Interreg
CENTRAL EUROPE
European Union
European Regional
Development Fund

DEEPWATER-CE

DEEPWATER-CE

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MORE RAIN - LESS WATER?

Have you ever wondered where the water in your tap comes from?

Did you know that good quality water resources is constantly decreasing due to climate changes and user conflicts?

The depletion of drinking water resources is a tremendous problem almost everywhere in the world.

At the same time, there are more and more frequent heavy rains and floods, bringing huge amounts of water that we do not store.

Eight DEEPWATER-CE partners are working together to build a joint water resource management strategy, including retention of excess water from periods of heavy rainfall that can be used to recharge groundwater.

As part of the DEEPWATER-CE project, pilot studies will be carried out in four countries (Poland, Hungary, Slovakia, Croatia) to examine available managed aquifer recharge solutions to develop the best methods and guidelines for Central Europe(CE).

If you want to learn more, you can join one of our webinars soon!

Chetan Vlad/ Pexels

ABOUT PROJECT

The idea of DEEPWATER-CE is based on the key role that Managed Aquifer Recharge (MAR) could play in managing water resources in Central European countries. To prevent and address the arising user conflicts the transformation of water management with innovative approaches and technologies is necessary.

The solution based on groundwater storage has a unique potential to adapt to the negative effects of climate change on water resources, which will effectively contribute to stable and secure water supply in the long run.

Using this approach DEEPWATER-CE consortium will cooperating to provide concepts, tools and models for improving MAR schemes in porous and karst hydrogeological conditions, adopting MAR solutions in national water resource management schemes, choosing potential MAR locations and preparation of trainings for knowledge transfer of the results.

Target groups of DEEPWATER-CE consists of local, regional & national public authorities, water suppliers, universities and research institutions, interest groups including NGOs, international organisations, general public, national park administrations and other services.

European Union

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DEEPWATER-CE

8 PROJECT PARTNERS

5 COUNTRIES: HUNGARY, GERMANY, POLAND, SLOVAKIA, CROATIA

€ 1.771. 535,96 BUDGET

01.05.2019
30.04.2020 TIMELINE

EXPECTED RESULTS

The project results will enshrine in the following outputs:

1. Trainings for knowledge transfer on MAR solutions and their environmental and economic benefits (sets of vebinars, training sessions)

2. Transnational decision support toolbox for designating potential MAR locations in Central Europe as a handbook including a set of checklists for the selection of MAR location in CE

3. Pilot feasibility study of MAR schemes with integrated environmental approach in four pilot areas in porous hydrogeological conditions in Hungary, Poland and Slovakia and in karst geological conditions in Croatia

4. Policy recomendations and national action plans for adopting MAR solutions in national water resource management schemes in CE, prepared as specific technical guidelines.

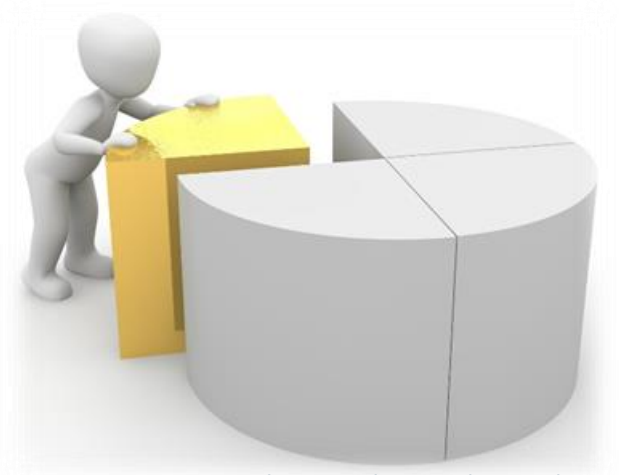
In the first period of the project we built a transnational database of cross-sectoral stakeholders to encourage collaboration with stakeholders who can provide a contribution to the project or benefit from it.

We are organizing meetings, webinars and thematic trainings, as well as spreading knowledge about the activities carried out within the project using social media and other communication channels.

We want to take into account climate change impacts, economic aspects and user conflicts of water resources. Based on developed climate scenarios, hydrogeological conditions analysis and extreme situation cases, we plan to prepere a decision support toolbox for the selection of ideal MAR locations in CE.

We will test the developed toolbox in pilot areas, which will be the control points for us, for the correctness of the assumptions made and criteria. At the same time they will be the reference points for improving the operation of our tools or to take into account other variables which are important for analyzing the problem.

In the final stage of the project policy recomendations and national action plans will be prapared to define - how, when, who, and with which resources MAR could be adopted into water resource management in HU, PL, SK and HR.



Peggy und Marco Lachmann-Anke z Pixabay

WORK PACKAGES

THEMATIC PACKAGES

T1

Development of a transnational knowledge base on the applicability of MAR in CE

- involvement of stakeholders on national and transnational level
- collection of good practices and benchmark analysis of existing MAR solutions
- trainings for stakeholders via Webinars

T2

Development of a transnational assessment methodology for decision-making on MAR locations in CE

- determination of the most appropriate sites in CE for the location of MAR
- selection of areas that will be mostly affected by climate change and where MAR could be more needed
- development of a common decision supporting tool for MAR sites location

T3

Feasibility assessment of establishing MAR schemes in CE

- common methodology to conduct feasibilitiy studies
- pilot feasibility studies carried out in 4 countries
- preliminary assessment of the environmental impact of potential implementation

T4

Development of policy recommendations and national action plans

- development of policy recommendations in line with current legislations and regulations
- technical guidelines dedicated to the adoption of MAR into the river basin plans and strategies
- discussions with relevant stakeholders to ensure their support and suggestions
- roundtables with decision takers

DEEPWATER PARTNERS

HUNGARY

- MINING AND GEOLOGICAL SURVEY OF HUNGARY
- GEOGOLD KÁRPÁTIA KFT.

POLAND

- STATE WATER HOLDING 'POLISH WATERS'
- UNIVERSITY OF SILESIA

CROATIA

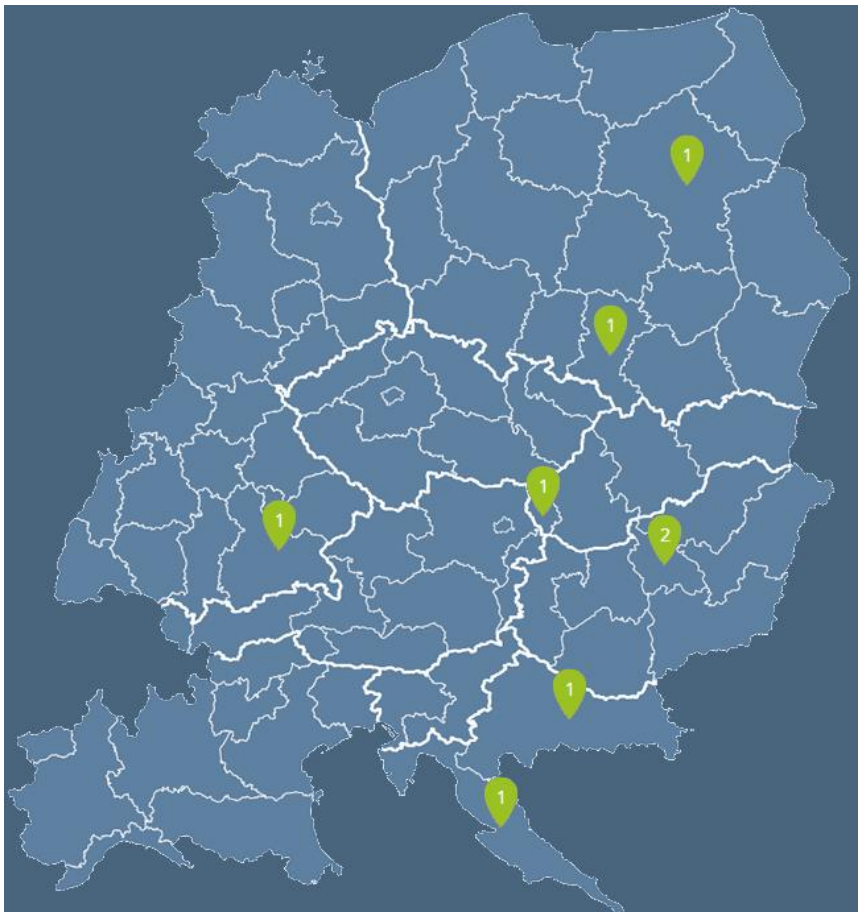
- CROATIAN GEOLOGICAL SURVEY
- SPLIT WATER AND SEWERAGE COMPANY LTD

SLOVAKIA

- WATER RESEARCH INSTITUTE

PARTS OF GERMANY

- TECHNICAL UNIVERSITY OF MUNICH



PROJECT PARTNERS 8		
	PUBLIC AUTHORITIES	3
	HIGHER EDUCATION & RESARCH CENTRE	3
	INFRASTRUCTURE AND PUBLIC SERVICE PROVIDERS	2

MAGYAR BÁNYÁSZATI ÉS FÖLDTANI SZOLGÁLAT
MINING AND GEOLOGICAL SURVEY OF HUNGARY

HU

LP

Mining and Geologic Survey of Hungary (MBFSZ) is a central governmental body supervised by the Ministry of Innovation and Technology, and at the same time, a nationally recognized geoscientific knowledge and competence centre. It performs national administrative and research activities related to mining, geology, geophysics, and climate policy.

MBFSZ's activities cover the following fields:
- Mining authority duties
- Basic and applied geoscientific research
- Sustainable resource management
- Mineral resources registration
- Climate change mitigation and adaptation
- Knowledge sharing and education

The role of MBFSZ in the project is both managerial (as Lead Partner) and thematic.

GEOGOLD KÁRPÁTIA KFT.
GEOGOLD KÁRPÁTIA LTD.

HU

PP

PP2-Geogold

Geogold Karpatia is a private for profit SME, which core business is environmental protection, geology, hydrogeology, geophysical surveys and water management.
As the legal successor of GeoGold2002 LP, founded in 2002, the company started its activities in 2005 with highly experienced geologists and geophysicists.

Geogold has experience in industrial and public water supply researches, water vulnerability diagnoses, engineering geophysics and landfill verifications.
They have extensive practical and implementation experience in the field of water resources exploration and research.
The services are offered on the market, as the company performs economic activities with the highest technology.

Geogold has extensive experience in international EU projects. It participated as a consortium partner in similar projects since 2007.
Geogold aims at gaining international experience in the field of MAR in different climatic conditions.

TECHNISCHE UNIVERSTITÄT MÜNCHEN
TECHNICAL UNIVERSITY OF MUNICH

DE

PP

P3 - TUM

Technical University of Munich (TUM) is a higher education and research institution. TUM was one of the first universities in Germany to be named a University of Excellence. The university also forges strong links with companies and scientific institutions across the world.

TUM Chair of Hydrogeology carries out research in the field of subsurface hydraulics, isotope hydrology, biodegradation and geochemical processes and modeling. This includes unsaturated and saturated flow and transport, groundwater-surface water interactions, bank filtration hydraulics and micro-pollutant fate.
The institute is equipped with field measurement devices and two laboratories specific for research in hydrogeology, isotope analysis and biogeochemistry.

TUM has large experience in the topic and participates to the project with the role of knowledge provider.

UNIWERSYTET ŚLĄSKI
UNIVERSITY OF SILESIA IN KATOWICE

PL

PP

P4-US

University of Silesia in Katowice (US) is a higher education and research institution.
The University cooperate with industry, public institutions and others in areas of:

- access to catalog of scientific research services
- contracted research
- expert opinions by the academics of the University of Silesia
- access laboratory and conference facilities

Team of hydrogeologists from University of Silesia actively studies groundwater aquifers located in areas heavily transformed by human activity (urbanization, mining) where natural and manage aquifer recharge poses part of research activity, i.e. in the identification of groundwater recharge using modern modelling techniques and the impact of urban-industrial areas on the resources and exploitation of groundwater on the examples of Tarnowskie Góry and Tarnów.

The role US in the project is the project communication coordinator and participating in thematic packages.

PAŃSTWOWE GOSPODARSTWO WODNE "WODY POLSKIE"
STATE WATER HOLDING 'POLISH WATERS'

PL

PP

PP5-PGW

State Water Holding 'Polish Waters' (PGW) is the national public authority, a central administrative body responsible for water conservation, and especially for water management and water use.

Their responsibilities include in particular:
- developing the national water and environmental programme
- preparing draft proposals of the river basin water management plans
- developing draft proposals of flood protection and drought prevention
- harmonizing the draft proposals of the conditions for the use of waters in the water region in question
- keeping water inventory of the national territory
- supervising the performance of Directors of the Regional Water Management Boards
- supervising the performance of the national hydrological and meteorological and hydro geological services
- implementing tasks related to the conservation of water and water works and water management investments

The role PGW in the project is participating in thematic packages, share experiences, strategies and plans.

VÝSKUMNÝ ÚSTAV VODNÉHO HOSPODÁRSTVA
WATER RESEARCH INSTITUTE

SK

PP

PP6-WRI

Water Research Institute (WRI) was established in 1951, it is a public organization under the supervision of the Ministry of Environment SR. The institute applies quality management system in compliance with the standard ISO 9001. Main activities are aimed at research and development, expertise, professional water management consulting services and solutions for water management and ecological problems.

Main scope of work:
- expertise and other and other tasks based on the National Water Reference Laboratory for Slovakia
- examination of protection and use of surface water and groundwater resources
- quality and technology of drinking water and wastewater treatment
- elaboration of water management planning documents in accordance with WFD, organizing events to increase the professional knowledge of water management staff
- monitoring of water quality in transboundary courses
- elaboration of flood protection conceptions

The WRI provides the clients with the commercial services as complex laboratory analyses of water, sediments, biota, the assessment of infrastructural projects, calibration of hydrometric tools, studies in the field of water management.

VODOVOD I KANALIZACIJA D.O.O. SPLIT
SPLIT WATER AND SEWERAGE COMPANY LTD

HR

PP

PP7-VIK-Split

Split Water and Sewerage Company Ltd (VIK-Split) Infrastructure and (public) service provider is a regional water supply company operating in the territory where the pilot area will be established, provides water in 4 towns / cities and 9 municipalities. The installations for 4 towns include conveyance from river Jadro, 5 km from the center of Split, a supply and water distribution network of 1400 km, 57 reservoirs and 50 pumping stations. Some municipalities have different source of drinking water, for example Marina from drilled well and island of Šolta from river Cetina.

VIK-Split is performing economic activities on the market within the legal frame of its business and is exclusive provider of the following services:

- supplying drinking water
- sewerage and wastewater treatment
- maintenance of the rainwater canals in the Split area

As experts, they deal with the problems of water salinity caused by lowering the underground fresh water level in summer period in water supply system in Community of Marina

HRVATSKI GEOLOŠKI INSTITUT
CROATIAN GEOLOGICAL SURVEY

HR

PP

PP8 - HGI-CGS

Croatian Geological Survey (HGI-CGS) is the foremost public research institute in the field of geosciences in Croatia. The institute has three departments: Department of Geology, Department of Hydrogeology and Engineering Geology, and Department of Mineral Resources.

Employees of the HGI-CGS are highly experienced and competent in geological, hydrogeological, geochemical, engineering geological and environmental research. HGI-CGS collects diverse types of geological information and distributes them to the economy, public administration, scientific community and the general public. Researchers are active in the popularization and promotion of geological science through workshops for all age groups, science fairs, professional and scientific lectures. HGI-CGS collaborates with many institutions of similar affiliation in the country and abroad – universities, institutes, and other types of organizations. HGI-CGS also provides consulting services on a commercial basis for different stakeholders.

Department of Hydrogeology and Engineering Geology has centennial experience in a wide spectrum of hydrogeological research, ranging from identification and intake of potable and thermal groundwater, groundwater protection, quantitative and chemical status monitoring and assessment, fluid and heat flow modelling, complex hydrochemical research, tracer tests as well as interaction of groundwater with dependent ecosystems and anthropogenic activities and constructions.

ASSOCIATED PARTNERS

General Directorate of Water Management

It is an independently operating institute in Hungary and a central government body under the direction and supervision of the Minister of Innovation and Techology. As a central governing body – supervises, coordinates and controls the professional activities of the water directorates.

International Groundwater Resources Assessment Centre (IGRAC)

IGRAC facilitates and promotes international sharing of information and knowledge required for sustainable groundwater resources development and management worldwide. Since 2003, IGRAC provides an independent content and process support, focusing particularly on transboundary aquifer assessment and groundwater monitoring.

Tarnów Waterworks

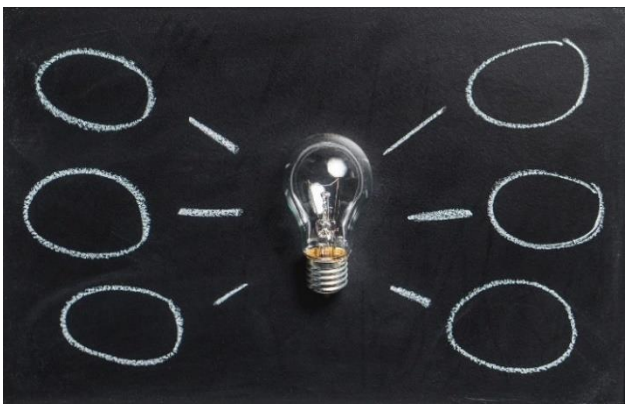
IT is an infrastructure and public service provider in Tarnów, Poland.
Their main activity is water treatment and distribution as well as wastewater treatment.
They supply water to three municipalities that own the company, and one nearby the city and surrounding municipalities which represents a total of 200 000 people.
They also represent the pilot area in Poland.

Veneto Regional Agency for Environmental Protection (APRAV)

APRAV is environmental agency, for Veneto region of Italy.
Their main role is the natural environmental protection of the region, with the task of keeping under control the natural environment and verify environmental regulations.

Croatian Waters

Croatian Waters is a legal entity for water management established by the Water Act and founded by The Republic of Croatia. The activities of Croatian Waters is water management within the limits of the following tasks:
• Preparation of planning documents for water management
• Water regulation and protection from adverse effects of water
• Amelioration drainage
• Water use
• Water protection
• Irrigation
• Management of the public water estate



KICK OFF MEETING OF DEEPWATER PROJECT:

11-12 JUNE 2019

BUDAPEST HUNGARY

The event was hosted by the project's lead partner, the Mining and Geological Survey of Hungary. All eight project partners and five associated partners, met for two days of engaging meetings, group work and interactive sessions.

During the kick-off event, the participants discussed details of management structure and administrative reporting steps. Also the project Steering Committee was established. The second day was dedicated to introducing implementation activities of all thematic work packages and communication work package to initiate a discussion among participants. The fruitful conversations focused on bulling common understanding on different aspects of the project objectives and its implementation. The partners have set up tasks to be carried out in the near future.

KICK-OFF MEETING OF CROSS-SECTORAL STAKEHOLDERS GROUP

The main purpose of the meetings was to establish contacts and encourage collaboration and discussions, with stakeholders who can provide a contribution to the project or benefit from it. Information about the project aims and project partners were presented.

We want to encourage participants to get involved and comment our material available on the project website and social media. We inform them about the possibility of participateing in future thematic training, about good practices and applications of MAR solutions in Central Europe, our research results from pilot action and about the suitability of developed MAR solutions for specific areas in Central Europe.

10 September 2019, Komiža, CROATIA

PARTICIPANTS **21**

Croatian CSSG kick-off meeting was held on the beautiful island of Vis, in the heart of UNESCO Geopark Vis Archipelago. The main goals of the meeting were:

- to introduce DEEPWATER-CE project (duration, partners, mission, activities and expected results) to expert audience and general public,
- to present specific geological and hydrogeological settings which enable autonomous water supply of Vis island,
- to define main pressures and challenges of water supply on Vis island,
- to present potential solutions to cope with increased water demand, climate changes and climate extremes (e.g. prolonged drought) – mainly MAR methods,
- to develop a platform for further cooperation with local community and experts.

Several interesting interdisciplinary presentations were held by eminent researchers and professors, with topics such as: (i) the concept of Managed Aquifer Recharge, (ii) Hydrogeological characteristics of Vis island, (iii) Hydrological factors of karst aquifer recharge, (iv) History and future of Vis water supply and (v) Tourism and water demand.

Presentations sparked an interesting discussion and participants expressed great enthusiasm towards DEEPWATER- CE and application of its results. As a result, relatively small but motivated basis of stakeholders was created which will facilitate upcoming field research – hydrogeological, geophysical and geochemical investigations.

14th September 2019, Budapest, HUNGARY

PARTICIPANTS 46

The national cross-sectoral stakeholder group kick-off meeting, organized by the Mining and Geological Survey of Hungary and the Geogold Kárpátia Ltd. took place in the ceremonial hall of the Mining and Geological Survey of Hungary.
The main goals of the meeting were to introduce the DEEPWATER-CE project's mission and expected results, as well as to launch a close cooperation between the Hungarian project partners and all concerned stakeholders. Participants could learn about the

- main project activities,
- MAR technology and different MAR types,
- MAR related policy environment in Hungary,
- pilot area, the Maros alluvial fan's hydrogeological environment and the region's water supply problems,
- operation of the MAR technology in Borsodszirák, NE Hungary,
- ENeRAG H2020 project, also investigating the adoption of MAR systems.

Following the presentations, a fruitful roundtable discussion took place accross participants on the possible application of the MAR technology in Hungary with all its bottlenecks, challenges and potential benefits.

30th September 2019, Sosnowiec, POLAND

PARTICIPANTS 45

In the first part of the meeting our project partners presented the goals, tasks and expected results of the project. Then the project's stakeholders presented their activities and experience in this subject:

- Infiltration water well field in Krajkowo for the city of Poznań
- The results of the Horizon 2020 AquaNES project: Demonstrating synergies in combined natural and engineered processes for water treatment systems
- Infiltration water well field for the city of Wrocław – history and current water exploitation

In the last part of the meeting two INTERREG Central Europe projects were presented:

- boDEREC-CE: Board for detection and assessment of pharmaceutical drug residues in drinking water - capacity building for water management in Central Europe
- Results of AMIGA-CE project: Integrated approach to management of groundwater quality in functional urban areas (G. Gzyl)

16th Octoberber 2019, Munich, GERMANY

PARTICIPANTS 34

The meeting took place at the Technical University of Munich from 12:30-16:30. Stakeholders attended the meeting mainly from the target group higher education and research.

Project Management from PP3 welcomed the participants and presented the DEEPWATER-CE Interreg Project. Three guest speakers held presentations about MAR schemes in Italy, Germany and Saudi Arabia.

In a following workshop session problems with implementation of MAR schemes and regulations for those were discussed.

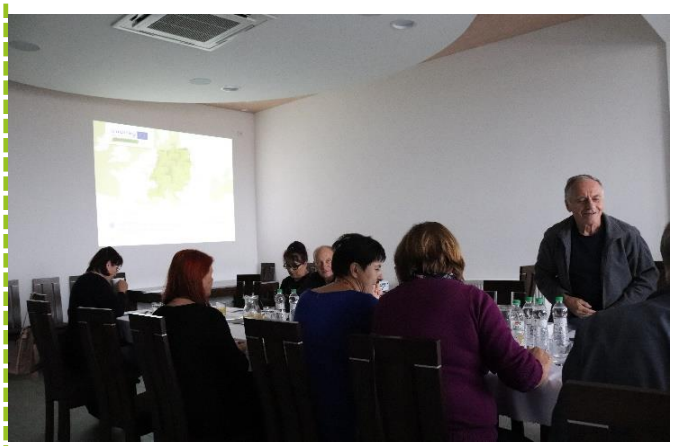
Finally, the meeting was closed with agreeing on future media to communicate in the newly formed network of stakeholders

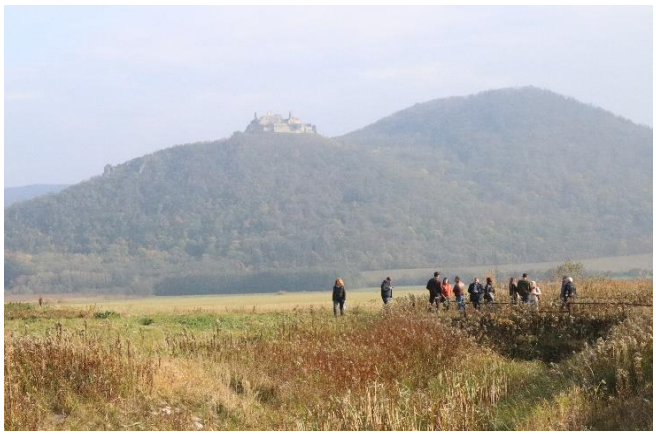
30 October 2019,Plavecke Podhradie SLOVAKIA

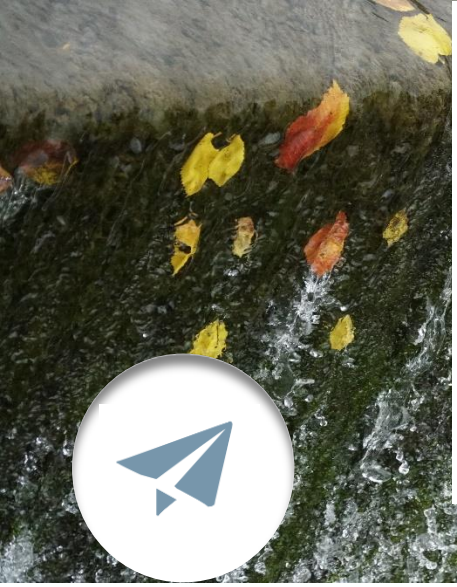
PARTICIPANTS 33

The meeting was held in Plavecke Podhradie (Zahorska lowland) where the pilot site in porous sedimentary rocks was selected. After introduction of all the participants, the session started by information on DEEPWATER-CE project´s main aim, activities, expected results and explanation of MAR schemes principle. The results of international projects, already implemented in Zahorska lowland, dealing with water availability for agricultural uses were presented. Then followed the presentation on geological-hydrogeological conditions of pilot site in Plavecke Podhradie area.

Moreover, considering the porous geological conditions, the possibilities of water accumulation in drainage systems in Podunajska lowland was introduced. These sites seem to provide favorable possibilities for MAR schemes implementation.
The most valuable part of the meeting was the vivid discussion with stakeholders in order to take into consideration their expectations and requirements for future MAR schemes implementation. The meeting was finished by short excursion to pilot site in order to get familiar with the technical and natural conditions in situ of the MAR solutions.







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CONTACT US:

Coordinator

ELISABETH MAGYAR

magyar.elisabeth@mbfsz.gov.hu

Lead Partner

MBFSZ Mining and Geologic Survey of Hungary

Deepwater-ce

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PARTNERS

GEOGOLD KARPATIA ENVIRONMENTAL CONSULTING Ltd.

HGI 1909 HRVATSKI GEOLOŠKI INSTITUT CROATIAN GEOLOGICAL SURVEY

MBFSZ MINING AND GEOLOGICAL SURVEY OF HUNGARY

Państwowe Gospodarstwo Wodne Wody Polskie

Technical University of Munich

UNIWERSYTET ŚLĄSKI W KATOWICACH

VODOVOD I KANALIZACIJA SPLIT

This newsltter is edited by DEEPWATER PARTNERS.
For more information, please contact with PP4:
KATARZYNA STACHNIAK - lead author
UNIVERSITY OF SILESIAIN KATOWICE, POLAND
katarzyna.stachniak@us.edu.pl

COVER GRAPHICS, SECTION PHOTOS: Katarzyna Stachniak
MEETING PHOTOS: project partners
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