

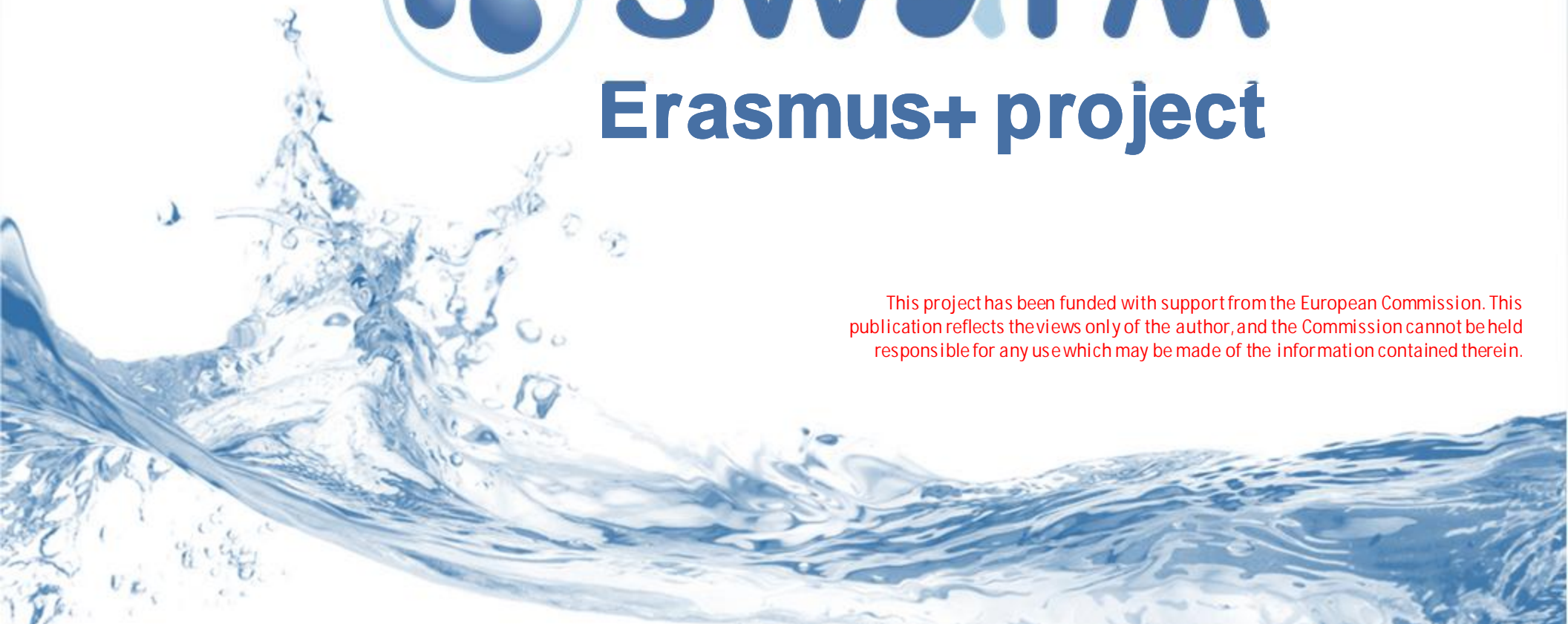
Co-funded by the  
Erasmus+ Programme  
of the European Union



# SWARM

## Erasmus+ project

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.





## Basic Information

- **Contract number** 597888-EPP-1-2018-1-RS-EPPKA2-CBHE-JP
- **Project acronym** SWARM
- **Project name** *Strengthening of master curricula in water resources management for the Western Balkans HEIs and stakeholders*
- **Project duration** 15th November 2018 - 14th November 2021
- **Programme** Erasmus+ Call for Proposals EAC/A05/2017
- **Total cost** 931,289.00 €
- **Coordinator** University of Niš, Serbia  
Univerzitetski trg 2, 18000 Niš, Serbia
- **Project website** [www.swarm.ni.ac.rs](http://www.swarm.ni.ac.rs)
- **Project e-mail** [swarmuni@gmail.com](mailto:swarmuni@gmail.com)



[www.swarm.ni.ac.rs](http://www.swarm.ni.ac.rs)



# Motivation

One of the major environmental and sustainability challenges of the 21st century is **preserving and ensuring the most precious resource – water**. 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. Carefully manage of this **limited resource** is urgent due to plenty of statistical facts.

WB countries should above all **develop new or improve the existing education** in this field, to **raise technical capacity** and accomplish creation of **more efficient systems** in the field of **water resources management**.

[www.swarm.ni.ac.rs](http://www.swarm.ni.ac.rs)



## Overall Broader Objective

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



[www.swarm.ni.ac.rs](http://www.swarm.ni.ac.rs)



## Specific Objectives

- **Improve the level of competencies and skills in WB HEIs** by developing new and innovative master programmes in the field of water resources management (WRM) in line with the Bologna requirements and national accreditation standards
- **Design and implement seven new and up-to-date laboratories** in WB partner HEIs in cooperation with EU project partners
- **Develop and implement LLL courses for the water sector** in line with EU Water Framework Directive



[www.swarm.ni.ac.rs](http://www.swarm.ni.ac.rs)



# Sustainability

- Seven new and improved study programmes in WRM implementing 32 new/modernized subjects at the WB partner HEIs.
- **New training programme in WRM** with training materials for water resources sector developed and conducted.
- **Retrained WB teaching staff** with up-to-date knowledge in WRM to teach on the new/improved master programmes.
- **Advanced teaching and learning process introduced.**
- **Introduced new laboratory equipment and software** necessary for the continuation of the study programmes.





## 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 (UNIRIFCE, Croatia)*

 *University of Lisboa (UL, Portugal)*



# Consortium – WB partners



*University of Niš (UNI, Serbia)*



*University of Novi Sad (UNS, Serbia)*



*University of Sarajevo (UNSA, Bosnia and Herzegovina)*



*Dzemal Bijedic University of Mostar (UNMO, Bosnia and Herzegovina)*



*University of Pristina in Kosovska Mitrovica (UPKM, Kosovo\*)*



*Technical College of Applied Sciences Urosevac with temporary seat  
in Leposavic (TCASU, Kosovo\*)*



*University of Montenegro (UoM, Montenegro)*



*Public Water Management Company "Vode Vojvodine" (PWMC VV, Serbia)*



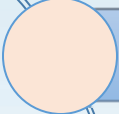

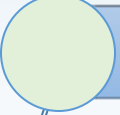



# Consortium

Co-funded by the  
Erasmus+ Programme  
of the European Union



## Associated partners

-  **SOFIYSKA VODA AD**
-  **Association for Water Technology and Sanitary Engineering**
-  **Association Resource Aarhus center in B&H**
-  **Regionalni vodovod Crnogorsko primorje**



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



# Work Packages

- **Analysis of water resources management in the Western Balkan region**
- **Leader:** University of Natural Resources and Life Sciences, Vienna (BOKU)

Preparation  
WP1

- **Development of competence-based curricula aligned with EU trends**
- **Leader:** Aristotle University of Thessaloniki (AUTH)

Development  
WP2

- **Development of trainings for professionals in water sector**
- **Leader:** University of Pristina in Kosovska Mitrovica (UPKM)

Development  
WP3

- **Implementation of developed master curricula and trainings**
- **Leader:** Norwegian University of Life Sciences (NMBU)

Development  
WP4

- **Quality assurance and monitoring**
- **Leader:** Universidade de Lisboa (UL)

Quality Plan  
WP5

- **Dissemination and Exploitation**
- **Leader:** University of Niš (UNI)

Dissemination &  
Exploitation WP6

- **Project management**
- **Leader:** University of Niš (UNI)

Management  
WP7

[www.swarm.ni.ac.rs](http://www.swarm.ni.ac.rs)

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





## Outcomes

- ü **Report on WB regional issues related to WRM**
- ü **Report on EU water policies and innovation and EU recommendations and legislation in water sector**
- ü **Report on master curricula related to WRM in EU and WB partner countries**
- ü **Workshop on innovative practices in the EU water sector: barriers and opportunities**
- ü **Report on innovative practices for WRM in EU**



[www.swarm.ni.ac.rs](http://www.swarm.ni.ac.rs)



# Outcomes

- ü Catalogue of competencies
- ü Report on development of specific competencies and learning outcomes of curricula
- ü Theme-based training of teaching staff for acquiring new teaching and learning methods (UACEG, NMBU, UNIRIFCE, AUTH, UL, BOKU)
- ü 7 laboratories equipped
- ü Report on LLL courses for professionals in EU water sector
- ü Survey of water sector needs in WB
- ü Register of companies in the field of WRM in the WB countries
- ü Handbook for training in water resources management

Co-funded by the  
Erasmus+ Programme  
of the European Union





## Theme-based training of teaching staff

- ü Six three-day training organised
- ü 92 WB teaching staff trained
- ü 5 study visits organised
- ü 7 video materials recorded



**Report on acquired teaching and learning methods created>**

<http://www.swarm.ni.ac.rs/activities?id=26>





# Theme-based training of teaching staff

 **swarm**



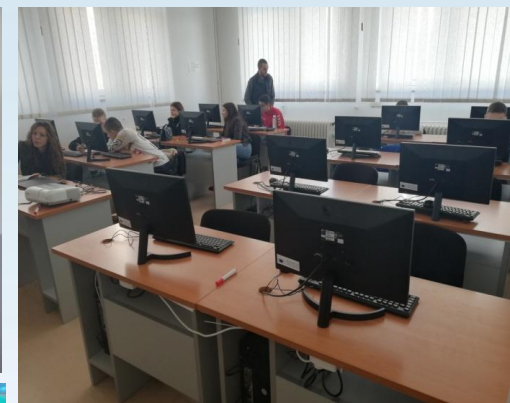
[www.swarm.ni.ac.rs](http://www.swarm.ni.ac.rs)

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



## ü 7 Laboratories equipped

 **swarm**



[www.swarm.ni.ac.rs](http://www.swarm.ni.ac.rs)

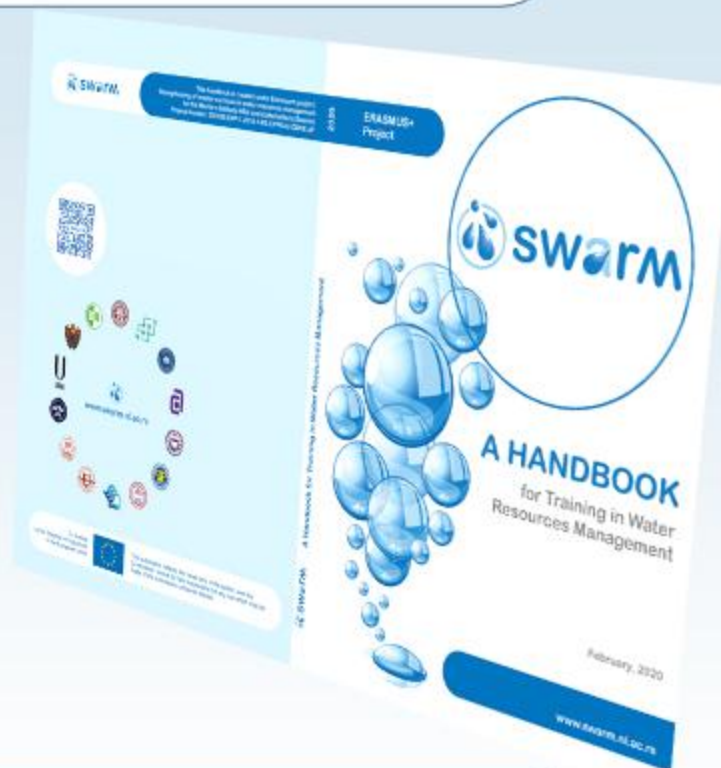
<http://www.swarm.ni.ac.rs/activities?id=26>



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



# **swarm Handbook for the training in WRM**



[www.swarm.ni.ac.rs](http://www.swarm.ni.ac.rs)

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



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



## Webinar

### Frontiers in Water Resources Management

Tuesday, 5th May 2020

9:00 Greetings and Welcome

**Milan Gockić**, University of Niš  
**Zakhar Maletskiy**, Norwegian University of Life Sciences

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

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  
**Ermina Hadžić**, University of Sarajevo

9:40 Analyse of water sector needs in the Western Balkans  
**Milan Gockić**, University of Niš

9:50 Water Resource Management in Cold Climate Regions  
**Harsha Ratnaweera**, Norwegian University of Life Sciences

10:10 Flood risk scenarios for high frequency/low damage events and Civil Protection actions  
**Glavoggo 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  
**Zakhar Maletskiy**, Norwegian University of Life Sciences

Contact & info  
mlg@pcc@ni.ac.rs  
[www.swarm.ni.ac.rs/en/55/](http://www.swarm.ni.ac.rs/en/55/)

Organized by



In the framework of



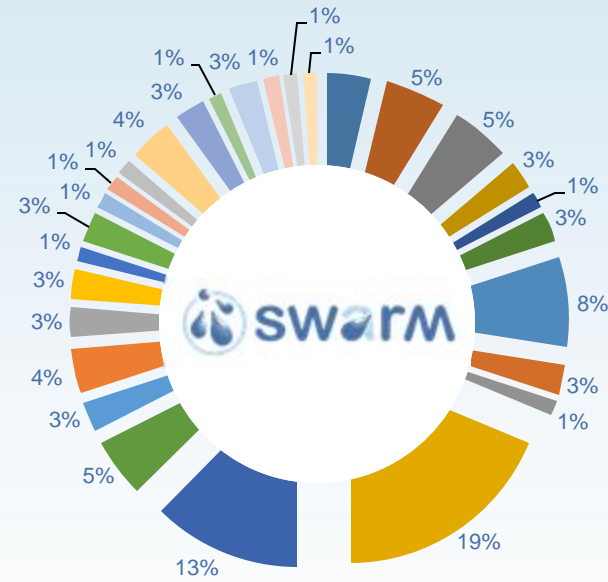
This project has been funded with support from the European Commission under the Marie Skłodowska Curie Grant Agreement.

[www.swarm.ni.ac.rs](http://www.swarm.ni.ac.rs)

# Webinar – Frontiers in WRM

ü 6 panelists

ü 75 participants from 28 countries



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

Co-funded by the  
Erasmus+ Programme  
of the European Union



## Number of participants

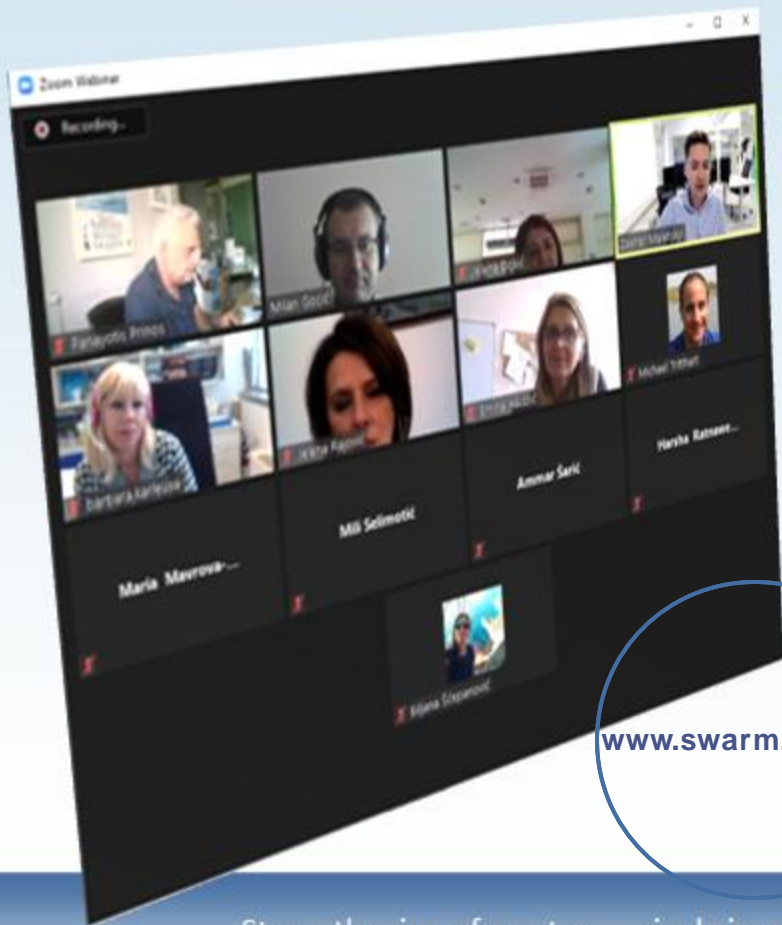
- Norway
- Serbia
- Bosnia and Herzegovina
- Greece
- Austria
- Croatia
- Sri Lanka
- Germany
- Russian Federation
- Ukraine
- India
- Kenya
- Moldova, Republic of
- Uganda
- Bulgaria
- Montenegro
- Belgium
- Portugal
- Malaysia
- Belarus
- Kyrgyzstan
- Bangladesh
- Canada
- Tajikistan



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

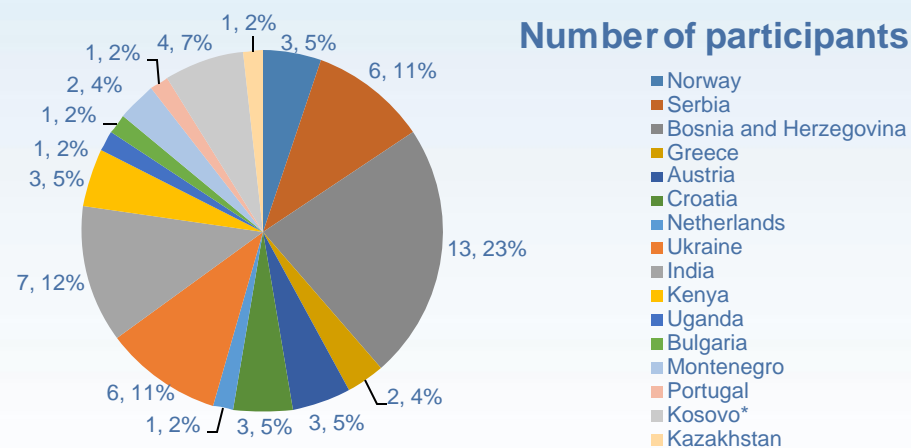


# swarm Inter-project coaching meeting



[www.swarm.ni.ac.rs](http://www.swarm.ni.ac.rs)

- ü 18 panelists
- ü 57 participants from 16 countries
- ü Two main topics:
  - o Innovation in teaching and learning methods
  - o Achieved synergy with a non-academic sector



<http://www.swarm.ni.ac.rs/activities?id=60>



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

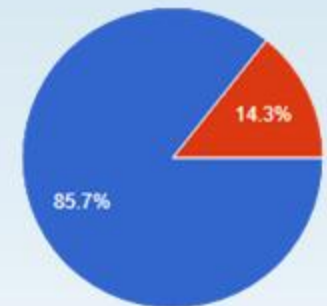


# Training in water resources management

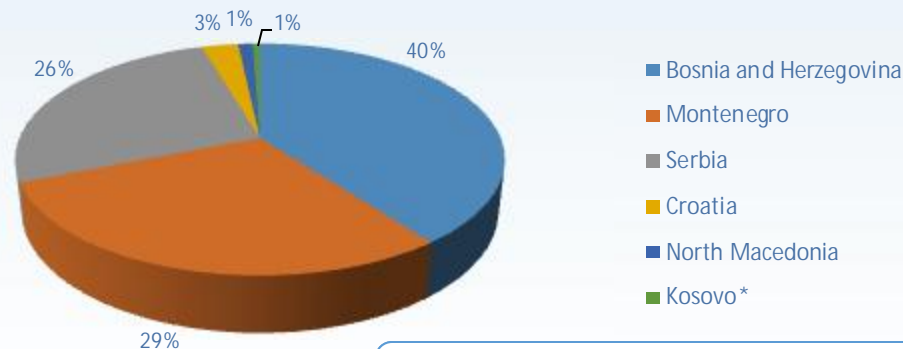
- three-day training
- 14 panelists
- 174 participants from 6 WB countries
- and 45 water related companies

- Topics related to the professionals in the water sector
- Academic and panelists from the water sector

## Overall impression



- Excellent
- Very good
- Good
- Poor
- Very poor



<http://www.swarm.ni.ac.rs/activities?id=75>

[www.swarm.ni.ac.rs](http://www.swarm.ni.ac.rs)





## **swarm Symposium**

- ü Dates: **September 23-24, 2021**
- ü Location: **Novi Sad, Serbia**
- ü Organizer: **Faculty of Technical Sciences**
- ü Supporter: **SWARM Erasmus+ Programme**



[www.swarm.ni.ac.rs](http://www.swarm.ni.ac.rs)

Link for registration:

<https://docs.google.com/forms/d/1XBIqs6zDOx6PA4dlvnqnEXLZLCNDSFpJIQvjQCDO-zk/edit>

<http://www.swarm.ni.ac.rs/symposium>



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

