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

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WP1

Analysis of soil erosion state and torrential floods in Western Balkan Countries

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1. Introduction. The Bulgarian University system in brief.

In Bulgaria the educational system is managed by the Ministry of education and science. The management of the system is implemented at state/public administration level and at institutional level. The government is responsible for the elaboration and implementation of long-term national policy and for setting an environment that guarantee the academic autonomy of the higher schools, the quality of training, and scientific research. The higher schools management is implemented in accordance to their right to academic self-management. The state assists to the process through resource allocation on a competitive basis.

Bulgaria is actively working on building up appropriate environment for modernizing the higher education system, taking into account the demands of the society and businesses. The good practices are observed and disseminated. The possibilities to introduce new managerial models to improve the financial consolidation/strengthening of higher education institutions have been investigated.

Priority areas for intervention are as follows:

-Elaboration and application of a new funding model -
Ensuring efficient and transparent management -
Ensuring a reliable system of quality assurance
-Development of higher schools as scientific research centers.

At present day, the education system includes 51 higher schools under the Higher Education Act (1995) including universities, specialized higher schools and colleges. There are 37 public (25 universities, 11 specialized higher schools and 1 college) and 14 private higher schools (5 universities, 2 specialized higher schools and 7 colleges). The academic year is divided into two semesters and typically includes 32 academic weeks.

As result of the active participation in the Bologna process the following key characteristics have been introduced in Bulgaria:

1. 3-Degree higher education system
   - Bachelor - comprises two levels – “professional bachelor in ….” (ISCED 5B) and “bachelor” (ISCED 5A);
   - Master - (ISCED 5A);
   - Doctor - (ISCED 6).
2. A credit accumulation and transfer system.
3. European diploma supplement.

Bachelor programs

The normal duration of a bachelor's program is four years in accordance with the curriculum. It requires the acquisition of at least 240 credits. Universities and specialized higher education institutions in all fields of science offer Bachelor programs. Bachelor's degree training in accordance with the curriculum provides comprehensive training or specialized vocational training in professional areas and specialties.

Masters programs

The Master's degree training provides in-depth scientific, theoretical and specialized training, combined with specialization in the relevant specialty. The acquisition of a Master's Degree requires:

- not less than 300 credits according to the syllabus with a training period of not less than 5 years;
- not less than 120 credits after having obtained a degree "professional bachelor in ...";
- not less than 60 credits after having obtained a Bachelor's Degree.

Persons who have completed secondary education providing them with access to higher education and who have successfully passed the state matriculation exams or persons who have obtained a Bachelor's Degree are eligible to obtain training for Master's degree. Professional Bachelor or Master.

Doctoral studies

Doctoral studies are offered in all fields of science and can be performed by universities, specialized higher schools or research organizations accredited for the certain program. There are full-time, part-time and independent doctoral programmes. Full-time study and independent study have a duration of up to 3 years (relevant for all disciplines); part-time study and distance learning have a duration of up to 4 years. In exceptional circumstances, controlled by the regulation framework of the relevant institution of higher education or academic organisation, the duration of the programme can be extended up to a year.

2. Bachelor and master degrees with discipline in soil erosion and torrent control

In Bulgaria the discipline and courses related to soil erosion and torrent control are provided in four main education disciplines:

- Forest sciences.
- Agronomy sciences.
- Civil engineering.
- Geological sciences.

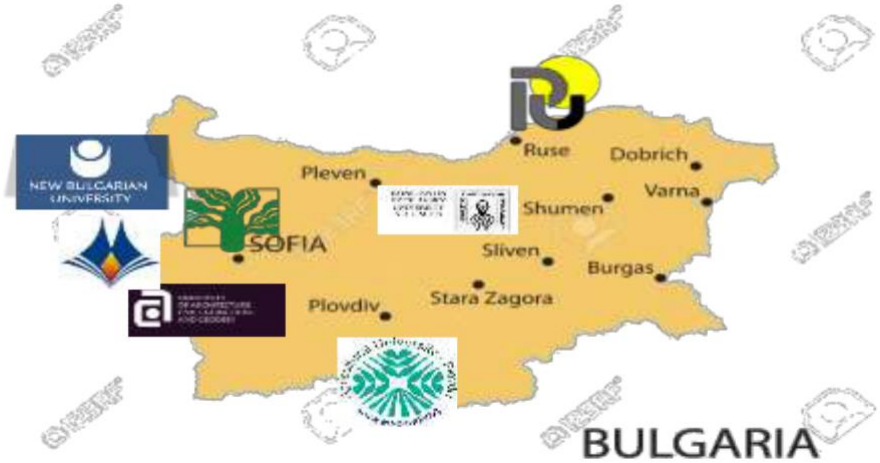

Figure 1. Situation of Higher schools with courses related to soil erosion and torrent control in Bulgaria.

The abovementioned disciplines are taught in 7 universities (Figure 1), however only the Faculty of forestry at the University of Forestry has a structured programme in more detail.

3. Courses in Forest sciences in Bulgaria. An overview and specific example at the University of Forestry.

The Faculty of Forestry has 90-year history and gives three-degree training to students in Forestry: undergraduate with academic degree Bachelor of Science, Master of Science and Doctor. The forms of training are „full-time“ and „part-time“. The students follow general, fundamental and specialized courses that provide the necessary knowledge and skills of a forest engineer. In all major disciplines, there are traineeships. The training is organized by curriculum with compulsory, elective and optional subjects linked to a system of credit transfer in ECTS, according to the Higher Education Act.

Bachelor program

The full-time training lasts 8 semesters, and the part-time - 10 semesters. Students obtain broad knowledge in the field of forestry. The general education is implemented by studying various subjects including soil erosion and torrent control course. For the entire period of education, 8 specialized and complex educational practices are held. The program concludes with a 6-week internship in engineering. Depending on the overall semester grades, the graduation procedure continues is either with a state exam or with a thesis defence.

A total of 240 ECTS credits are awarded for a total of 40 subjects, practices, internship and graduation. The bachelors obtain biological, engineering and technical knowledge, attested by a diploma of higher education and acquire vocational qualification of “Forest engineer”.

Master program

This education program lasts three semesters for full-time and 4 semesters for part-time education. During the MSc studies, students receive in depth and higher level of knowledge in management, specialized and methodical research disciplines, selected depending on the chosen specialization. The depth of fundamental training is carried out through five compulsory subjects - Forest Policy, Multifunctional forest management, Management of human resources, Geographic Information Systems and Organization and management of the wildlife management.

Profiling of MSc. study is achieved in three specializations:

Forest management;
Wildlife and fish-farming management;
Forest use and economics.

Depending on their specialization, students choose and study six electives and one optional discipline and conduct a training practice. Among the optional disciplines is the soil erosion and torrent control subject. The master course ends with graduate thesis.

For studied a total of 12 disciplines, one training practice and thesis defence students accumulate at least 75 credits in ECTS. By obtaining Master degree students are eligible to enrol for Doctoral programme.

Discipline Erosion and torrent control

The discipline provides basic scientific knowledge about the erosion processes, about the depending factors and measures to limit the erosion processes. The curriculum includes issues related to the specifics of floods, methods for reducing surface water runoff and stabilizing vulnerable sections of the hydrographic system.

The course is structured in five sections - Erosion, Floods, Hydraulics, Erosion control activities, and Other denudation processes. The first section discusses the nature of the erosion process, the prerequisites for erosion, and how to determine the degree of land degradation. The subject of the second section is the hydrology of the river beds (parts of the river basin and their characteristics, the maximum water runoff in the river basins, the movement and sediment deposition, and of the third hydraulics pressure, the movement of water in open beds, the leakage through openings and spillovers). The fourth section examines the main groups of protection measures. The last fifth section deals with the landslide and deflation processes and mitigation measures. Also, individual course projects are developed, including main constructions used for the defence of hydrographic system from torrents. During the practical training, the students are acquainted with the results of the events in representative torrential watersheds.

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