



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



Motivation



Water is one of the most valuable raw materials for today's civilization and one of the most important factors that determine the quality of our lives. Technological development, on the one hand, plays a significant role in various forms of environmental pollution, and hence for water. On the other hand, scientific development can detect and combat these risks. This includes monitoring of the occurrence of recently unknown forms of contamination caused by micropollutants. Recent research shows that the aquatic environment, from which we produce potable water in Europe, contains anthropogenic substances - until a few years ago, their presence was unknown and there are still considerable knowledge parts.

Motivation

This is where boDEREC-CE sets an innovative approach by implementing pilot sites in Central Europe countries to monitor emerging contaminants (EC), above all pharmaceutical and personal care products (PPCP). PPCP includes any products used in personal healthcare, cosmetics, and mental products, reclaimed water, creating potential hazards to environmental and human life. This lack of knowledge needs to be tackled by developing one common course of action and policy on European level.

Thus, boDEREC-CE is focused not only on the study PPCP behaviour. Particular attention is paid to assessing the effectiveness of attenuating this specific type of pollution, using different types of drinking water treatment technologies: the main output is an innovative model based decision making tool, which, given future legal thresholds, can be used as an early warning tool. This tool will be tested under different conditions at waterworks. Furthermore, activities will be started to inform public about measures to reduce the use and waste of PPCP. By the formation of a transnational board, research institutions and waterworks will continue networking for defining standards and guideline values.

Facts & figures



Budget: 2. 328.141 €
ERDF co-funding: 1.938.208 €

Duration: 04.2019 - 03.2022

Granted within 3rd 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.

Workpackages

WP T1

Discovering emerging contaminants in the water environment – State-of-the-art

Review of the state-of-the-art (SOA) of handling, monitoring and treatment of PPCPs in water resources management and drinking water treatment will be provided, including different views and approaches: from political, legislation, monitoring and engineering point.

WP T2

Monitoring emerging contaminants in the water environment – piloting programme

Concept of long-term detailed monitoring of time-space changes of PPCP concentrations throughout the monitored system which is understood as the area from the source of water used for the production of potable water up to the process of its technological modification to the final form

WP T3

Modeling emerging contaminants - model application

Transnational review of existing country-specific frameworks for model applications in all parts of water management systems. Modelling studies of waters system within pilot action. Development an implementation strategy of a model-based decision-making process for emerging contaminants (modePROCON).

WP T4

Attenuating emerging contaminants - prospects and new approaches

Capacity building activities resulting in providing the waterworks decision-making support tool for selecting treatment option for mitigating PPCP – wwDEMAST. Building upon all efforts, an overall outcome of the project will be TRAST-PPCP, a Transnational strategy which will define necessary steps for optimization of organisational structures and future oriented drinking water management.

Output results



Strategy / Action Plan:
Transnational Strategy for PPCP Mitigation
in Drinking Water - TRAST-PPCP

Tools:
State-of-the art current practices in relation to
EC in the water environment



Data collection tool for EC

Model-based decision making tool for Emerging
Contaminants (modePROCON)

Decision-making Support Tool for
Waterworks (wwDEMAST)



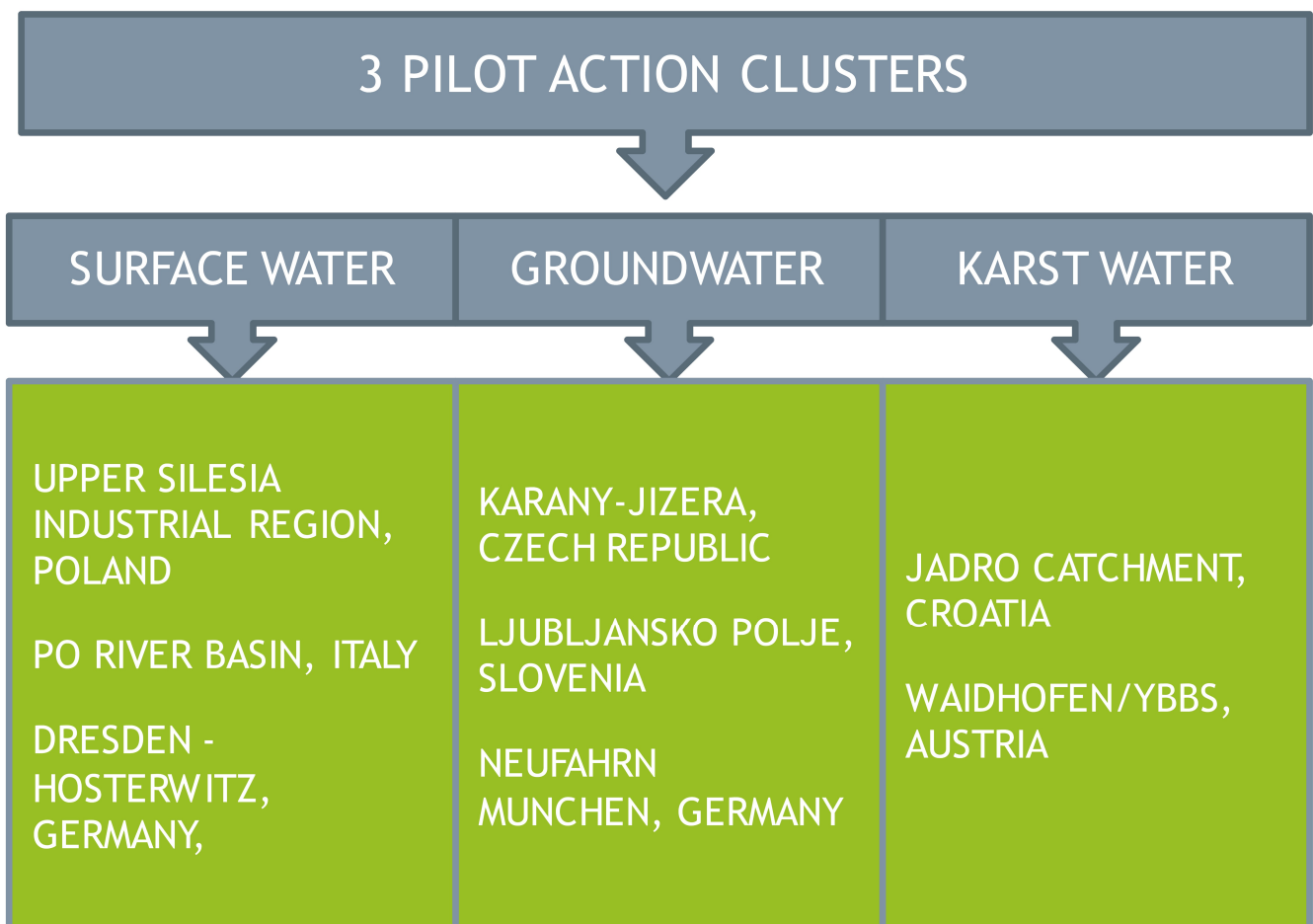
Trainings:
Standardized Training procedure for mode-
PROCON, implemented in a Massive Open On-
line Course (MOOC)



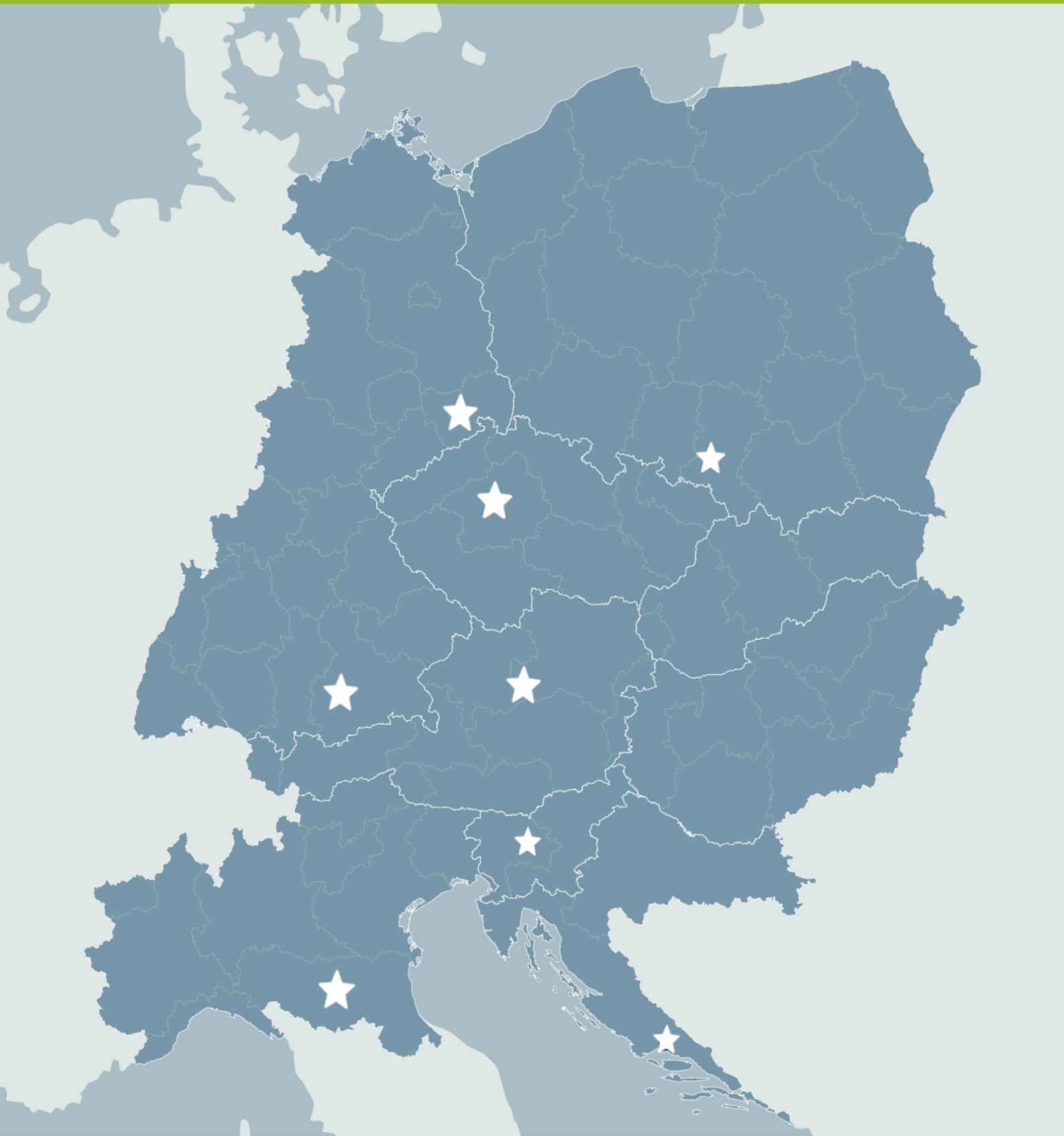
Pilot Actions:
Surface pilot actions cluster
Groundwater pilot action cluster
Karst pilot action cluster

Pilot actions and monitoring

Within boDEREC-CE regular monitoring of the pharmaceuticals and personal care products (PPCP) content in water (groundwater or surface water) which constitutes source for the production of drinking water is carrying out. The project assumes two-year long monitoring conducting in 8 Pilot Action tracking spatial changes and dilution effects and also concentration changes at particular stages of water production. The information obtained will be used to assess attenuation in the natural environment and the effectiveness of different water treatment technologies. Selected Pilot Action were clustered into 3 groups according to their specific environmental character which is representative for the majority of water resources exploited for freshwater supply in Central Europe.



Pilot actions localization



Progress status

Done in 2019:

WP T1 - In the first thematic work package the focus is on the review of the state of the art of handling, monitoring and treatment of emerging contaminants, therefore national problems regarding emerging contaminants in the environment were identified as well as existing national policies and legislation were reviewed and described. Furthermore, existing papers and documents on emerging contaminants appearing in the water environment with the emphasis on existing and available knowledge in the proposed pilot actions were reviewed. Also, active and passive attenuation strategies regarding emerging contaminants were reviewed and their effectiveness was evaluated.



Within WPT2 Project Partners aim mainly to develop concept of the PPCP monitoring. In first stage of the work package Pilot Action areas were characterized in terms of natural, technical and socioeconomic conditions. Main target was determined for each of 8 Pilot Action and screening monitoring was carried out in the areas. Basing on the results Project Partners described methodology concept for further monitoring to be conducted in next two years.

In WP3, a questionnaire was prepared that should set the base for upcoming deliverables. The questionnaire included general questions related to hydrological and solute transport modeling activities that are conducted on a national scale in each partner country. Although not included as a deliverable in WP3, the questionnaire was supposed to help the project partners getting a first overview of modeling activities in their respective countries.

Partner meetings

Partners in boDEREC-CE project have regular meetings, that enable for close and more effective cooperation. During appointments they can focus on the most important issues. Three meetings were held in 2019:

Kick-off meeting in Zagreb (Croatia) on 15th - 17th April 2019, the first appointment, when Partners had an opportunity to get to know each other and work on first issues.

In October (14th - 18th) 2019 in Munich (Germany) PP08 TUM organised, with support of USGS and FREEWAT project (SSSA Pisa), the Integrated Hydrological Modeling Workshop dedicated to whole boDEREC-CE partnership. The workshop was focused on water management modelling using open source tools such as FREEWAT and Modflow family software. New skills acquired during the workshop will be used within Pilot Action studies and establishing modePROCON tool.

Partner Meeting in Ljubljana (Slovenia) on 12th - 14th November 2019, where partners were talking about project details, current issues and further questions and decisions.



Project partners



PP01
Croatian
Geological Survey
www.hgi-cgs.hr



PP02
Split water and sewerage company Ltd.
www.vik-split.hr



PP03
Czech University
of Life Sciences
Prague
www.czu.cz



PP04
PublicWater UtilityJP-
VODOVOD-KANALIZACIJA
Ljubljana
www.vokasnaga.si



PP05
University
of Silesia Katowice
www.us.edu.pl



PP06
University of Ljubljana
www.uni-lj.si



PP07
Silesian Waterworks
www.gpw.katowice.pl



PP08
Technical University of
Munich
www.tum.de



PP09
Regional Agency
for Prevention
Environment and
Energy
in Emilia-Romagna
www.arpae.it



PP10
District Basin Authorities
of Po river
www.adbpo.gov.it



PP11
Centre for Applied
Research and Technology
at Dresden University of
Applied Sciences
www.zaft-dresden.de



PP12
University
of Natural Resources and
Life Sciences Vienna
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Find out more

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Content: boDEREC-CE partnership

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