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Brief project description

Project CC-WaterS officially started on May 1st, 2009; the Serbian partners (IPA1PP-University of Belgrade – Faculty of Mining & Geology FMG and IPA2 PP – Institute for water development Jaroslav Cerni JCI) formally signed their Grant Contract with the European Delegation of the European Union to the Republic of Serbia 6 months later, in November 2009. The international project consortium consisted of 18 project partners from 9 SEE countries. The project was led by the Municipality of the City of Vienna - Waterworks, Austria. FMG was represented by six experts, four of them are members of the Centre of Karst Hydrogeology of the Department of Hydrogeology.

The structure of the CCWaterS project included seven thematic groups or working packages (WP). Five of them are purely technical and very closely linked; in chronological order they are: *Climate Change (WP3), Water Resources Availability (WP4), Land Uses and Water Safety (WP5), Socio-economic Evaluation (WP6)*, and *Water Supply Management Measures (WP7)*. They are supported by the two more organizational packages, *Management and Coordination (WP1) and Communication and Dissemination (WP2)*.

CC-WaterS identified and evaluated resulting impacts on the availability and safety of public drinking water supply for several decades to come. Elaborated measures to adapt to those changes form the basis for a Water Supply Management System (WSMS) regarding an optimization of water extraction, land use restrictions, and socio-economic consequences under climate change scenarios for water suppliers in SEE. The joint actions to produce this technical system as the main output of the project were performed on a trans-national level in the Alps, Danube Middle and Lower Plains, and coastal areas, representing different SEE-characteristic climates and topography.

Accordingly, each of the countries involved identified test areas where the established methodology outlined above was applied. In total, there were 25 test areas (from 1 to 5 per country); different climates, morphologies, geological settings and water availability are well represented. In some of the areas water is already scarce and these

areas are facing different problems such as water shortage due to limited recharge, inappropriate land use, water pollution, and salt water intrusion. Some other partners proposed test areas which are rich in water, representing current or very promising sources for future and alternative water supply. The latter is the case with test areas proposed by the IPA1 - FMG.

Serbian PPs have established systems for monitoring water quantity and quality on selected water points in test areas. For instance, FMG focussed on the observations of groundwater parameters on karstic springs draining the Beljanica Mt and Stara Planina Mt.; a database concerning climatic elements (rainfall, air temperature), hydrology and springflow regime in both test areas has been created and its data incorporated into the project main transnational database; GIS-based maps for hydrogeology, aquifer vulnerability, land use and other thematic issues have been prepared; several mathematical models of groundwater flow (stochastic and hydrodynamical) have been created and tested; the optimization of technical solutions was done by using the specialized software Fuzzy Decimaker; many technical solutions, measures, and legislative acts are proposed to improve water management at national and local levels.

The main result of CC-WaterS is a SEE water supply management system regarding optimization of water extraction and land use restrictions under climate change scenarios for water suppliers in SEE.

Further results of activities undertaken by CC-WaterS are: the determination of imbalances based on different water demands; the creation of information strategies for SEE public, policy makers and stakeholders about the relationship among ecosystem services, water treatment and costs; profit from best practices in land use for safeguarding recharge areas for future water supply for stakeholders and end users; increased awareness of stakeholders and policy makers of the relationships between water supply management measures and socio-economic aspects; enhanced crisis management for water suppliers; sustainable national, regional and local water supply management practice in SEE; and the availability and safety of future drinking water resources.

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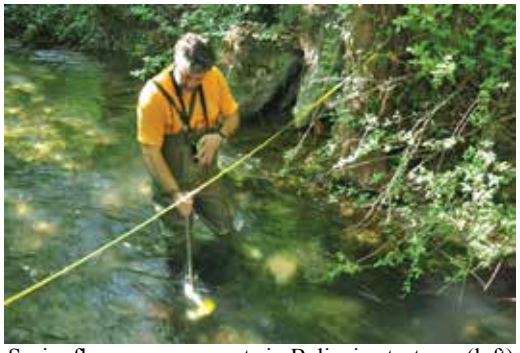
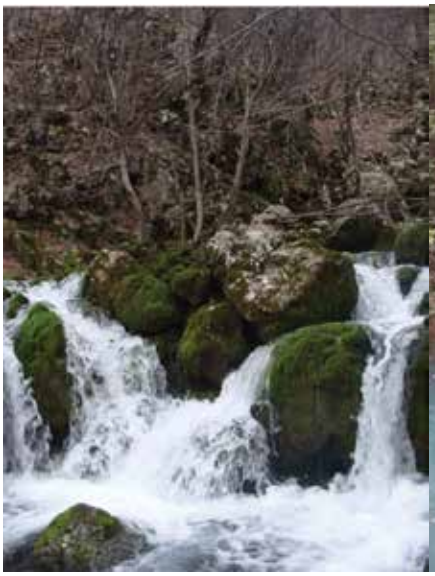
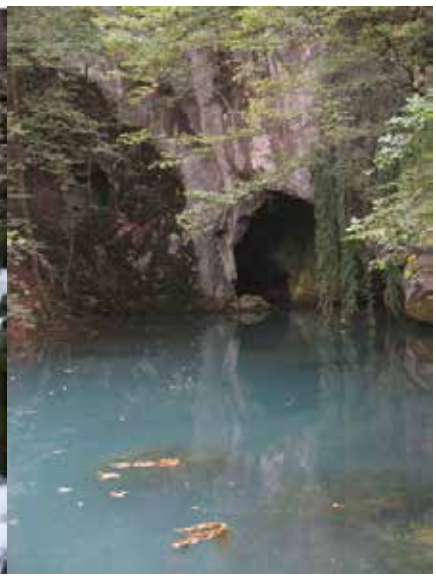
PHOTO ALBUM

Participants of the project kick-off meeting, City hall, Viena, May 2010

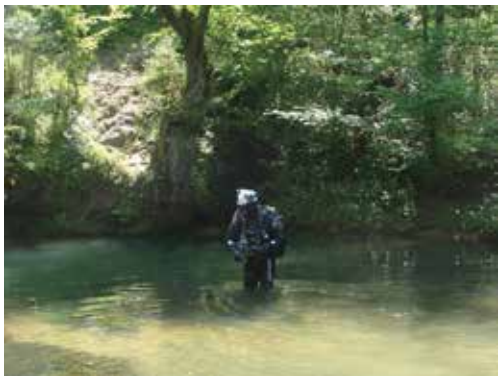
Project members of IPA 1 (FMG), IPA 2 (IJC) and external consultants. Preparatory staff meeting, Belgrade, May, 2010




Springflow measurements in Beljanica test area(left) and downloading diver data in Krupac spring (Pirot)

Beljanica test area. Veliko vrelo spring (;eft) and Krupajsko vrelo spring (right)

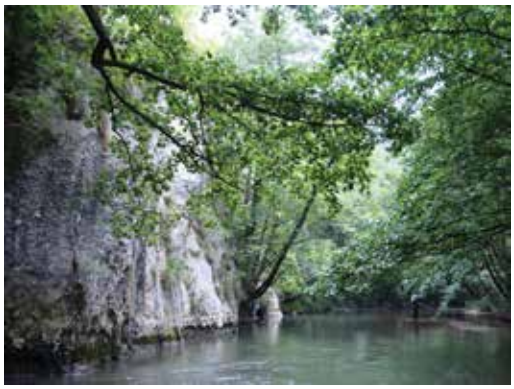



Diving in the Jelovičko spring on Stara planina Mt. and recording data on Živkova rupa temporary spring


Presentation of IPA 1(FMG) works in Patras, Greece (left) and core staff meeting in Thessaloniki, Greece

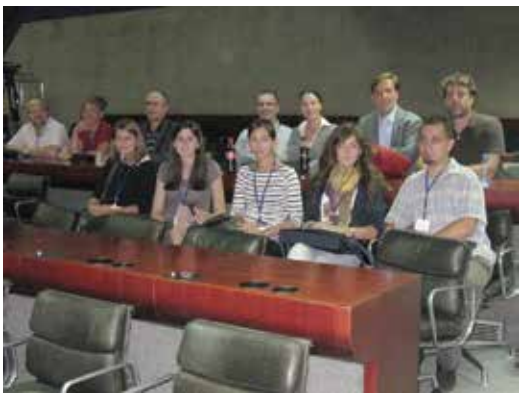

Field trip in Lendava (Slovenia) (left) and closing meeting of WP3 at the University HQ, Belgrade.


WP 7 closing meeting in Vela Luka (Croatia) and field visit of local waterworks




Beljanica test area. Mlava River (left) and measuring water quality parameters of Mlava spring


Nišava riverflow measurements (left) and visit of monitoring well of Ljubljana source

Project presentationfor media (movie CCWaterS) and at IWA conference, Belgrade, 2011 (Sava Centre)