

Justification for the introduction of the “Disaster Risk Management” study programmes (180 and 240 ECTS) in Bosnia and Herzegovina

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INTRODUCTION

Contemporary society faces increasingly frequent and complex natural and technological disasters driven by climate change, urbanisation, and critical infrastructure challenges, highlighting the need for proactive risk management and qualified professionals. This paper examines the justification for introducing **Disaster Risk Management (DRM) study programmes of 180 and 240 ECTS** at a Bosnian and Herzegovinian higher education institution, within the digital and green skills modernisation framework of the Erasmus+ SKILL2SUSTAIN project (2025–2028). The analysis draws on regional needs assessments, comparative EU–WBC higher education analysis, stakeholder needs for green and digital skills in Bosnia and Herzegovina, and the proposed DRM curricula and learning outcomes, providing an evidence-based justification that reflects both disciplinary requirements and regional demand.

METHODOLOGY

The study applies a mixed-method approach combining **stakeholder surveys, desk research, comparative benchmarking, and curriculum development** to justify the introduction of Disaster Risk Management (DRM) study programmes of 180 and 240 ECTS in Bosnia and Herzegovina. Empirical data were collected between October and November 2025 through anonymous online surveys involving 22 public institutions, 123 SMEs, and 477 students, focusing on current and future digital and green skills needs. The research also analysed Western Balkan and EU higher education practices, including institutional strategies, curricula, digitalisation, green transition, research, and support structures. Qualitative content analysis and cross-dimensional benchmarking were then used to compare regional needs and institutional capacities, with the findings integrated into the proposed DRM curriculum structure, workload, and learning outcomes to provide an evidence-based foundation for the new interdisciplinary programmes.

REGIONAL AND POLICY RATIONALE

The proposed DRM programmes are fully aligned with the **Sendai Framework for Disaster Risk Reduction (2015–2030)** and address the main disaster risks affecting Bosnia and Herzegovina, including floods, landslides, wildfires, droughts, earthquakes, and technological hazards. The programmes combine international civil protection standards with locally relevant risk governance, preparing graduates to use modern tools such as GIS and remote sensing for disaster prevention, preparedness, and resilience. Comparative evidence also shows that while EU and Western Balkan HEIs share strategic commitments to digitalisation and the green transition, WBC institutions still face limitations in governance, funding, digital infrastructure, and institutional integration.

Stakeholder evidence from Bosnia and Herzegovina further supports the introduction of the DRM programmes by demonstrating strong demand for practical digital and green competencies among SMEs, public institutions, and students. **Key priority areas include AI-supported processes, data analysis, BIM, energy efficiency, sustainability reporting, and project-based learning linked to real labour market needs.** These findings validate the need for an interdisciplinary DRM curriculum that combines digital technologies, green transition principles, and collaboration with industry and public institutions to strengthen disaster resilience and sustainable development.

DISASTER RISK PROFILE OF BiH

Independent national and international literature confirms that Bosnia and Herzegovina faces significant and interconnected disaster risks, particularly from **floods, landslides, wildfires, climate change, and earthquakes**. Major events such as the 2014 and 2024 floods demonstrate the recurrent and widespread impacts of flooding and landslides, while wildfire risk is expected to increase due to rising temperatures and changing precipitation patterns. Climate research further indicates increasing temperatures, more frequent extreme precipitation and drought periods, and growing impacts across agriculture, water management, forestry, health, and other sectors. At the same time, Bosnia and Herzegovina’s location within the Dinarides creates significant seismic exposure, with historical earthquakes and recent hazard assessments highlighting vulnerabilities in the built environment. Together, these findings provide strong independent evidence supporting the need for specialised Disaster Risk Management education focused on risk assessment, prevention, resilience, climate adaptation, and the application of modern digital tools to disaster risk reduction.

LEARNING OUTCOMES AND LABOUR-MARKET ALIGNMENT

The proposed study programmes are designed to align learning outcomes with the needs of the labour market by combining technical, digital, environmental, and operational competencies. Graduates of the 180 ECTS programme will develop knowledge and skills in risk assessment, occupational safety, civil protection, crisis management, GIS and data analysis, emergency planning, environmental risk management, and the reliability of technical and information systems. The 240 ECTS programme expands these competencies through advanced training in fire protection, early-warning systems, tactical intervention and rescue operations, humanitarian and peacekeeping activities, and the use of specialised intervention equipment. These learning outcomes directly respond to stakeholder-identified needs in Bosnia and Herzegovina for professionals capable of applying modern digital tools and integrated disaster risk management practices in public institutions, industry, and emergency response systems.

INTERNATIONAL BENCHMARKING

The proposed DRM programmes have clear analogues among established international and regional programmes, supporting its academic legitimacy and labour-market recognisability. Comparable programmes include **Disaster Risk Management and Climate Change Adaptation at Lund University (Sweden)**; **“Disaster Risk Management and Fire Protection” at the University of Novi Sad (Serbia)**; **Disaster Risk Management and Fire Engineering at the University of Tuzla (Bosnia and Herzegovina)**; and **Fire Protection Engineering programmes at the University of Maryland and Oklahoma State University (United States)**. The existing Tuzla programme indicates that demand and academic precedent for DRM education in Bosnia and Herzegovina are already partially validated domestically; the proposed programmes extend comparable provision to a different region of the country, within a curricular design developed under the Skill2Sustain consortium.

CONCLUSIONS

The evidence provides a clear justification for the DRM programmes, based on Bosnia and Herzegovina’s significant exposure to hydrological, geological, wildfire, drought, and technological hazards, as well as the need for professionals trained across the full disaster risk cycle. The EU–WBC comparison also shows strong potential for adopting advanced tools such as GIS-based hazard modelling and structured risk governance, supported by initiatives such as SKILL2SUSTAIN. Finally, stakeholder assessments confirm demand among students, SMEs, and public institutions for the practical and digitally enabled competencies embedded in the proposed DRM curriculum.

The proposed DRM programmes are justified by their alignment with the Sendai Framework, the demonstrated demand for applied digital and green skills, and a curriculum tailored to Bosnia and Herzegovina’s hazard profile. Developed within the Erasmus+ SKILL2SUSTAIN project, they provide a practical foundation for building disaster resilience and supporting sustainable development.



Figure 1. Promotional poster for new study programmes “Disaster Risk Management”

PROGRAMME FEATURE	OSH AND FIRE PROTECTION	DRM (180 ECTS)	DRM (240 ECTS)
DURATION	3 and 4 years	3 years	4 years
ECTS CREDITS	180 and 240	180	240
AWARD	Bachelor in OSH and Fire Protection	Bachelor engineer in Disaster Risk Management	Bachelor engineer in Disaster Risk Management
CORE RISK FOCUS	Workplace safety, fire protection	Hydrological, geological, wildfire/drought, technological risk, security risk	As 180 ECTS, plus extended incident management, recovery and tactical response modules
DISTINCT METHODOLOGICAL TOOLS	Risk assessment, OSH legislation	GIS, remote sensing, hydrology, disaster simulation, emergency preparedness	GIS, remote sensing, hydrology, disaster simulation, early-warning systems, intervention equipment, Crisis preparedness and response

Figure 2. Structural comparison



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