SETOF Soil Erosion and TOrrential Flood
Prevention: Curriculum Development at the Universities of Western Balkan Countries

WP 2: Development of curricula – Final report

Reference Number: 598403-EPP-1-2018-1-RS-EPPKA2-CBHE-JP

- Land degradation, physical degradation, erosion - significant problem for conserving resources, great negative effect
- Consequences of soil erosion is the occurrence of torrential floods
- Frequent occurrence in Balkan - need to improve the education of experts who will be able to prevent the problems

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- Improving and modernizing existing BSc and MSc study programs at universities in Serbia and Bosnia and Herzegovina
- Developing a new joint master program
- In accordance with the Bologna Declaration and good practices of EU countries (Austria, Italy, Bulgaria) and countries in the region (North Macedonia)
- Educate experts who will be able to solve problems in the field of soil erosion and torrential flood prevention, having the knowledge and skills to be competitive at regional and international level

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- 2.1 Defined study requirements with Bologna standards
- 2.2 Defined goals, competences and learning outcomes of bachelor and master curricula
- 2.3 Established new and improved existing subjects of bachelor programme
- 2.4 Established new master programme
- 2.5 Study visits to EU partners university and analysis best practices
- 2.6 Harmonization of the proposed changes
- 2.7 Introduce and training teaching staff

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2.1 Defined study requirements with Bologna standards

Participating Organisation: UB; UNS; UNI; UBL; UNSA; BOKU; UNSCM; UNIRC

The activity included the definition of the conditions for the improvement of the curricula in compliance with the Bologna Process and the existing laws on higher education, statutes and other legal acts

The development of the Bologna Process in European countries, as well as other legal acts and strategy, was analyzed and compared with the degree of the application of the Declaration at the universities of the Balkan States

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2.1 Defined study requirements with Bologna standards

- Institutional and legal framework of higher education - Law on Higher Education
- Analysis of the system of the undergraduate and graduate studies comparing to the Bologna Declaration
- Analysis of the system of credits – ECTS system comparing to the Bologna Declaration
- Analysis of credibility and comparability of degrees and Diploma Supplements
- Analysis of the mobility of students, teachers and researchers

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2.1 Defined study requirements with Bologna standards

4 Reports are made:

- WP2.1. SR
- WP2.1. BH
- WP2.1. NMK
- WP2.1. IT

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2.2 Defined goals, competences and learning outcomes of bachelor and master curricula

Participating Organisation: UB; UNS; UNI; UBL; UNSA

Improvement of existing basic and master programs through the modernization of syllabus and introduction of new subjects are carried out at universities in Serbia (the University of Belgrade – Faculty of Forestry, University of Novi Sad – Faculty of Agriculture and University of Niš – Faculty of Occupational Safety) and universities in Bosnia and Herzegovina (University of Sarajevo – Faculty of Forestry and University of Banja Luka – Faculty of Forestry)

The development of new and improvement of the existing study programs are carried out in accordance with the Bologna Declaration and good practices of EU countries (Austria, Italy, Bulgaria) and countries in the region

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2.2 Defined goals, competences and learning outcomes of bachelor and master curricula

One of the goals of modernization of existing and development of new study programs is education through training by employed engineers for practical solutions of flood prevention and education of local self-governments for the development of prevention programs

Based on the adopted study programs with new syllabuses, experts will be educated who will have a harmonized approach to solving the problems of controlling erosion processes and protection against torrential floods in the wider area of Balkan

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2.2 Defined goals, competences and learning outcomes of bachelor and master curricula

With the new master study program Soil erosion and torrential flood prevention, students gain the knowledge that will enable them to carry out the tasks of protecting the soil from degradation, primarily soil erosion and taking preventive measures to protect against torrential floods

According to the defined goals, the expected learning outcomes are defined and presented in 2 Reports:

- **WP2.2 BIH**
- **WP2.2 SERBIA**

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2.3 Established new and improved existing subjects of bachelor programme

Participating Organisation: UB; UNS; UNI; UBL; UNSA

UB Improved 3 BSc and 2 MSc subjects:

Soil conservation (BSc), Organization of anti-erosion works (BSc), Management of soil and water resources in protected areas (BSc), Quality management in the protection of soil and water resources (MSc), Valuation of natural resources (MSc)

UB Introduced 5 BSc and 2 MSc new subjects:

Revitalization of Small Water Flows (BSc), Climate change and natural hazards management (BSc), Basics of forest hydrology (BSc), Hydraulics of open channel flow (BSc), Economics of the soil and water resources protection (BSc), Surface water resources (MSc), Stabilization of the terrain (MSc)

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2.3 Established new and improved existing subjects of bachelor programme

UNS Improved 4 BSc and 1 MSc subjects:

Engineering Hydrology (BSc), River engineering (BSc), Soil Conservation Structures (BSc), Bioregulation (BSc), Soil and water conservation (MSc)

UNS Introduced 2 MSc new subjects:

Decision making in soil erosion and torrent control (MSc), Application of GIS in protection against torrential floods (MSc)

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2.3 Established new and improved existing subjects of bachelor programme

UNI Improved 2 MSc subjects:

Climate change adaptation(MSc), Soil protection (MSc)

UNI Introduced 1 MSc new subjects:

Soil erosion and torrential floods protection (MSc)

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2.3 Established new and improved existing subjects of bachelor programme

UBL Improved 4 BSC and 1 MSc subjects:

Forest ecoclimatology(BSc), Forest soils (BSc), Forest utilization II (BSc), Land degradation (BSc), Syndinamics of forest phytocaenosis (MSc)

UBL Introduced 1 MSc new subjects:

Sustainable land management and global trends (MSc)

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2.3 Established new and improved existing subjects of bachelor programme

UNSA Improved 3 BSC and 5 MSc subjects:

Torrent control (BSc), Methods of rehabilitation of eroded terrains (BSc), Pedology 2 (BSc), Degradation and remediation of soil (MSc), Soil protection (MSc), Sustainable land management in space planning (MSc), Melioration of degraded forests (MSc), Reforestation of bare karst land (MSc)

UNSA Introduced 1 MSc new subjects:

Conservation of karst terrains (MSc)

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2.4 Established new master programme

Participating Organisation: UB; UNS; UNI; UBL; UNSA

- The master curriculum is in line with the adopted recommendations and good practices of EU partners, and the subjects syllabi cover the areas of land protection from erosion and prevention from torrential floods

- All universities from Serbia (UB, UNS, UNI) and BiH (UBL, UNSA) participated in defining the structure and subjects syllabi of the new joint master's program

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2.4 Established new master programme

- The joint master's program lasts for one year (two semesters) and contains mandatory and elective subjects which are structured as joint subjects (joint course)

- The total amount of credits are 60 ECTS points

- The structure of the master programme is presented in the following tables

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2.4 Established new master programme

No	Code	Subjects	S	Number of classes	ECTS
1.	20.ER2101	Land and water degradation	I	3+2	5
2.	20.ER2102	Soil erosion protection	I	3+2	6
3.	20.ER2103	Torrential flood prevention	I	2+3	6
4.	20.ER2104	Integrated torrential basin management	I	3+2	5
5.	20.ER2110	**Elective subject I** - Land melioration - Conservation of karst terrain - Climate change adaptation - Project management in natural resources protection - Sustainable land management - Biomeliorations of barren lands	I	2+2	4
6.	20.ER2120	**Elective subject II** - Natural disaster risk management - Land degradation and ecosystem services - Torrent monitoring and early warning system - Decision-making in soil erosion and torrent control - Modelling of land and water degradation - Melioration of degraded forests	I	2+2	4
7.	20.ER2201	Study research work	II	10	7
8.	20.ER2202	Professional practice	II	6	3
9.	20.ER2203	Development of master's thesis	II	12	12
10.	20.ER2204	Master's thesis	II	2	8
Total classes of active teaching				58	
Total ECTS					60

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2.5 Study visits to EU partners university and analysis best practices

- Study Visit and analysis best practices in EU countries –Austria were held in Innsbruck, Austria on the 16th of May 2019
- Study Visit to the torrential catchments in SILA mountain Italy on the 1st of October 2019
- A study Visit and analysis of best practices in North Macedonia will be held at the Ss. Cyril and Methodius University in Skopje on the 16-17th of June 2022
- A study Visit and analysis of best practices in Italy will be held at the University Mediterranea of Reggio Calabria on the 4-6th of July 2022
- Excursion to the working area of the WLV Gebietsbauleitung Wien, Burgenland und Niederösterreich Ost on the 30th of August 2022

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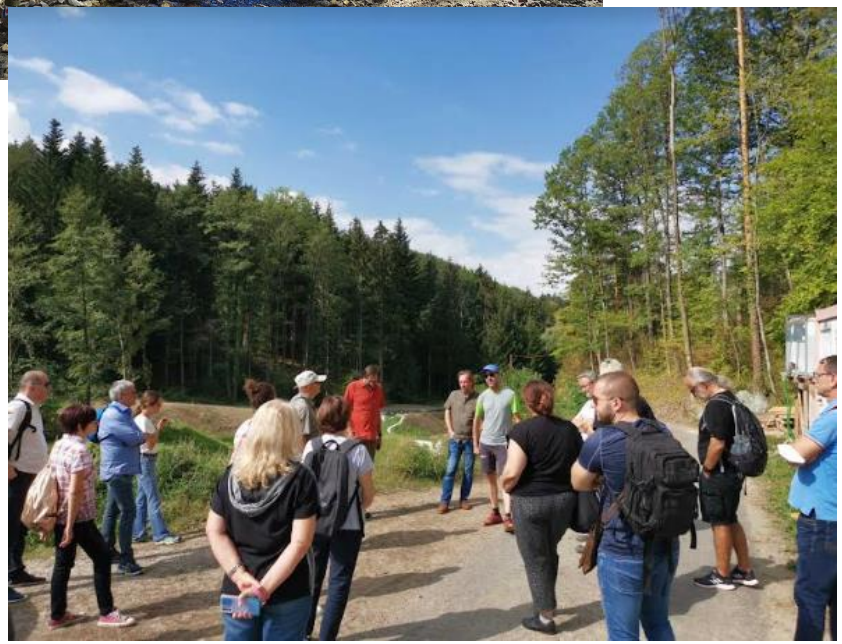
2.5 Established new master programme



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2.6 Harmonization of the proposed changes

Participating Organisation: UB; UNS; UNI; UBL; UNSA

On the basis of the adopted study programs with new syllabuses, new experts will be educated, whose approach to erosion control and protection against torrential floods will be harmonized in the wider Balkan region

The mutual cooperation of HEI's for curriculum improvement will influence the adoption of a uniform methodology in solving the problems of land degradation and the prevention of torrential floods at the regional level

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2.6 Harmonization of the proposed changes

The proposed changes in the existing bachelor and master curriculum will comply between the universities

The proposed new master curricula are compiled at the level of universities in each one of the states and at the level of the countries

The syllabi of compulsory and elective courses are structured as joint courses and are defined by harmonization between all universities

This will ensure that graduate students have one unique methodology for solving problems of flood prevention

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2.7 Introduce and training teaching staff

Participating Organisation: UB; UNS; UNI; UBL; UNSA; BOKU; UNSCM; UNIRC

- During the implementation of projects, teachers at the universities of the partner countries through training gained additional knowledge on the basis of which will be able to implement the enhanced program

- Training of teachers was be done through study visits to EU universities, as well as during the stay of teachers from these universities at the universities of partner countries

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2.7 Introduce and training teaching staff

- Training for the teachers from the universities of the partner countries: Teaching Soil Erosion and Torrential Flood Prevention at the Mediterranean University of Reggio Calabria by Prof. dr Paolo Porto held in Niš (10th Nov 2021) and in Novi Sad (12th Nov 2021)
- Development of soil erosion, aridity, drought and desertification maps of the Republic of North Macedonia by Ivan Blinkov; RUSLE modelling - Use of GIS/RS analyze in various projects by Bozin Trendafilov; Identifying runoff sensitivity in forests and seminatural areas; Technical documentation for erosion control on the catchments; Case study: Skopska Crna Gora by Ivan Mincev held in Skopje on 16th June 2022
- Teaching policy at BOKU, Didactic concepts at BOKU, Constructive alignment concept for BOKU, ARCS Model in teaching classes, Blended learning concepts by Strauss-Sieberth Alexandra and Vlajo Verena held in Vienna – BOKU on 29th Aug 2022

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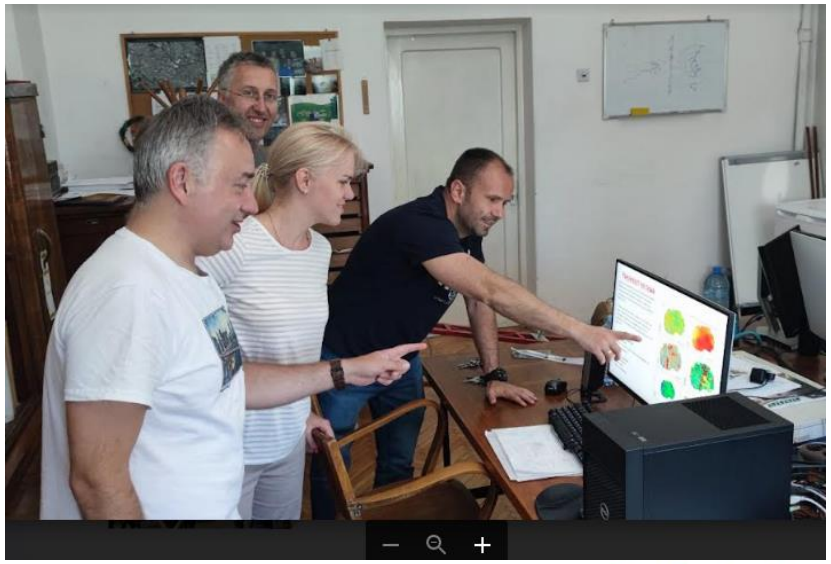
2.7 Introduce and training teaching staff



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THANK YOU !!

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