



MINUTES OF THE WORKSHOP

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University of Nis



**Strengthening of master curricula in water resources management
for the Western Balkans HEIs and stakeholders**

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1. Introduction

This document reports the Workshop on innovative practices in the EU water sector: barriers and opportunities of the Erasmus+ Capacity Building in the Field of Higher Education project „Strengthening of master curricula in water resources management for the Western Balkans HEIs and stakeholders“ (SWARM), held at the University of Natural Resources and Life Sciences (BOKU) from 8 to 10 May 2019. The meeting was chaired by Michael Tritthart.

The purpose of the workshop was to:

- Present the current situation in the Western Balkan countries;
- Develop a common understanding of the innovative practices in the EU water sector trying to present some of the present barriers and future opportunities.

The project's aims and objectives were reiterated, discussed and endorsed.

The workshop agenda was adopted without changes.

2. First session - Opening and WP1

Speakers:

Michael Tritthart, University of Natural Resources and Life Sciences, Vienna (BOKU)

Dejan Ubavin, University of Novi Sad (UNS)

Emina Hadžić, University of Sarajevo (UNSA)

Goran Sekulić, University of Montenegro (UoM)

Jelena Djokić, University of Pristina in Kosovska Mitrovica (UPKM)

Olivera Gavrilović, Public water management company Vode Vojvodine (PWMC VV)

Kurt Glock, University of Natural Resources and Life Sciences, Vienna (BOKU)

Summary:

The meeting started at 10:00 with the SWARM participants' registration.

Michael Tritthart opened the welcoming session and presented BOKU university as well as work package 1 as a work package leader. The content of WP1 is: I) Identification of Western Balkans regional issues related to water resources management; II) The general overview of existing successful models of education in the field of WRM of EU HEIs and comparative analysis with the existing curricula in WB partner countries; III) Three-day workshop on innovative practices in the EU water sector. WP1 is the base for preparing trainings of professionals in water sector in WB partner countries and for the definition and development of the new courses and master curricula in WB countries. He highlighted the achieved tangible results.

Dejan Ubavin presented issues related to the water resources management (WRM) in Serbia. He pointed out the importance of strengthening the water management in Serbia. Water management issues in Serbia can be summarized as:

- Economic price for drinking water (which includes drinking water supply, water discharge and treatment) as main method of financing of Local Public Water Utilities in Serbia is very low (0.6 – 0.72 EUR/m³), while the real economic price for drinking water in order to secure proper functioning and maintenance of the water distribution system should be 1.5 EUR/m³.
- Insufficient investment in water sector in last 20 years.
- Water losses in water supply networks are large, because the networks are poorly maintained.
- Water protection is the weakest part of the water management system. i.e. poor application of legislation in wastewater treatment.
- Flood protection is the main problem in the area of protection from water. Maintenance of the existing systems for flood protection is minimal, which causes the reduction of systems functionality.
- Irrigation systems cover the small parts of arable land.
- Drainage systems have poor maintenance, which causes the reduction of system efficiency.
- Coordination and cooperation in the planning and implementation of programs is on unsatisfactory level.
- Decentralized management, which is applied in developed countries, is at the beginning in Serbia. Insufficient capacity for implementation of legislative requirements and goals especially in smaller municipalities.
- It is necessary to adopt the new, functional and sustainable concept of water management based on groundwater, and artificial reservoirs, if there is not enough groundwater quality or quantity.
- There are not enough fully defined projects for whose implementation international funds could be sought.
- Groundwater is not adequately covered in water monitoring.

Emina Hadžić presented the water management system in Bosnia and Herzegovina and recommendations related to solve problems in this field. There is no state-level law on water resources policy. Bosnia and Herzegovina does not have a national sustainable development strategy or other comprehensive development strategy. The draft development strategy was prepared.

Goran Sekulić presented water resources in Montenegro which has sufficient water resources, but they are unevenly distributed the country (43 l/s km²). The identified problems are: protecting water as a vulnerable resource, increasing the public understanding of the water sector, growing impact of climate change on water. The Ministry of Agriculture and Rural Development is the main body responsible for development water policy, while the Ministry of Sustainable Development and Tourism is responsible for environmental policy.

Jelena Djokic presented water related issues in Kosovo*. Annual average rainfall is 700 mm which also impacts the water resources. There are seven regional water companies responsible for the water resources management and two regional irrigation companies. Problems can be seen in water supply because of old water pipelines. Investment is focused on regulation of rivers and improvement of water infrastructure especially for water and wastewater services. Flood risk management planning is a process at the very beginning. The industrial pollution has been found as a great problem and poses a daily threat to water resources.

Olivera Gavrilovic presented a general approach to the issues related to WRM. Over 90% of Serbia has a share in the Danube River Basin. Public water management companies facilitate the operational implementation of water. Identified problems are: investment in the water sector has been significantly reduced, inadequate maintenance of water systems and structures, insufficient number of projects.

Kurt Glock presented EU recommendations and legislation in water sector. In terms of the analysis of EU legislation in WRM the following directives are highlighted: Water Framework Directive, Floods Directive, Urban Waste-Water Treatment Directive, Drinking Water Directive, Habitats Directive, and Birds Directive.

The first session finished at 13:00.

3. Second session – EU innovative solutions in water sector

Speakers:

Günter Langergraber, University of Natural Resources and Life Sciences, Vienna (BOKU)

Michael Tritthart, University of Natural Resources and Life Sciences, Vienna (BOKU)

Zakhar Maletskyi, Norwegian University of Life Sciences (NMBU)

Skoulikaris Charalampos, Aristotle University of Thessaloniki (AUTH)

Petar Filkov, University of Architecture, Civil Engineering and Geodesy (UACEG)

Nevena Dragičević, University of Rijeka, Faculty of Civil Engineering (UNIRIFCE)

Rodrigo Proença de Oliveira, Universidade de Lisboa (UL)

Luís Filipe Tavares Ribeiro, Universidade de Lisboa (UL)

Summary:

Günter Langergraber presented innovative practices in the field of water resources management in Austria. He underlined the importance of wastewater treatment in line with the national legislation. A special training course for operators of small WWTPs (≤ 50 PE) has been organized since 2000. The content is: theoretical knowledge on biological wastewater treatment, practical work, field trips, and fundamentals of the legal requirements basics on operational management and maintenance requirements.

Christoph Hauer, Beatrice Wagner and Michael Tritthart prepared a presentation related to the importance of sustainable sediment management in the scope of integrated water management. Michael Tritthart emphasized three modules: sustainable hydropower, sediment management in river engineering, issues on the global scale (including their implementation in the Christian Doppler Laboratory for Sediment Research and Management).

Zakhar Maletskyi presented innovations in WRM in Norway. The municipalities own the majority of the water and wastewater infrastructure in Norway. Some municipalities have organised the service in inter-municipal companies. He highlighted using DNA for biomonitoring of water quality as one of innovations in Norway.

Skoulikaris Charalampos presented how the EU Water policy is implemented in Greece. There are 14 water districts in Greece for which one River Basin Management Plan was developed. There is a program of measures in Flood Risk Management.

Nevena Dragičević presented the water management framework in Croatia. She showed water supply systems in Croatia and implementation of legislative frameworks. Flood protection is the second important topic. Flood hazard map has been designed and some of the projects related to this subject are currently active.

Rodrigo Proença de Oliveira and Luís Filipe Tavares Ribeiro presented innovative practices for WRM in Portugal. Portugal's main water management challenges are:

- Water scarcity and meteorological variability;
- Adaptation to climate change impacts;
- Transboundary water management;
- Surface and groundwater integrated management;
- Control of non-point source pollution and hydro-morphological pressures to improve the good status of water bodies.

They presented three innovative methodologies such as identification of vulnerable zones, assessment of trend analysis for increasing the concentration of pollutants in the groundwater bodies and the reverse of the trend as well as identification of groundwater dependent ecosystems.

The group discussion on innovative practices - barriers and opportunities was moderated by Zakhar Maletskyi and Elisabeth Sundheim Hoff. Some conclusions can be summarized as:

- Creativeness and resilience – in WB many catastrophic events = resilience
- Creativeness – the best students will go to EU/rest of the world, the rest must be creative, show willingness to adapt/respond to bad situations
- Threats/weaknesses connected to politics – respond, find alternatives to solve the problems with lack of resources
- Corruption – relatively foreign concept to Austria, in Austria group discussions with law makers are regular, ability to change the current situation – easy to talk to people in higher positions, more of a hierarchical system in WB countries – money is not allocated
- Bulgaria and Croatia share the same issues/weaknesses with WB countries
- Eastern Europe needs time, transition period, lessons learned in EU/Europe/rest of world
- Awareness of what is going on in the water sector, more professionals in decision-making positions

General conclusion: Let's build a network that can help to bring a change in WB and EU countries.

The second session finished at 13:30.

4. Third session - Topics for the training material

Speakers:

Zakhar Maletskyi, Norwegian University of Life Sciences (NMBU)

Petar Filkov, University of Architecture, Civil Engineering and Geodesy (UACEG)

Barbara Karleuša, University of Rijeka, Faculty of Civil Engineering (UNIRIFCE)

Maria Mavrova-Guirguinova, University of Architecture, Civil Engineering and Geodesy (UACEG)

Maria Manuela Portela, Universidade de Lisboa (UL)

Skoulikaris Charalampos, Aristotle University of Thessaloniki (ATh)

Summary:

Zakhar Maletskyi, Petar Filkov and Barbara Karleuša presented topics related to the theme-based training of teaching staff for acquiring new teaching and learning methods that should be organised in Sofia from 28 May to 01 June 2019, Oslo from 17-20 June 2019 and Rijeka from 18-20 September 2019.

Maria Mavrova-Guirguinova presented the topic related to the challenges to implementing the EU water directives, including an economic analysis. A good investment planning for financing water-related investments in many EU members is delayed by a lack of data and patchy information. The Organisation for Economic Co-operation and Development (OECD) is working with the EC to project financing needs for water supply, sanitation and flood protection for the EU member states by 2050. Answers to the following issues would be most useful:

- How can a better understanding of investment needs and financing capacities be used to inform financial planning for water-related investments at country level?
- The state of existing assets is a major driver for future investment needs, but this is usually poorly documented at national level. Are there practical suggestions for how to overcome this difficulty?
- Which elements of the regulatory framework are the most fundamental to ensure the effective use of existing sources of finance and attract additional sources of finance?

Zakhar Maletskyi presented the topic related to water reuse in Europe - needs for and barriers to innovation based on four sections: 1. Global challenges, 2. Needs in Europe, 3. Challenges-Opportunities, and 4. Barriers for innovation. Current challenges-opportunities in reuse are:

- Economic models for partial or full cost recovery,
- Technical challenges in nutrient recovery,
- Energy efficiency,
- Case studies to assure that produced water has the appropriate quality.

Barriers for innovation are:

- Fragmentation of the sector,
- Slow adaption,
- Lack of holistic vision of water management considering its whole life cycle,
- Absence of SME development,
- Social acceptance,

- Management and business models to develop innovations to commercialization.

In general he concluded: Most of challenges are not technical, but in the management plane.

Maria Manuela Portela presented challenges arising from water scarcity and droughts. Droughts are among the most complex and least understood natural hazards, affecting more people than any other one. They are also recurrent events specially in areas with pronounced natural hydrological temporal variability. Droughts are generally associated with the persistence of low rainfall, soil moisture and water availability relative to the normal levels in a given area. Droughts and water scarcity are major issues whose relevance tends to increase.

Skoulikaris Charalampos presented barriers and bottlenecks for innovation in the water sector. The integration of the sustainable development concept into water resources management practices is considered indispensable for succeeding in the protection of the water resources while fulfilling the water demands of economic development.

Barbara Karleuša presented how to promote public-private partnerships and collaboration with HEIs. She presented examples of UNIRIFCE in the field of public-private partnerships.

The third session finished at 12:00.

ANNEX I – Workshop agenda

Wednesday, 8 th May 2019		
Top Floor, Muthgasse 107, 1190 Vienna		
10:00-10:30	SWARM participants registration	
First Session - Opening and WP1		
10:30-10:45	Welcome speech	Michael Tritthart, BOKU
10:45-11:00	Introduction to WP1	Michael Tritthart, BOKU
11:00-11:20	Identification of issues related to WRM in Serbia	Dejan Ubavin, UNS
11:20-11:40	Identification of issues related to WRM in Bosnia and Herzegovina	Emina Hadžić, UNSA
11:40-12:00	Identification of issues related to WRM in Montenegro	Goran Sekulić, UoM
12:00-12:20	Identification of issues related to WRM in Kosovo*	Jelena Djokić, UPKM Jelena Rajović, TCASU
12:20-12:40	Identification of issues related to WRM – general approach	Olivera Gavrilović, PWMC VV
12:40-13:00	EU recommendations and legislation in water sector	Kurt Glock, BOKU

Thursday, 9 th May 2019		
Ground Floor, LS1, Muthgasse 62, 1190 Vienna		
Second Session – EU innovative solutions		
9:30-10:10	Innovative practices in the Austrian water sector - Water resources management professionals	Günter Langergraber, BOKU Beatrice Wagner, BOKU
10:10-10:25	Innovative practices for WRM in Norway	Zakhar Maletskyi, NMBU Elisabeth Sundheim Hoff, NMBU
10:25-10:40	Innovative practices for WRM in Greece	Panagiotis Prinos, AUTH Skoulikaris Charalampos, AUTH
10:40-11:00	Coffee break	
11:00-11:15	Innovative practices for WRM in Croatia	Nevena Dragičević, UNIRIFCE
11:15-11:30	Innovative practices for WRM in Portugal	Rodrigo Proença de Oliveira, UL Luís Ribeiro, UL
11:30-11:45	Innovative practices for WRM in Bulgaria	Petar Filkov, UACEG
11:45-13:30	Group discussion on innovative practices: barriers and opportunities	Moderation: Zakhar Maletskyi, NMBU Elisabeth Sundheim Hoff, NMBU

Friday, 10 th May 2019		
Ground Floor, LS1, Muthgasse 62, 1190 Vienna		
Third Session – Topics for the training material		
9:30-10:00	WP2.5 Theme-based training of teaching staff for acquiring new teaching and learning methods	Zakhar Maletskyi, NMBU Petar Filkov, UACEG Barbara Karleuša, UNIRIFCE
10:00-10:20	Challenges to implementing the EU water directives, economic analysis	Maria Mavrova-Guirguinova, UACEG
10:20-10:40	Water reuse in Europe - needs for and barriers to innovation	Zakhar Maletskyi, NMBU
10:40-11:00	Challenge from water scarcity and droughts	Maria Manuela Portela, UL
11:00-11:20	Barriers and bottlenecks for innovation in the water sector	Skoulikaris Charalampos, AUTH
11:20-11:40	Promoting public-private partnerships and collaboration with HEIs	Barbara Karleuša, UNIRIFCE
11:40-12:00	General discussion and closing the workshop	

ANNEX II – Attendance list

No.	Name	Institution acronym
1	Milan Gocić	P1-UNI
2	Slaviša Tajković	P1-UNI
3	Vojkan Miladinović	P1-UNI
4	Michael Tritthart	P2-BOKU
5	Kurt Glock	P2-BOKU
6	Zakhar Maletskyi	P3-NMBU
7	Elisabeth Sundheim Hoff	P3-NMBU
8	Panagiotis Prinos	P4-AUTH
9	Skoulikaris Charalampos	P4-AUTH
10	Petar Filkov	P5-UACEG
11	Maria Mavrova-Guirguinova	P5-UACEG
12	Barbara Karleuša	P6-UNIRIFCE
13	Nevena Dragičević	P6-UNIRIFCE
14	Maria Manuela Portela	P7-UL
15	Rodrigo Proença de Oliveira	P7-UL
16	Luís Ribeiro	P7-UL
17	Igor Peško	P8-UNS
18	Dejan Ubavin	P8-UNS
19	Emina Hadžić	P9-UNSA
20	Merima Salčin	P10-UNMO
21	Edin Šunje	P10-UNMO
22	Đurica Marković	P11-UPKM
23	Jelena Đokić	P11-UPKM
24	Jelena Rajović	P12-TCASU
25	Goran Sekulić	P13-UoM
26	Ivana Čipranić	P13-UoM
27	Olivera Gavrilović	P14-PWMC VV