



Strengthening of master curricula in water resources management for the Western Balkans HEIs and stakeholders (SWARM)

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SWARM newsletter, Issue 3/May 2020

Welcome to the SWARM newsletter!

This bulletin provides information on the latest SWARM project activities.



Enjoy your reading and visit the SWARM website (www.swarm.ni.ac.rs) to find more information.

With the best regards,

SWARM project team



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Erasmus+ Programme
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THE FIFTH THEME-BASED TRAINING OF TEACHING STAFF IN LISBON (UL)

Instituto Superior Técnico (IST), Civil Engineering, Architecture and Georesources Department (DECivil), Lisbon University (UL) organized the fifth theme based training of teaching staff for acquiring new teaching and learning methods of the Erasmus+ CBHE project “Strengthening of master curricula in water resources management for the Western Balkans HEIs and stakeholders” (SWARM), from 27th November to 29th November 2019.

All WB project partners took part at this training. Nineteen representatives from 8 partner institutions were present at the training (16 out of 19 were from WB partner HEIs – UNI, UNS, UNSA, UNMO, UPKM, TCASU and UoM).

The first day was dedicated to the presentation of PhD and MSc Civil Engineering Courses at IST and the visit and presentation to the ongoing research projects of the Laboratories of Hydraulics and of Environment of IST. Also, the principles of water governance was presented and discussed during the first day of the theme-based training. The final section of the day was about Mooc - Massive Open Online Courses: how to develop a mooc for engineering courses.

The second day started with the field trip. The field trip was to the Lisbon underground multi-level sewage treatment plant, at Alcântara, rooted on the very tight site between the major roads and hilly urban area of Lisbon. We were introduced with the system of collecting, processing and reusing of the waste-water in one of a several Lisbon’s WWTP. The hosts from the plant took the opportunity to present their business concept, professional results and the challenges, as well as future opportunities and plans. Afterward, upon the return at IST, we were introduced, by elaborate presentations, with Drainage master plan of Lisbon city, the Portuguese-Spanish Convention and the Agreements for the protection and sustainable use of waters of International river basins.



The third day started by visiting the XVIII century water distribution system to Lisbon. The Mãe d’Água das Amoreiras Reservoir, better known as only Mãe d’Água das Amoreiras, is the deposit (the chalice) that collects the waters from the Águas Livres aqueduct in the district of Lisbon. It was designed in 1745 and built in Jardim das Amoreiras, being completed in 1834. Today, this is considered an important engineering legacy of the Lisbon city that is protected as an historical industrial heritage. The third day finished with the general discussion and closing remarks.

The event was concluded with positive impressions. It was everyone’s opinion that the training was very beneficial.





Presentations from the event can be downloaded from:

<http://www.swarm.ni.ac.rs/activities?id=45>

DEVELOPMENT OF COURSES CONTENT AND SYLLABI

Under the activity WP 2.2 *Development of courses content and syllabi*, two reports has been delivered.

The report “*EU Universities’ Courses and Content*” includes the courses of the EU Universities, participating in the project, which are relevant to the proposed courses of the WB Universities. The final version of this report was adopted on 30th of December, 2020.

The report “*Swarm Unique Set of Courses*” summarizes and offers set of new and updated courses developed or modernized under this activity. In total, seven WB HEIs developed 17 new (3 undergraduate and 14 master) and 15 upgraded/improved courses (2 undergraduate and 13 master). The final version of this report was adopted on 12th of January, 2020.

WB HEI	Undergraduate		Master	
	New courses	Upgrade/improve of existing courses	New courses	Upgrade/improve of existing courses
University of Pristina in Kosovska Mitrovica/ Faculty of Technical Sciences		2	4	
Technical College of Applied Sciences Urosevac-Leposavic			3	
University of Montenegro/ Faculty of Civil Engineering				4
University of Novi Sad/ Faculty of Technical Sciences			5	1
Dzemal Bijedic University of Mostar/ Faculty of Civil Engineering			1	2
University of Nis/ Faculty of Civil Engineering and Architecture	3		1	2
University of Sarajevo/ Faculty of Civil Engineering				4
TOTAL	3	2	14	13

This activity was led by ATh and all consortium members took part into creation of these reports. The complete and final versions of the reports are available on the project official website and on the following link>

<http://www.swarm.ni.ac.rs/activities?id=46>

INNOVATION OF EXISTING AND DEVELOPMENT OF NEW MASTER CURRICULA FOR WRM IN WB

The activity *WP 2.3 Innovation of existing and development of new master curricula for WRM in WB* was completed by delivering a report: “*Report on Swarm Master Curricula*”. The report initially presents the strategy that was followed for developing new courses and

updating existing ones under the aim of innovative approaches. The latter chapters of the report present the list of the new courses, the purpose of the study program, aims and objectives, competencies, and curriculum structure per each of seven WB University.

This activity was led by AUTH and all WB partners took part into creation of this report. The final version of this report was adopted on 20th of January, 2020. The complete report is available on the project official website and on the following link>

<http://www.swarm.ni.ac.rs/activities?id=51>

THE SIXTH THEME-BASED TRAINING OF TEACHING STAFF IN VIENNA (BOKU)

The sixth theme based training of teaching staff for acquiring new teaching and learning methods of the Erasmus+ CBHE project “Strengthening of master curricula in water resources management for the Western Balkans HEIs and stakeholders” (SWARM) was held at the University of Natural Resources and Life Sciences (BOKU) from 4th February to 6th February 2020.

All WB project partners took part at this training. Twenty-one representatives from 8 partner institutions were present at the training (18 out of 21 were from WB partner HEIs – UNI, UNS, UNSA, UNMO, UPKM, TCASU and UoM).



The first day of the training focused innovative teaching practices and online learning methods. The meaning of learning outcomes as statements about competences, knowledge and attitudes that students are expected to have acquired at the end of a unit, course or

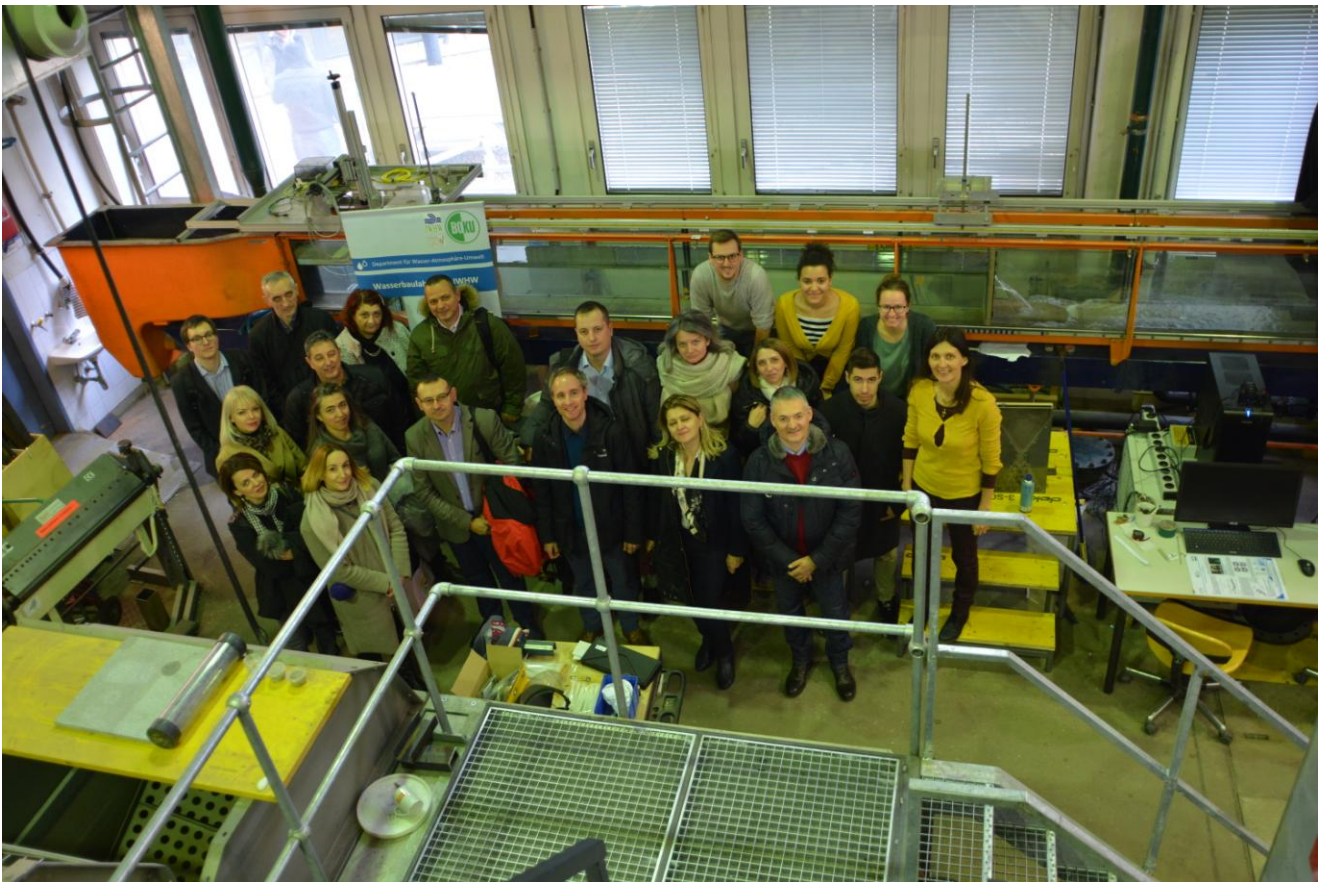
module was explained. It is recommended practice to formulate five to seven learning outcomes per course. Also, selecting appropriate content and methods significantly influence our students’ learning success. Moreover, the questions in an assessment test need to be aligned with the learning outcomes; this part of the theme-based training presented methods how to achieve this.

The second day with the field trip. The field trip was to the Waste Water Treatment Plant of Vienna. The wastewater treatment system is modelled on nature and thanks to the sophisticated plant technology, the process takes place much more quickly and more effectively than in a natural environment. The purified water leaves the plant to return to the Danube River via the Danube Canal. Upon the visit to the WWTP, we started the visit to the hydro power plant Freudenu, a run-of-river power plant on the Danube, within the urban area of the Austrian capital of Vienna. The power plant is equipped with six Kaplan bulb turbines which, with an impeller diameter of 7.5 metres, number amongst Europe’s biggest. The power plant generates approx. 1,093 GWh of electricity annually.



On the third day, the e-learning system BOKUlearn and eLearning exercises and tests were presented. The second part of the day was oriented to the lab and pilot facilities visit. The participants visited the Laboratory of the Institute of Hydraulic Engineering and River Research as well as the Laboratory of the Institute of Sanitary Engineering. Various different experiments were shown and explained in depth.

The event was concluded with positive impressions. It was everyone's opinion that the training was very beneficial.



Presentations from the event can be downloaded from:

<http://www.swarm.ni.ac.rs/activities?id=52>

REPORT ON PURCHASED LABORATORY EQUIPMENT AND SOFTWARE

This *Report* is a part of work package (WP) 2 “*Development of competence-based curricula aligned with EU trends - Development*” and activity 2.6 “*Purchasing of literature, software*

and laboratory equipment, installation and activation” 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). This Report has been prepared by AUTH and the WB Partners HEIs.

A major financial part of the SWARM project was the purchase of the necessary laboratory and teaching equipment and software. The reason behind the purchase of equipment is to use it intensively for project related activities such as:

- implementation of developed master curricula (WP4.1);
- implementation of trainings for professionals in water sector (WP4.2).

The equipment and software is going to be used after the project as part of activities in teaching and learning process at the benefiting WB HEIs.

In order to evaluate the purchase and installation of the equipment, the following activities were conducted:

- receipt of property register with the respective equipment items and software from each WB HEI;
- pictures of equipment items were taken;
- protocol was signed with a confirmation signature on the receipt/installment of the full equipment that had been purchased and the integration of it into the property register;
- Erasmus+ stickers were put on the IT equipment, which is obligatory according to the EACEA Guidelines.

According to the Guidelines for the Use of the Grant, the beneficiary i.e. WB HEIs retain with project accounts:

- all invoices for all equipment declared costs;
- proofs of payment (bank statement);
- proofs of tendering procedure for purchases above EUR 25,000;
- proof that VAT is not deductible (if VAT exemption is not obtained and VAT costs are charged to the project budget);
- registration in the inventory registry.

Finally, seven equipped laboratories are ready to be used for preparing new laboratory exercises for education students and also professionals in the water sector.

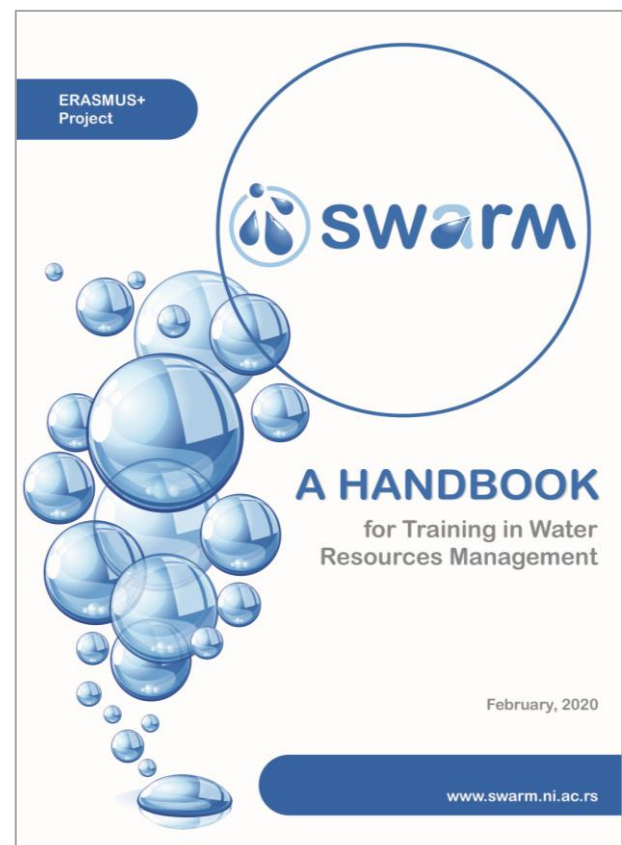
The final version of this report was adopted on 28th of February, 2020. The complete report is available on the project official website and on the following link>

<http://www.swarm.ni.ac.rs/activities?id=23>

DEVELOPMENT OF TRAININGS' CONTENT AND CORRESPONDING EDUCATIONAL MATERIAL

A part of work package (WP) 3 “Development of trainings for professionals in water sector - Development”, the activity 3.3 “Development of Trainings' Content and Corresponding Educational Material” was realized and completed by the WB Partners HEIs.

A crucial result of this activity are two handbooks (English and local language version), that are prepared and printed in February 2020 for forthcoming 3-day “*Training for professionals in water sector*” scheduled for December, 2020 to be organized in seven cities of WB.



Additionally, as a part of activity 3.3, a detailed training outline and the selection of trainers have been done. This preparation work for the scheduled 3-day trainings has been summarized in the report named “*Training Outline and Selected Trainers*” delivered by UNI, on 11th of March, 2020.

This activity (3.3), also included providing supplementary materials for trainings. A three-fold brochure was prepared and printed in promotional purposes.



The complete training material and the report are available on the project official website and on the following link >

<http://www.swarm.ni.ac.rs/activities?id=53>

THE WEBINAR – FRONTIERS IN WATER RESOURCES MANAGEMENT

In the light of global pandemic crisis outbreak in spring 2020, SWARM Erasmus+ Project consortium members took the challenge of using well-established the online platform to continue the mission of the project by organising the webinar. This webinar was organized on 5th of May, 2020, 9am-11am, by the University of Nis (UNI), Norwegian University of Life Sciences (NMBU), University of Natural Resources and Life

Sciences, Vienna (BOKU), Aristotle University of Thessaloniki (AUTH) and University of Sarajevo (UNSA). The purposes of the webinar were to:

- Share projects' outcomes and future ideas;
- Focus on knowledge exchanges with partners;
- Represent of water resources management issues.

Water as the basic resource incorporated into functioning of different sectors requires innovative, interdisciplinary, structural, and trans-boundary approach - strong coordination and cooperation across countries and across sectors.

The webinar presented different interdisciplinary research experiences, in order to create a dialogue to point up solutions and synergies related to sustainable and fair water resources management, highlighting strengths, potentialities, and critical issues.

Webinar

Frontiers in Water Resources Management

Tuesday, 5th May 2020

9:00 Greetings and Welcome
Milan Gođić, University of Nis
Zahar Malestkyi, Norwegian University of Life Sciences
Milan Gođić, University of Nis

9:05 Strengthening of master curricula in water resources management for the Western Balkans HEIs and stakeholders (SWARM)
Milan Gođić, University of Nis

9:15 Perception of Strengths and Weaknesses towards Improving Water Resources Management in the Western Balkans
Michael Tritthart, University of Natural Resources and Life Sciences, Vienna

9:30 Water Resources Management issues in Bosnia and Herzegovina
Emina Hadžić, University of Sarajevo

9:40 Analyse of water sector needs in the Western Balkans
Milan Gođić, University of Nis

9:50 Water Resource Management in Cold Climate
Harshu Ratnaswari, Norwegian University of Life Sciences

10:10 Flood risk scenarios for high frequency/low damage events and Civil Protection actions
Giuseppe Tito Aronica, University of Messina

10:30 Integrated Quantitative Assessment of Climate Change Impacts on Mediterranean Coastal Water Resources and Socio-Economic Vulnerability Mapping
Charalampos Skoulikaris, Aristotle University of Thessaloniki

10:50 Final Remarks
Zahar Malestkyi, Norwegian University of Life Sciences

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www.swarm.ni.ac.rs/news-events

Organised by

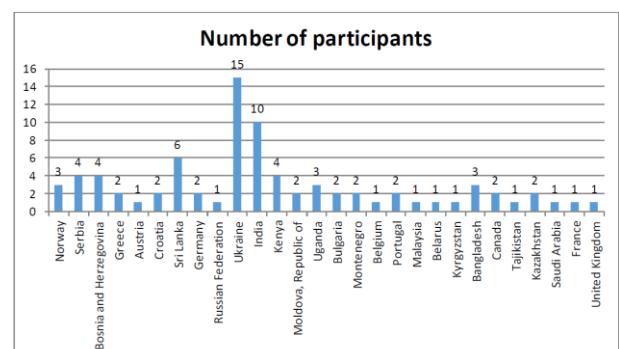


In the framework of



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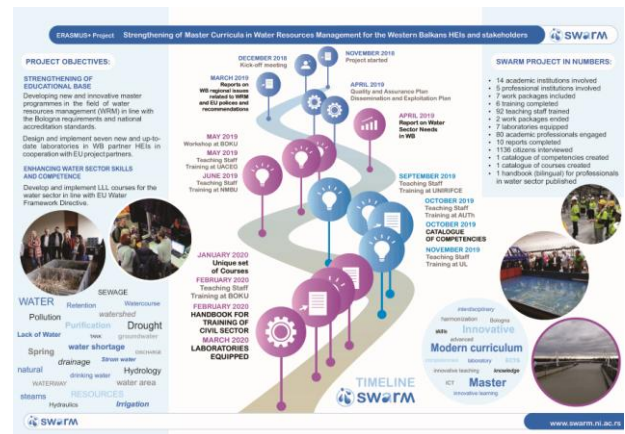
In total 111 participants registered, 75 attended from 28 countries (Norway, Serbia, Bosnia and Herzegovina, Greece, Austria, Croatia, Sri Lanka, Germany, Russian Federation, Ukraine, India, Kenya, Republic of Moldova, Uganda, Bulgaria, Montenegro, Portugal, Belgium, Malaysia, Belarus, Kyrgyzstan, Bangladesh, Canada, Tajikistan, Kazakhstan, Saudi Arabia, France, United Kingdom) or 68% attendance rate.



The participants were from different specialties i.e. water and wastewater treatment, water resources management, water and wastewater transport and from different professions i.e. academia, utilities, consultants, policy makers.

The complete report of the event is available on the project official website and on the following link>

<http://www.swarm.ni.ac.rs/activities?id=55>



THE MID-TERM RESULTS LEAFLET

In order to more closely present the results of project development to the general public in a simple and the graphically, a three-fold brochure with the mid-term results of the project development and the implementation was prepared and printed.

The printed material will be distributed to the consortium members with the instruction for the further distribution to the target groups and the third party.



For further information about the project please refer to the website www.swarm.ni.ac.rs, and feel free to get in touch with us also via swarmuni@gmail.com or on one of our other social media channels.



OVERALL BROADER OBJECTIVE: Education of experts for water resources management in the Western Balkans (WB) in line with the national and EU policies.

CONSORTIUM:

EU partners: University of Natural Resources and Life Sciences, Vienna - BOKU, Austria; Norwegian University of Life Sciences - NMBU, Norway; Aristotle University of Thessaloniki - AUTH, Greece; University of Architecture, Civil Engineering and Geodesy - UACEG, Bulgaria; University of Rijeka, Faculty of Civil Engineering - UNIRI CE, Croatia; Universidade de Lisboa - UL, Portugal

WB partners: University of Niš - UNI, Serbia; University of Novi Sad - UNS, Serbia; University of Sarajevo - UNSA, Bosnia and Herzegovina; Džemal Bijedić University of Mostar - UNMO, Bosnia and Herzegovina; University of Pišća in Kocovska Mitrovica - EPKMA, Kosovo; Technical College of Applied Sciences Utiševac with temporary seat in Leposavić - "TASAB" Kosovo; University of Montenegro - UoM, Montenegro; Public Water Management Company "Vode Vojvodine" - PVMC VV, Serbia

ASSOCIATED PARTNERS: "Tofiyanka voda" AD, Sofia, Bulgaria; Association for Water Technology and Services; Engineering Resource Center at RAKI Regional water supply "Crnogorsko primorje", Montenegro

PROJECT DURATION: November 2018 - November 2021

THE PROJECT MID-TERM RESULTS: Strengthening of Master Curricula in Water Resources Management for the Western Balkans HEIs and stakeholders

SWARM Logo: A stylized water drop with a gear inside, symbolizing innovation and engineering.



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