



## Implementation of international projects in water management in Serbia

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Inter-project coaching / 23.09.2020.

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

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Strengthening of master curricula in water resources management for the Western Balkans HEIs and stakeholders  
Project number: 597888-EPP-1-2018-1-RS-EPPKA2-CBHE-JP



## DEVELOPMENT DEPARTMENT SUCCESSFULLY COMPLETED PROJECTS



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**Project: PREPARATION OF DESIGN DOCUMENTATION FOR RECONSTRUCTION PLANNING OF BAJA-BEZDAN CANAL - RPBBC**



- Hungary-Serbia IPA Cross-border Co-operation Programme
- Project Partner is a water management company from Baja, Hungary.
- Associated Partner is a water management company from Sombor, Serbia.
- Total project value is 850,000 EUR.
- Project includes supply of necessary equipment, preparation of Feasibility study, preparation of Preliminary and Main Design on reconstruction of the canal and its two sluices.
- Project duration: 15 months, start date: 1 September 2010

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**Project: IMPROVEMENT OF DROUGHT AND EXCESS WATER MONITORING FOR SUPPORTING WATER MANAGEMENT AND MITIGATION OF RISKS RELATED TO EXTREME WEATHER CONDITIONS - WATERATRISK**



- Hungary-Serbia IPA Cross-border Co-operation Programme
- Project Partner is a Faculty of civil Engineering, University of Szeged, Hungary, Faculty of Sciences Novi Sad, Department of Geography, Faculty of Agriculture, Watermanagement Company from Szeged - ATIVISIG
- Total project value is 858.085 EUR.
- The main goal is to mitigate the risks associated with extreme weather conditions in the cross-border region, developing new solutions for monitoring droughts, excess inland water and channel conditions
- Collecting existing data, setting up measuring stations for precipitation, recording the selected terrain with an aircraft, and processing the collected data, participating in the development of a hydraulic model.
- Project duration: 24 months, start date: 1 October 2017

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**Project: STRENGTHENING COOPERATION BETWEEN RIVER BASIN MANAGEMENT PLANNING AND FLOOD RISK PREVENTION TO ENHANCE THE STATS OF WATERS OF THE TISZA RIVER BASIN - JOINTISZA**



- Danube Transnational Programme
- Project Partners are: Hungary, Romania, Slovakia, Ukraine, Austria, Serbia
- Total project value is 2.260.000 EUR.
- Specific objective: Strengthen transnational water management and flood risk prevention
- The main output of the project will be an updated final draft of the Integrated Tisza RBM Plan, which already includes the primary aspects of the Floods Directive.
- Project duration: 30 months, start date: 1 January 2017

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**Project: ECOFRIENDLY WATERMANAGEMENT AGAINST EXTREME WEATHER CONDITIONS IN THE CROSS BORDER AREA - ECOWAM**



- Hungary-Serbia IPA Cross-border Co-operation Programme
- Project Partner is a water management company from Szeged, Hungary, European Affairs Fund of Autonomous Province of Vojvodina
- Total project value is 1.494.680,31 EUR.
- Prevention of negative effects on the quality of water bodies by establishing a joint system for improving water management in AP Vojvodina and Csongrád County
- Dredging of sediment from Jegrička river, removal of overgrown vegetation from the riverbed, development of a joint monitoring and analysis system for water quality and biodiversity conservation, as well as defining long-term solutions to prevent degradation of water body quality.
- Project duration: 30 months, start date: 1 October 2017

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**Project: TISZA RIVER MODELLING ON THE COMMON INTEREST SECTION OF HUNGARY AND SERBIA - TRMODELL**



- Hungary-Serbia IPA Cross-border Co-operation programme
- Project Partners was: water management company from Szeged, Hungary and Faculty of Technical Sciences from Novi Sad, Serbia.
- Total project value is 700,000 EUR.
- Project includes supply of necessary equipment, preparation of hydraulic model for Tisza River section in Serbia and an update of the existing model for Tisza River section in Hungary; collection of input data.
- Project duration: 15 months, start date: 1 August 2010

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**Project: ENVIRONMENTALLY FRIENDLY WATER MANAGEMENT IN PLAIN AREAS - EWAM**



- Hungary-Serbia IPA Cross-border Co-operation programme
- Project Partner is a Csongrad County, Hungary.
- Total project value is 598.624,60 EUR.
- PWMC Role in the action: Lead Beneficiary
- The project aims at improving cooperation and monitoring in water management in AP Vojvodina and Csongrad County.
- Project duration: 18 months (February 2013 – August 2014)

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## Project: **WATERWAYS FORWARD**



- Project was funded from INTERREG IVC programme.
- Total project value: 2,800,000 EUR
- Participants: 17 partner organizations from 11 EU countries, Norway and Serbia.
- Participants from Serbia: European Affairs Fund of Autonomous Province of Vojvodina and PWMC Vode Vojvodine.
- Project objective is the improvement of regional inland waterways management and surrounding regions through the promotion of integrated, sustainable and individual approaches while paying attention to their multi-functional use.
- Project duration: 2010-2013

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## Project: **Danube FLOODRISK**



- Transnational cooperation programme.
- Financed from the EU funds.
- Total project value: 6,300,000 EUR
- Participants: Ministry of Environment of Romania as a Lead Partner and Austria, Germany, Bulgaria, Hungary, Italy, Slovakia, Croatia and Serbia.
- Project includes: defining measures for flood risk reduction: risk assessment, risk mapping, involvement of stakeholders, risk reduction by adequate spatial planning.
- Project duration: until 2012

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Project: **DMCSEE** –

## DROUGHT MANAGEMENT CENTRE FOR SOUTHEASTERN EUROPE



- Transnational cooperation programme.
- Financed from the EU funds.
- Total project value: 2,200,000 EUR
- Participants: Slovenia, Serbia, Bulgaria, Hungary, Greece, Croatia, Montenegro, Macedonia and Albania
- Project includes: assessing the problem of droughts and ongoing climate changes and their impact on water management and agriculture; drought risk mapping for irrigation scheduling system which will ensure a more functional use of the canal network in Vojvodina.
- Project duration: 36 months (2009-2012)

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Project: **TISZA CATCHMENT  
AREA DEVELOPMENT - TICAD**



- Transnational cooperation programme.
- Financed from the EU funds.
- Total project value: 2,700,000 EUR
- Participants: Hungary as a Lead Partner and Romania, Slovakia, Austria and Serbia
- Project covers Tisza River area and its objective is to define a proposal for coordination of legislation regarding water resource management and sustainable development of Tisza catchment area, including the development of water management in Vojvodina
- Project duration: 34 months (2009-2012)

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**Project: ENVIRONMENTAL OPTIMIZATION OF IRRIGATION MANAGEMENT WITH THE COMBINED USE AND INTEGRATION OF HIGH PRECISION SATELLITE DATA, ADVANCED MODELING, PROCESS CONTROL AND BUSINESS INNOVATION – ENORASIS**



- Location of the action: Europe: 1. Pilot site in Poland (Grabow); 2. Pilot site in Serbia (Čelarevo); 3. Pilot site in Turkey (Adnan Menderes University, Faculty of Agriculture (South Campus)); 4. Pilot site in Cyprus (Fassouri Plantations)
- PWMC Role in the action: Consortium member
- Donors to the action: European Union (FP7-ENV Programme)
- Total costs: 2.716.118 (PWMC "Vode Vojvodine": 104.700)
- Duration: 24 months – From 01/01/2012 to 31/12/2014
- ENORASIS offers an irrigation management Decision Support System (ENORASIS Service Platform and Components) for environmentally optimized and thus sustainable irrigation management for farmers and water management organizations.

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**Project: IMPLEMENTATION OF EU WATER FRAMEWORK DIRECTIVE**



NL Agency  
Ministry of Economic Affairs

- Government to government – project financed by the Government of Netherlands.
- Total project value: 130,000 EUR
- Participants from the Netherlands: RIVM (National Institute for Public Health and the Environment) as a Lead Partner
- Participants from Serbia: Republic Waters Directorate - as a Lead Partner, PWMC Vode Vojvodine – project partner and end-user
- Project includes capacity building to ensure expertise for significant improvement of water quality on the territory within the liability of PWMC Vode Vojvodine in accordance with WFD and new Water Law in order to ensure sustainable water management.
- **Project duration: 2 years**

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### ASSOCIATED PARTNER

Project: **EVER-MOVING BORDER EMERGENCY RESPONSE -EMBER**



- Croatia-Serbia IPACross-border Co-operation Programme
- Total project value: 1.023.664,93EUR
- Participants : Vukovar Srijem County , Srem County, Secretariat of the Provincial Government , Provincial Secretariat for Economy, Employment and Gender Equality , European Affairs Fund
- Main results/outcomes: Flood risk prevention
- Project duration: 06 October 2016 – 05 January 2018

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### ASSOCIATED PARTNER

Project: **EMERGENCY RESPONSE-NOW -ERNOW**



- Serbia - Bosnia and Herzegovina IPA Cross-border Co-operation Programme
- Total project value: 1.205.223,60EUR
- Participants : Šid Municipality , Brcko District Government
- Main results/outcomes: Flood risk prevention
- Improved skills and procedures of protection and rescue operational forces and harmonized actions of emergency and crisis management bodies in the cross-border region (CBR) during and after natural disasters in all their varieties (biological, geological, fire ...), with the focus on the action operationalisation on flood threats. Raised awareness of local population about actions and responses in case of flooding.
- Project duration: 2016 –2018

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## ONGOING PROJECT

### BABECA

### BEGA

### WETLAND RESTORE

### SWARM

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*Project:* **THE COMPLEX WATER MANAGEMENT DEVELOPMENT  
OF THE AREA OF THE BAJA-BEZDAN CANAL - BABECA**



- Hungary-Serbia IPA Cross-border Co-operation Programme
- Project Partner is a water management company from Baja, Hungary, European Affairs Fund of Autonomous Province of Vojvodina
- Total project value is 8,699,538 EUR.
- Reconstruction of Šebešfok and Bezdán locks with construction of remediation warehouse at Šebešfok locks, as well as removal of aquatic vegetation.
- Project duration: 36 months, closing date: 25 September 2020

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**Project: REVITALIZATION OF NAVIGATION INFRASTRUCTURE ON BEGEJ - BEGA**



- Romania - Serbia IPA Cross-border Co-operation Programme
- Project Partners are: Banat River Basin Administration – Apa Banat Timisoara, Timiș County Council, Provincial Secretariat for Regional Development, Interregional Cooperation and Local Self-Government Vojvodina, Public Water Management Company Vode Vojvodine
- Total project value is 13.877.987,41 EUR.
- Reparation of Hydrocomplex Klek and Srpski Itebej , Construction of working inspection path/cycle path, Construction of Floating dock and mooring points in Zrenjanin city, Repairation of HC Sânmihaiu Roman, Technical Documentation for the construction of a cross-border crossing. Project includes supply of necessary equipment.
- Project duration: 15 months, start date: 3 August 2017

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**Project: RESTORATION OF WETLANDS IN MIDDLE DANUBE – WETLAND RESTORE**



- Croatia-Serbia IPA Cross-border Co-operation Programme
- Project Partner is Zeleni Osijek Association (NGO), Public Enterprises Croatia Waters, Osiječko Baranjska County, Public Water Management Company Vode Vojvodine
- Total project value is 997.863,18 EUR.
- Continuation of the previous project ECOWET
- Project includes monitoring the condition of wetlands, revitalization of wetlands in 6 areas.
- Project duration: 15 June 2019 – 14.12.2021

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**Project: STRENGTHENING OF MASTER CURRICULA IN WATER RESOURCES MANAGEMENT FOR THE WESTERN BALKANS HEIS AND STAKEHOLDERS - SWARM**



- Erasmus + programme
- Total project value: 931.289,00 EUR
- Participants : Greece, Portugal, Norway, Kosovo, Montenegro, Bosnia and Herzegovina, Croatia, Bulgaria, Serbia
- Improvement of the quality of education and training
- Main results/outcomes: at least 15 novel courses and learning materials developed, at least 90 members of the teaching staff trained, a Master curriculum developed, one professional specialist study programme developed -> development and modernisation of curricula within the partner countries
- Project duration: 15 November 2018 – 14 November 2021

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## FUTURE PLANS LIST OF PROJECTS

### **Circular economy - reuse of sediment**

Sediments are part of potential mineral resources and environment also. Dredged sediments are one of the biggest potential waste flows, according to regulations. Dredged sediments are mostly disposed on our land. According to our annual business report we remove about 1.000.000 m<sup>3</sup> per year and it is estimated that the same quantity remains in the system.

### **Circular economy - uses of biomass from watercourses in Vojvodina**

Circular economy and renewable resources are becoming increasingly important for sustainable development. As a renewable source, biomass has the potential to replace fossil sources. PWMK VV every year removes reeds and vegetation from the canal banks. We don't have data about amount of mowed vegetation but the quantity is not negligible.

### **Methodology for calculating of resource and environmental costs for water planning purposes**

The Wateco guidance on the economic analysis for the water Framework Directive (WFD) identifies environmental and resource costs (ERC) as one of the issues, which require further investigation in order to make them of direct use for developing river basin management plans. It should take account of the principle of recovery of the costs of water services, including environmental and resource costs, having regard to the economic analysis which is base for good water planning system. Republic of Serbia doesn't established methodology for calculation of those costs which is necessary for RBMP.

### **Methodology for analysis of the diffusion of herbicides and pesticides application in the soil and analysis of the area coverage with agricultural crops and analysis of the nitrogen content in the soil**

Lack of data about analysis of the area coverage with agricultural crops and analysis of the nitrogen content in the soil. Also, we need methodology for analysis of the diffusion of herbicides and pesticides.

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## FUTURE PLANS LIST OF PROJECTS

### **Establishment of a register of water use, as an integral part of the water management information system for the purposes of the water management plan**

It is important that the water resources management authorities have a clear picture of the level of abstractions taking place. There is a need to carry out an audit of current water uses/ abstractions and to log these in a central water abstraction register for the authorities to have a clear picture of ongoing abstractions. The abstraction register needs to be combined with a water license database, in which abstraction licenses are registered. The proposed abstraction register-database forms a key component of the national water resources database.

### **Invasive Species Database (Georeferencing)**

Existing invasive species need to be georeferenced and also the existing database upgrade with new taxons. Especially, for aquatic invasive species and species in coastal zone.

### **Modeling of the impact of land use on water quality in watercourses in the APV**

Agricultural diffuse water pollution represents a notable pressure on water quality. Due to their efficiency and cost-effectiveness, water quality models have been increasingly applied to catchments as Decision Support Tools (DSTs) to identify mitigation options that can be introduced to reduce agricultural diffuse water pollution and improve water quality. Aim of the proposed project is to combine hydrological/hydraulic and water quality models to assess the impact of agricultural practices on river/canal water quality in Vojvodina in order to support water quality management and control.

### **Development of Software for cost and revenue reporting application for providing of water services**

According to Law on Water PWMCs are obliged to prepare Water Management Plans, and they are not in charge for PUCs (Who are Water services providers) and don't have any jurisdiction over them, so it is necessary to establish the Software solution or even information system via which PUCs would be providing data about cost of production of water services and revenues obtained from providing water services, for the purpose cost recovery calculation.

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## FUTURE PLANS LIST OF PROJECTS

### **Assessment of irrigation water quality of water bodies in Vojvodina - capacity building, establishment of by-law act**

The composition of water used for irrigation has a major impact on soil characteristics, on yield and quality of cultivated plants, and on irrigation equipment. On some of the irrigated areas in Vojvodina, heavily mineralized water has already led to the emergence of secondary salinization of soil. PWMC VV is obligated to provide water of satisfactory quality to users. Unfortunately, Serbia doesn't have regulation about quality of water for irrigation. This project proposes the development of the system of irrigation water quality monitoring and water quality assessment as a necessary measures in the production under irrigation systems in order to prevent adverse effects with capacity building of water authorities and establishment of by-law act about quality of water for irrigation.

### **Project design and installation of piezometers in APV in purpose of groundwater monitoring**

Monitoring of groundwater in Republic of Serbia is partially in line with EU Water Framework Directive provisions, however it does not cover entire territory of the Republic of Serbia which particularly refers to the province of Vojvodina. Considering that population living in the territories of APV obtains water supply from groundwater bodies, forming a network which will ensure monitoring is essential. Expansion of monitoring network is required to determine the current state and hence establish rational exploitation of good quality groundwater as well as to ensure groundwater protection against pollution. Original number of facilities for groundwater monitoring has been reduced (either damaged or destroyed) over the time, and their reconstruction did not follow the degradation trend. According to available data, only some of them are currently active.

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## FUTURE PLANS LIST OF PROJECTS

### Remote Sensing of Phosphorus in purpose of prediction of eutrophication and protection of surface water

Eutrophication is often caused by human activities such as the additional input of fertilizers from agriculture farming, food for aquaculture, untreated and/or treated sewage as well as industrial wastewater inputs. Eutrophication causes the deterioration of the coastal environment and typically leads to the formation of harmful algal (phytoplankton) blooms which may subsequently induce fish kill, further ecosystem damage. Eutrophication degrades the water quality by accelerating organic matter growth and decomposition as well as decreasing the light availability in the waters. The connection between nutrient input and algal blooms for inland water productivity is well known but not the spatial pattern of water nutrient loading and algae concentration. Remote sensing provides an effective tool for authorities to monitor nutrient abundances via the association with algae concentration.

### Identification of nitrate vulnerable zones

Protected areas are all areas designated as such based on applicable regulations, in order to specifically protect surface waters, groundwaters, and valuable ecosystems dependent on them. Under Nitrates Directive all states are obliged to identify nitrate vulnerable zones. Many problems were encountered in identifying vulnerable zones in Serbia. First of all, the water monitoring and monitoring network is insufficient against the mapping unit. Furthermore, information on nutrient losses and leaching resulting from agricultural production into the waters is incomplete. The indicative costs for the implementation of the Nitrate Directive in Serbia have also been estimated. The conclusion is that the biggest problem is precisely the finances.

### Capacity building in ecological monitoring and aquatic bioassessment

Human-driven global change is causing ongoing declines in biodiversity worldwide. In order to address these declines, decision-makers need accurate assessments of the status of and pressures on biodiversity. However, these are heavily constrained by incomplete and uneven spatial, temporal and taxonomic coverage. These data-poor regions are often those experiencing the strongest threats to biodiversity.

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## FUTURE PLANS LIST OF PROJECTS

### ПРЕДЛОГ ПРОЈЕКТА ЗА КОНКУРИСАЊЕ У ОКВИРУ ИПА ПРОГРАМА ПРЕКОГРАНИЧНЕ САРАДЊЕ МАЂАРСКА-СРБИЈА ЗА ПЕРИОД 2021-2027.

Р. Б.	ПРОЈЕКАТ/ГЛАВНА ПРОЈЕКТНА АКТИВНОСТ	ПРОЦЕЊЕНА ВРЕДНОСТ	ПРИОРИТЕТ
1	Реконструкција управне зграде Хс ДТД у Малом Стапару	400.000 €	РАДОВИ
2	Санација и уређење грађевинских објеката у кругу преводнице у Бездану	200.000 €	РАДОВИ
3	Израда мерног профила за квалитет и квантитет вода у профилу Риђица	20.000 €	РАДОВИ
4	Израда асфалтног застора на одбрамбеној линији Д.12 у недостајућем делу до државне границе у дужини 3.000 m	700.000 €	РАДОВИ
5	Ојачање круне одбрамбеног насипа израдом тузаничног застора на круни, на деоници Д.12 (km 35+700 - km 49+410; km 15+811 - km24+995), у дужини 22.894 km	930.000 €	РАДОВИ
6	Набавка мобилних црпних агрегата на електро погон МПА-525 са пратећом опремом, монтажном-демонтажним цевоводима (750 m) и пратећим фитинзима	450.000 €	ОПРЕМА
7	Пловни цевовод за пловни багер и припадајући фитинзи (флотери за 600 m потисни цевовод 1.000 m са фитинзима)	200.000 €	ОПРЕМА
8	Израда барже за транспорт измуњеног материјала	600.000 €	ОПРЕМА
9	Хоргош-Мартонош - изградња црпне станице	1.295.000 €	ОПРЕМА

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**THANK YOU!**

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