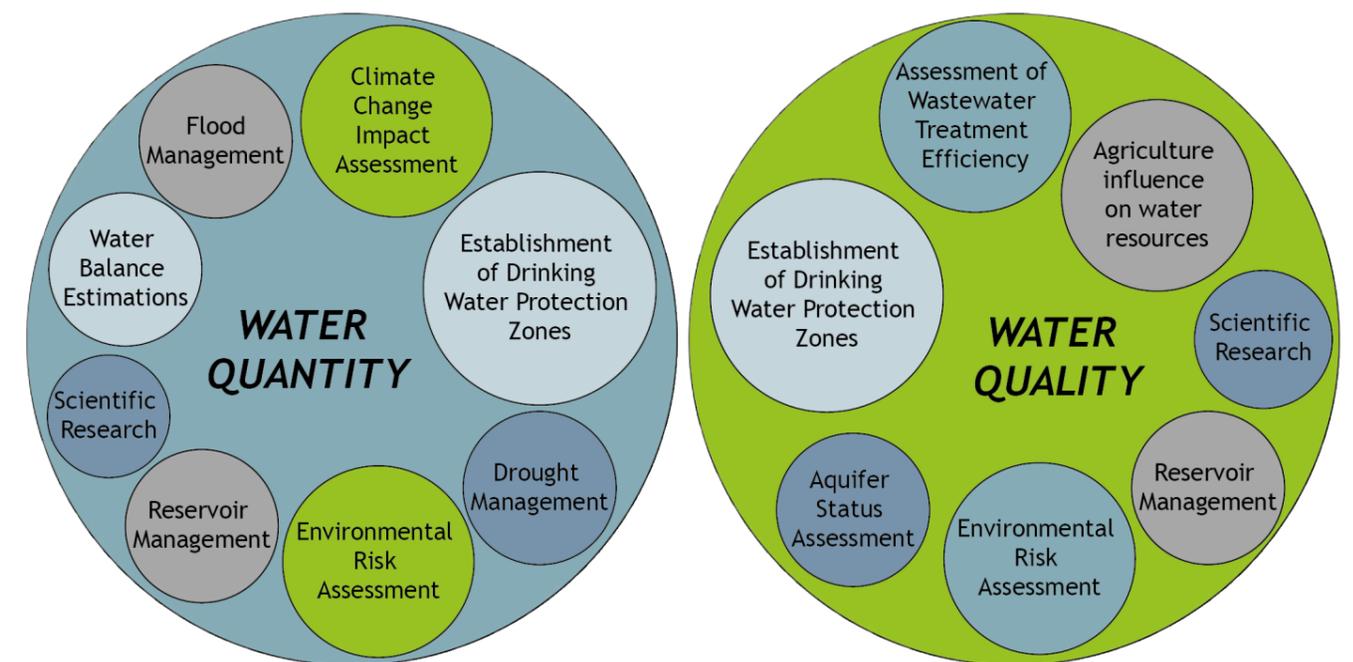
Further results of WPT2 realisation are expected in the end of 2021.

## WPT3 MODELING SHORT SUMMARY

Several activities were performed as part of the WPT3 within the European boDEREC-CE project during 2020. The first activity “Peer review of modeling activities in water management systems” was completed as planned in the project proposal, and the transnational synthesis report about the implementation of modeling activities was finalized.

Concerning the second activity in the WPT3: “Identification of needs, elaboration of solutions and capacity building”, we designed a first framework for the model-based decision-making tool modePROCON which is one of the main outputs of the project. This version of the tool is also ready to be introduced to our engaged stakeholders to gather feedback and better meet their working needs.

### *Model applications in water resources management*

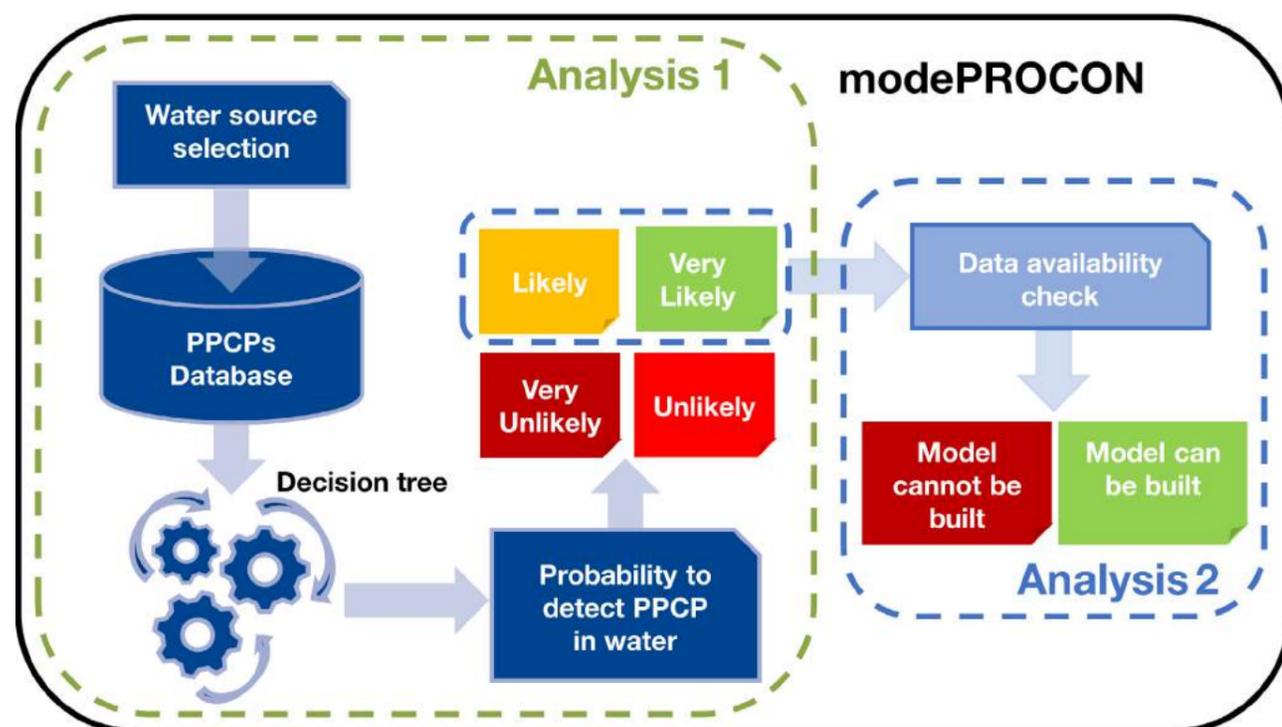


*We analyzed the legislative framework suggesting the application of modelling activities in water resource management and concluded that while indirectly requiring hydrologic models, legislative texts rarely state an obligation to make use of them. In fact, it is rather unrealistic that the legislative framework comprises all applications of modelling activities in practice. Therefore, the WPT3 transnational reports give an overview of the purposes for which hydrological models are applied in terms of water quantity and quality and the institutions applying them.*

**modePROCON** consists of two main analyses and its design is shown in the Figure below. Analysis 1: “Probability to detect a PPCP in water sources” is developed to define the likelihood of a compound to be found in surface water, groundwater and karst aquifer. At the end of this first stage, the tool classifies the selected PPCPs into four main categories depending upon the PPCP has very low or low probability to be found in water, versus high or very high probability.

If the PPCPs of interest have high or very high probability to be found in water, Analysis 2: “Data-availability check for model set up” starts. It consists of an evaluation of the availability of a list of input data required to set up a surface water, groundwater and karst aquifer solute transport model. If all data are available, modePROCON suggests to the user that modeling is feasible. On the contrary, the tool suggests that the model cannot be built and provides some suggestions on how to collect the missing data.

Structure of analysis used in modePROCON



The Start-up National Stakeholders Workshop were set for further capacity building in achieving a sufficient risk management of ECs in Central Europe. The workshop was a platform to exchange the experiences stakeholders made and contribute to gaining a valuable insight into the difficulties that water management institutions are facing with ECs. The workshops were mainly focused on modelling activities. The main goal of the workshops was thereby to identify the features required in the transnationally applicable EC modelling tool modePROCON. Stakeholders invited to participate in the workshop were scientific, private, and public entities that deal with topics related to the boDEREC-CE project on a legal and/or thematic level. Each partner country invited stakeholders it found suitable and discussed common and country-specific acceptances,

experiences and needs related to modelling activities in water management systems.

The workshop focused on the following topics:

1. Challenges and concerns with emerging contaminants in the daily operations of stakeholders
2. Experiences made and solutions found when dealing with emerging contaminants
3. Helpful tools to improve stakeholders' work

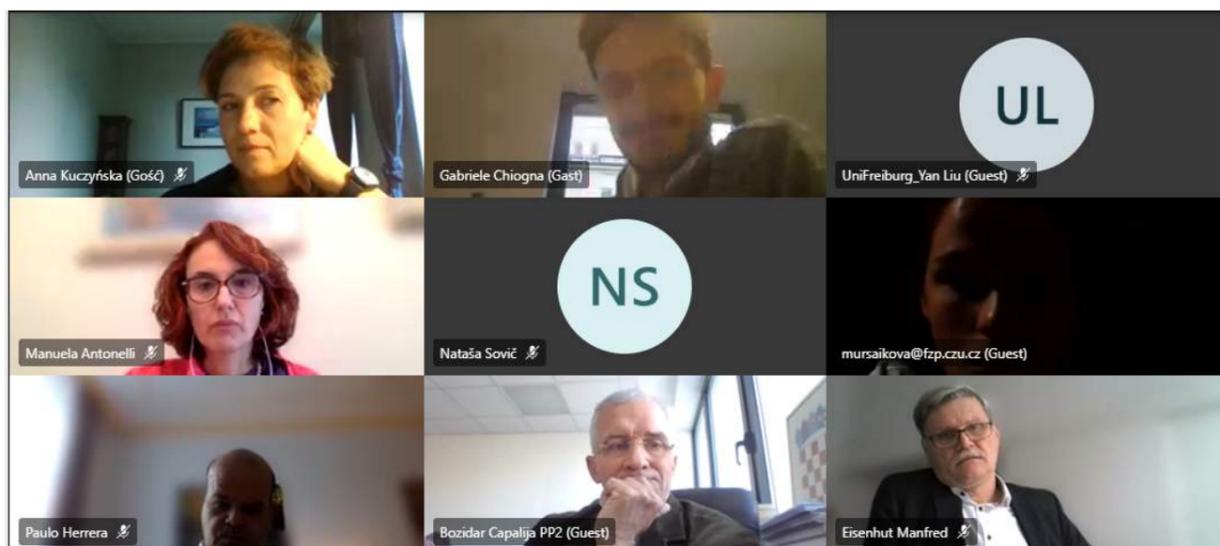
The stakeholder workshop organisation was affected by COVID-19 pandemic in Europe. The form of the meeting was hybrid - some partners were able to organise on-site meeting, others has organised online meeting. Despite those difficulties more than 140 institutions participated in the Start-up stakeholders workshop in 7 countries.



Due to COVID-19 situation partners have limited possibilities of organisation of the stakeholders meeting. Some, such as Croatian partners (on left), has organised on-site meeting, others, such as Polish partners (on right), were able to organise online meeting using digital tools.

After the half of the project lifetime the Midterm Conference was held to summarize completed tasks. The main aim of the meeting was to involve stakeholders in the project, sharing the experience and capacity building for implementation of the future project outputs. One of the main aspect was announcing the concept of the first boDEREC-CE tool - the modePROCON. Due to COVID-19 situation the Midterm conference held online via Ms Teams. Additionally, for gaining more audience including general public, the meeting was streamed live on Youtube. The conference was divided into 3. thematic session and the discussion panel. First session was the introduction to the

PPCPs' water pollution problem and its mitigation. Second session was dedicated to boDEREC-CE project realisation, where Leaders present work package outputs and progress. Third session was the presentation of the modePROCON tool concept. Last but not least, discussion panel was held. We invited the water-oriented experts to join us and share their experiences. The conference participants had an opportunity to listen very interesting exchange of views of experts from Poland, Germany, Slovenia, Italy, Czech Rep., Chile, Austria and Croatia. The discussion concentrated on 3 aspects - the knowledge gap of the ECs / PPCPs in water, monitoring and risk assessment.



The discussion panel was moderated by prof. Gabriele Chiogna from TUM, Germany - PP08 and nine water-oriented experts from 8 countries worldwide participated. They had an opportunity to share their experience and discuss on water sector needs facing the PPCP problem.

The panellists discussed about needs and approaches for filling the current knowledge gap in detection and assessment of PPCPs in drinking water. They pointed that:

- the gap have to be filled in order to water treatment / pollutants removal in respect of PPCPs, ECs and other micropollutants considering all removal factors in order to improve water quality.
- need of upgrading the analytical aspect should consider also metabolics.
- in the assessment of the PPCP's water pollution holistic approach, considering entire catchment area, should be implemented.
- a strong need for thresholds for human consumption.
- policies and strategies in order to risk management and implementation of consumption thresholds and monitoring methodology should be implemented.
- one of the most important aspect is communication of the PPCPs pollution problem, getting the general public and decision makers.

The panellists discussed also on monitoring strategies and suggestion for policy makers

according to high costs of PPCPs monitoring and a lack in PPCP monitoring data (single results, no long term monitoring of the EC). The panel participants highlighted mostly:

- need for coupling the modelling in preparation of the monitoring strategy in order of planning time interval for sampling and definition of most representative sampling location.
- using of the mass balance method, considering loads of sewage, for assumption of the pollution risk
- focusing on monitoring indicator substances.
- implement water risk assessment.

At the end all panellist agreed that there is no possibility of reducing the PPCPs pollution risk to zero according to developing nowadays knowledge and technologies. Panellist consider minimalization of the risk using the holistic approach, considering catchment as a whole, possible interaction and sources of pollution. They put main attention for raising awareness of the consumers and communication of the problem.

The conference was streamed live via YouTube. You can find the videos on our YT Channel: [shorturl.at/koqE5](https://shorturl.at/koqE5)



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