

Impact of the SWARM results on the HEIs in Bosnia and Herzegovina

Emina Hadžić and Merima Šahinagić- Isović

Tessaloniki/ 21 December 2021

University of Nis

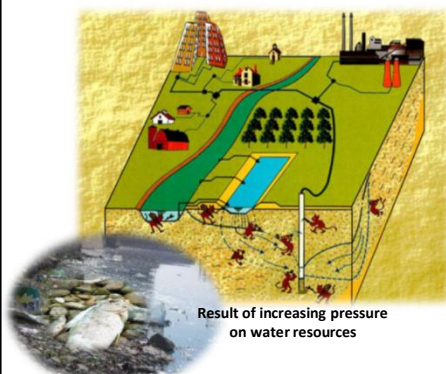


This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

www.swarm.ni.ac.rs

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



Result of increasing pressure
on water resources

Water is spatially and temporally "irregularly distributed", limited quantities and "increasingly unfavorable" quality for human use. Contrary to these facts, water needs are growing year by year.

One of the greatest environmental and sustainable challenges of the 21st century is the protection the most valuable resource - water.

Water as a basic resource involved in the functioning of various sectors of society and the economy.

For protection and sustainable use of water - An innovative, interdisciplinary, structural and cross-border approach is needed - strong coordination and cooperation between countries and between sectors.

Water resources management (WRM) must be based on preventive and precautionary actions

Important facts regarding SWARM influences on B&H

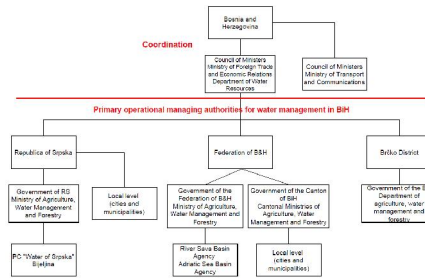
Today's state of the water legislation of Bosnia and Herzegovina has distinct specifics that distinguish it from national water systems of neighboring countries, or the countries of Southeastern Europe.

According to existing legislation the key competences for water resources management in BiH are distributed at the following levels:

- level of Bosnia and Herzegovina;
- level of Entities and Brčko District;
- level of cantons (only in FBiH);
- level of local administration (cities and municipalities).

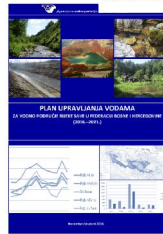
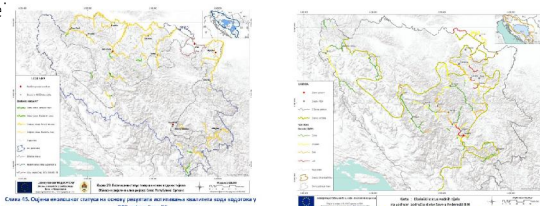
The boundary of the entities, as well as the cantonal boundaries, disintegrated river basins.

It has a negative impact on the integral and sustainable water resources management across the entire territory of the state.



Important facts regarding SWARM influences on B&H

The alignment of B&H legislation with the EU acquis has progressed, but is still insufficient. There is no state-level water law. Therefore, harmonization with EU water regulations is carried out through entity and water laws at the Brčko District level. Water management plans, as well as flood risk management plans are not made for complete water districts, but for divided river basins – administrative units. Implementation ??



Because of all the above, it is very important:

Education of experts for water resources management in the B&H in line with the national and EU policies/retrained teaching staff

In order to implement IWRM approach which includes intersectoral approach in water resources management, it is important to provide continuous education of students, stakeholders, to make continuous dissemination of knowledge

Education has a crucial role in integration process of candidate countries and must be based on the most up-to-date scientific knowledge and best practices- According to Indicative Strategy Paper for Bosnia and Herzegovina (2014-2020), it should "modernise the adult education and training".

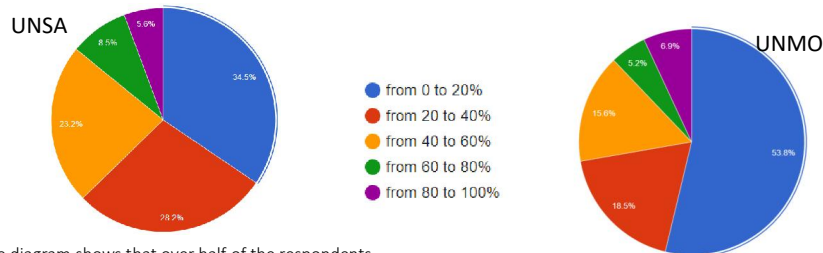
UNMO and UNSA contribution through SWARM project

- Contribution to the review of the current situation in the water sector of Bosnia and Herzegovina, especially in the segment of integrated water management, as well as the impact on the education of engineers in the field of Water Engineering
- Contribution to the improvement of curricula of existing subjects in the field of water resources and environmental engineering, as well as the introduction of new subjects with the aim of improving students' competencies.
- Participation in the transfer of knowledge to the public sector as well as citizens in order to raise awareness of the importance of effective management of water resources.

Survey results of the stakeholders regarding IWRM

The survey of public companies and institutions in B&H - 340 fulfilled questionnaires

Question 1: In your present position, how much time do you devote for carrying work related to Water Resources Management?



The diagram shows that over half of the respondents (62.7%) are in the group whose work is related to water resource management up to 40% of the total working hours. About 23.2% are those who devote up to 60% of working time to this topic. While only 14.1% of those dealing with water management, spend over 60% working hours.

Half of the respondents (53.8%) are in the group whose work is related to water resources management up to 20% of the total working hours. About 34.1% respondents devote up to 60% of working hours to this topic, only 6.9% respondents devote 100% of working hours.

WP3.2 Report on analyse of water sector needs for LLL courses in WB - final.pdf

Survey results of the stakeholders regarding IWRM

Q2 : In your present position, what are your responsibilities for Water Resources Management? You may tick more than one.



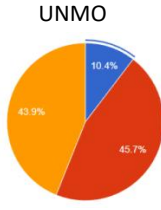
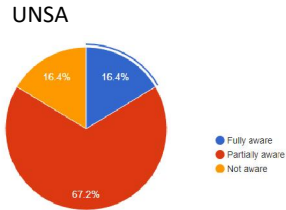
The most survey participants are responsible for Technical and Engineering Aspects (37.4%), and for Planning and Scheduling (37.4%). There is the smallest percentage of the participants involved in Staff Management, Control, Public Interaction and Complaint Redress, and Legal Aspects.

28.6% of respondents are responsible for Technical & Engineering Aspects, as far as other areas they have equal distribution of human resources.

WP3.2 Report on analyse of water sector needs for LLL courses in WB - final.pdf

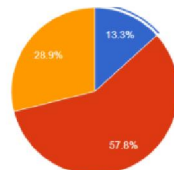
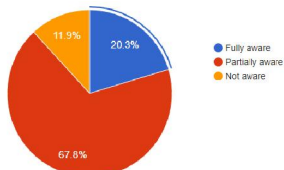
Q3: How aware are you of the instruments for Water Resources Management?

— EU Water Law, Policy or Strategic Plan




UNSA - The participants are “partially aware” (67.8%) of all three instruments for Water Resources Management. Fully aware are between 13% and 20% of the participants.

— National Water Law, Policy or Strategic Plan




UNMO - More than half (52%) of the respondents are partially aware of the instruments for Water Resources Management on European, National and Regional Water Law. About 15% are fully aware about all three instruments for WRM.

WP3.2 Report on analyse of water sector needs for LLL courses in WB - final.pdf



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



UNSA

Understanding WRM procedures (self/colleague)

Level	Percentage
1	4%
2	22%
3	41.2%
4	27.1%
5	6.6%

Have you or any one of your colleagues received training on the subject of WM? If yes, please provide details.

Response	Percentage
No	98.3%
Yes	1.7%

Technical & Engineering aspects (self/colleague)

Level	Percentage
1	10.2%
2	26.2%
3	42.4%
4	18.6%
5	18.6%

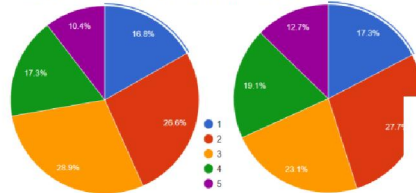
Level	Percentage
1	11.5%
2	27.1%
3	42.4%
4	18.6%
5	18.6%

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

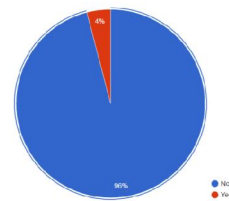
www.swarm.ni.ac.rs

UNMO

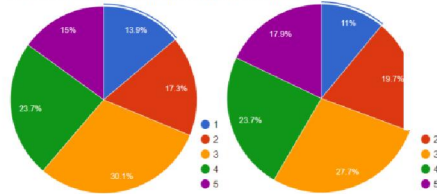
Understanding WRM procedures (self/colleague)



- Have you or any one of your colleagues received training on the subject of WM? If yes, please provide details.



Technical & Engineering aspects (self/colleague)



Improved curriculum at UNMO and UNSA

- Improved syllabus of subjects at the master study UNMO - Environmental Infrastructure Management:
 - Water protection and
 - Water management in the local community
- Developed a new course at the master study UNMO - Environmental Infrastructure Management:
 - Urban hydrology
- Improved syllabus of subjects at the master's study UNSA - Water resources and Environmental Engineering:
 - Water Protection I
 - Sewage systems
 - Treatment of drinking water
- Developed a new course at the master's study UNSA - Water resources and Environmental Engineering:
 - Integral Water Resources Management

Modernization of the curriculum is achieved through:

- advanced approach to curriculum development using interdisciplinary communication, analysis of needs and problems of society and enterprises, mobilization of university resources and capacities for their solution,
- introduction of innovative teaching and learning methodologies,
- promotion of excellence in the use of ICT in higher education through the procurement of the most advanced laboratory equipment,
- increase the competencies, skills and applicable advanced knowledge of graduates in the WRM, harmonized between the WB and EU partner.

- Developed of promotional material for new students
- A chapter in the Training Manual on Water Resources Management, which will be useful for stakeholders and others

The collage features several documents: a chapter from a training manual titled 'UNIVERZITET U SARAJEVU' and 'CRAGJEVINSKI FAKULTET' with the subtitle 'Odsjek za hidrotehniku i okolišno inženjerstvo'; a student brochure titled 'MASTERSKI ANAKNIZISE STUDJE (I ODLUKA STUDJA)'; and a technical document titled 'UNIVERZITET U SARAJEVU' and 'HIDROTEHNIKA I OKOLIŠNO INŽENJERSTVO' with the subtitle 'VASKULI I AKVIFERNE NEKRETNOSTI'.

This collage includes a student brochure for 'UNIVERZITET U SARAJEVU' and 'CRAGJEVINSKI FAKULTET' with the subtitle 'Odsjek za hidrotehniku i okolišno inženjerstvo'; a technical document titled 'UNIVERZITET U SARAJEVU' and 'HIDROTEHNIKA I OKOLIŠNO INŽENJERSTVO' with the subtitle 'VASKULI I AKVIFERNE NEKRETNOSTI'; and a document titled 'UPRAVLJANJE OKOLIŠNOM INFRASTRUKTUROM'.

A new laboratories

Procured laboratory equipment for innovative learning in water resources management

We modernised laboratory with the latest hardware and software equipment for simulation problems and solutions in WRM, where the students will gain practical knowledge that can be immediately applied, and the up-to-date library units will contribute to innovative study programmes.



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

www.swarm.ni.ac.rs

Sustainability of results in B&H

- **Two improved master programmes in WRM** at the WB partner HEIs
- **A new training programmes**, with training materials for water resources sector developed and conducted.
- **Retrained 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, library units and software** necessary for the continuation of the master programmes.
- Prepared **Training Manual on Water Resources Management**, which will be useful for stakeholders and others
- Raising the awareness of citizens and stakeholders through lectures, webinars, round tables

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

www.swarm.ni.ac.rs



Thank you for attention 😊