



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

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IN THIS ISSUE

- ❖ **Summer/winter school organization**
- ❖ **Implementation of developed and modernized curricula**
- ❖ **Organized international symposium**
- ❖ **Organized workshop**

SWARM newsletter, Issue 6/December 2021

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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SUMMER/WINTER SCHOOL ORGANIZATION

SWARM project partners from Norway (NMBU), Austria (BOKU), Croatia (UNIRIFCE), Bulgaria (UACEG), Greece (AUTH) and Portugal (UL) developed schools' programmes, new and water-related courses. In total, 5 out of 6 virtually schools in duration of 10 working days have been organized so far.

The schools involved 15 teaching staff from EU and 21 students from Western Balkan region who participated and successfully completed schools.

The planned school in Portugal will be organized in February 2022.

The following topics were presented:

- climate change and water management,
- drinking water supply,
- flood protection and torrents,
- waste water treatment,
- coastal engineering,
- hydraulic structures,
- unsteady problems in hydrodynamics,
- computer based river modelling,
- OpenFOAM,
- irrigation structures,
- water management optimization problems,
- valuing the water,
- water resources management and GIS,
- hydraulics of water supply and sewerage systems.

Some of students' impressions:

- I spent a great and quality time in this winter school and I learned a lot of new things. Thank you so much for everything.
- Everything was great, thank you!
- Congratulations on the excellent organization, efficiency in communication and the quality of the

lessons. Although due to the obligations I had, I could not attend all the lectures, the material that was available to all of us was of great use, and the lectures of Daniel Wildt were very interesting! Special praise for the way the topic is approached. Thank you for the opportunity to be a part of this project!

- It was a really pleasant and inspiring experience. Knowledge and lectures will be very useful in my later practice as a civil engineer.
- I am very pleased with the school. Great experience!

Developed materials are freely available on the project official website on the following link:

<http://www.swarm.ni.ac.rs/activities?id=91>

IMPLEMENTATION OF DEVELOPED AND MODERNIZED CURRICULA

In total, 20 new courses developed and 12 modernized at the Western Balkan HEIs such as

- Hydrotechnical Facilities
- Water energy management
- Water Supply and Sewerage of Buildings
- Modern methods in the preparation of drinking water
- Advanced techniques in wastewater treatment
- Protection and water resources management
- Hydrological Risks Management
- Groundwater Flow
- Alternative Separation Processes in Water Treatment
- Water Quality Management and Methods for Sediment Remediation
- Fundamentals in hydrotechnics, hydromechanics and geotechnics
- Sewage Systems
- Treatment of drinking water
- Integral Water Resources Management
- Sustainable Management of Communal Water Supply Enterprises
- Water treatment technologies in industry
- Measurements in hydrotechnics
- River Engineering
- Basic Principles of Water Resources Management and Policy
- Fundamentals of Water Resources Protection
- Water and Wastewater Treatment Methods and Technologies

Some of the produced materials can be found on the following link:

<http://www.swarm.ni.ac.rs/activities?id=86>

ORGANIZED INTERNATIONAL SYMPOSIUM

The International symposium "**Water Resources Management: New Perspectives and Innovative Practices**" held on the 23rd and 24th September 2021. The symposium was organized as a hybrid event (in-person and online using Teams platform) technically supported by the IT sector of the Faculty of Technical Sciences, University of Novi Sad.

The symposium was organized by the University of Novi Sad (UNS) in collaboration with the consortium partners.

The International Symposium was an interdisciplinary forum where the research results and best practices in the field of Water Resources Management (WRM) were shared with all SWARM fellows and stakeholders from the entire world. At the same time, the event was the place for the promotion of the achieved results under the SWARM project to a wider audience.

Effective results can be realized exclusively with active involvement, unbiased judgment and constructive input of all the innovation processes. In that context, topics were carefully selected to provide up-to-date issues and to encourage productive discussion bringing fresh and original insights and concepts at the forefront.

The symposium 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. Also, the symposium was a place to make a synergy between different areas in the

water sector and between academia, business sector and policy making bodies.

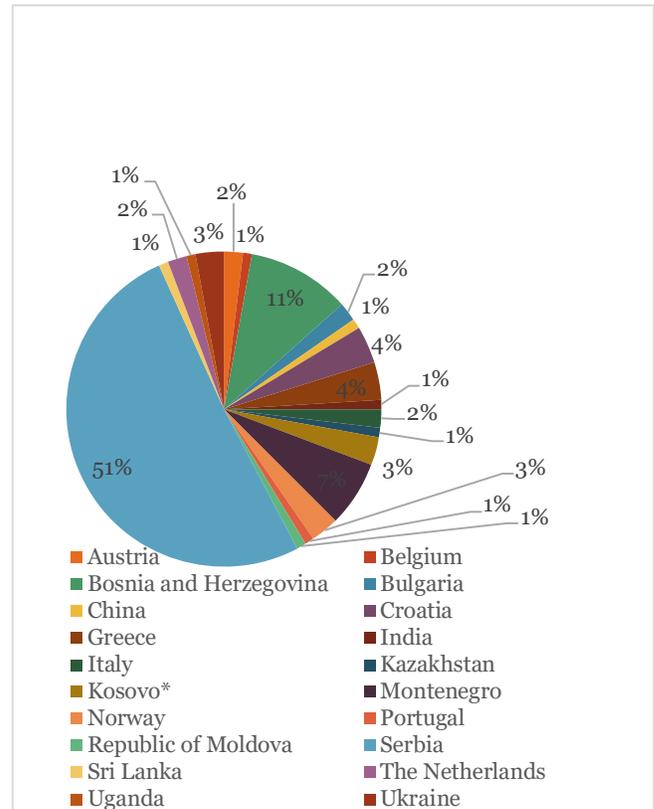
The following topics were discussed:

- Water resources planning and management under uncertainty, climate variability and climate change,
- Risk assessment and management of hydrological hazards,
- Integrated modelling of water resources: new directions,
- Water resources management in transboundary river basins,
- Hydropolitics and Water governance: current issues and future perspectives,
- Complexity of water resources management in WB countries,
- Capacity building in water resource management in HEIs,
- Technological advances in water resources management: remote sensing and data science methods,
- Water supply and wastewater management technology,
- Desalination and water reuse: opportunities and challenges,
- River flow modeling,
- Water management infrastructure.

In total 110 participants registered, 104 attended (43 in-person and 61 online) from 20 countries (Austria, Belgium, Bosnia and Herzegovina, Bulgaria, China, Croatia, Greece, India, Italy, Kazakhstan, Kosovo*, Montenegro, Norway, Portugal, Republic of Moldova, Serbia, Sri Lanka, the Netherlands, Uganda, Ukraine). In Figures 1-3 the number of participants at the symposium were presented.

Two representatives from the policy decision making bodies were participated in the event (Ministry of Environmental Protection of the Republic of Serbia and Directorate – General for the Environment). Five keynotes from the Netherlands, Norway, Greece and Italy presented the important topics in the field of water resources management. In total 19 out of 20 received papers were accepted for

publication involving 51 authors. Presentations were prepared and showed by 39 panelists in 8 sessions.

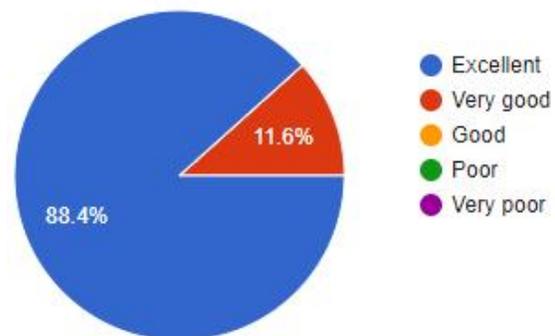


Number of participants per country represented in percentage

General conclusion is that the symposium had an excellent logistic and that the quality of presented material was very good.

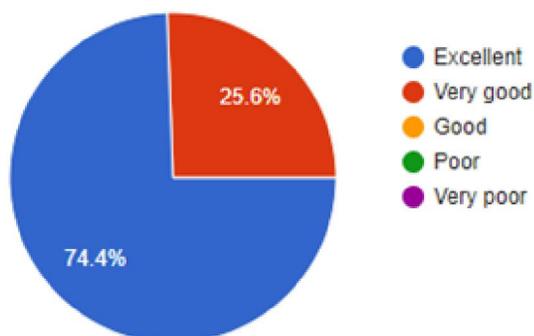
Relevance of the topic

43 responses



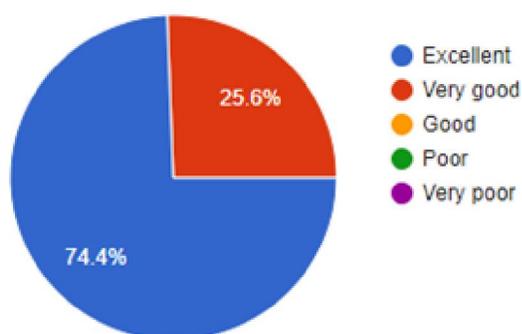
Usefulness of the acquired knowledge

43 responses



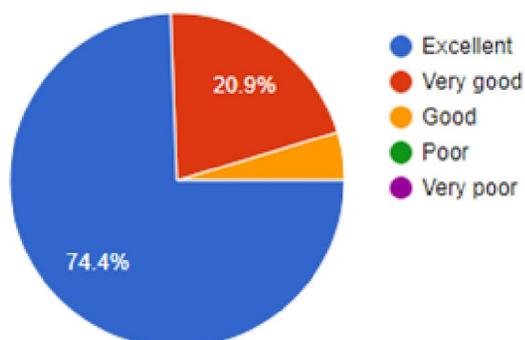
Rating of presented materials

43 responses



Rating interactivity in symposium

43 responses



Presentations and all other material are freely available at

<http://www.swarm.ni.ac.rs/activities?id=90>

ORGANIZED WORKSHOP

The **Workshop on the sustainability of the SWARM results** held on the 20th and 21st December 2021. The workshop was organized as a hybrid event (in-person and online using Zoom platform).

The workshop was organized by the Aristotle University of Thessaloniki (AUTH) in collaboration with the consortium partners.

The workshop was a chance to discuss how to achieve sustainability of the SWARM outputs after the project ending.

The following topics were discussed:

- dissemination and sustainability,
- experiences and good practices in the implementation of similar projects in programme partner countries,
- feedback from the organized schools,
- impact of the SWARM results on different levels.

In total, 25 participants attended (16 in-person and 9 online) from all partner institutions.

The following conclusions of the group work on sustainability of achieved SWARM results and collaboration with industry were achieved:

- Organization of summer schools on regular basis
- To identify synergies in research interests among all partners
- Development of new LLL courses for professionals
- A new project idea relevant to the funding landscape
- New webinars for WB stakeholders
- Using the equipment for research projects
- Keep cooperation between HEI-WB, widely
- Continual improve syllabi regarding IWRM

- Motivate ourselves for self-development
- Explore ways of broader collaboration
- Cooperation with practice
- Use the equipment by students
- Organization of the symposium
- Dissemination through conferences, seminars, publications
- Develop training material for using new equipment
- Delegation of tasks should be more equally distributed
- To valorize the scientific capability of the partners and not only their geographical localization
- Promotion of developed/modernized master study programmes
- Stop working online and work in-person, end COVID
- Less reports and more scientific contributions,
- Adding new courses.



More details are available on the project official website and on the following link:

<http://www.swarm.ni.ac.rs/activities?id=98>



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.



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