Catalogue of competencies

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Institution	**BOKU**, UNI, MU, UNIME, OE, TUC
Author(s)	**BOKU (Kurt Glock, Michael Tritthart)** UNI (Milan Gocić), MU (Sally Priest, Simon McCarthy, Josie Joyce, Emeline Matheou, Louise Story), UNIME (Giuseppe Aronica, Giovanni Falsone, Giovanni Randazzo, Ernesto Cascone), OE (Agota Dregelyi-Kiss), TUC (Georgios Stavroulakis, Vassilis Moustakis, Yannis Tsompanakis, Maria Bakatsaki, Magda Marinaki)
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1 Introduction

The risk management of natural disasters requires well-developed professionals with appropriate knowledge. It is the responsibility of national institutions including universities to educate the mentioned specialists. In a few European member states special master curricula dealing with natural disaster risk management (NDRM) have been established. Other member states in turn have included appropriate courses in existing master curricula. An overview of existing master´s degree programmes related to NDRM and a catalogue of competencies for graduation are outlined in the following report.

2 Overview of existing master curricula in Europe

Information about existing master curricula in EU countries is indispensable for developing master curricula for risk management in Western Balkan regions. An overview about high-level education programmes all over Europe is shown in Table 1, while more information is available in the report on "Master curricula best practices in EU partner countries" of WP1.3. Blue coloured rows indicate EU project partners and green coloured rows characterize additional EU countries. Overall 36 different master degree programmes dealing with natural disaster risk management were found.

Table 1: Overview of existing master curricula in Europe

Nation	Number of master´s degree programmes	Universities
Austria	4	• University of Natural Resources and Life Sciences Vienna, BOKU (2) • Graz University of Technology, TU Graz • Vienna University of Technology, TU Wien
Greece	1	• Technological Educational Institute of Eastern Macedonia and Thrace and Fire Brigade Academy
Italy	11	• University of Messina • University of Camerino • Polytechnic of Milan • Marche Polytechnic University • University of Genoa • University of Basilicata • University of Rome "La Sapienza" • School of Advanced Studies IUSS Pavia, University of Patras, University of Grenoble Alpes, Middle East Technical University • University of Cagliari, Interuniversity Consortium for Hydrology (CINID), Autonomous Region of Sardinia • University of Thessaly, Hellenic Open University, Università degli Studi di Messina, Universitat de Barcelona • University of Salemo
United Kingdom	15	• Kings College London • University College London (3) • Northumbria University • Durham University • University of Portsmouth • Coventry University (2) • University of Huddersfield • University of Manchester • University of Salford

		• University of South Wales • University of Lincoln • University of Leicester
Denmark	1	• University of Copenhagen
Germany	2	• University of Bonn • Bauhaus-University Weimar
Sweden	1	• Lund University
The Netherlands	1	• University of Twente
Total:	**36**	

3 Catalogue of competencies

Requirements for employees dealing with natural disaster risk management are wide-ranging and demanding. Skills for an integral management of natural hazards ("manager"), a technical know-how for necessary construction measures ("technician") as well as a fundamental knowledge about valid natural hazard legislation ("lawyer") are main elements in the catalogue of competencies for well-developed employees. Furthermore soft skills including appropriate modes of behaviour during communications and presentations as well as experiences in project management are indispensable. The integral approach of multidisciplinary skills is shown in Figure 1 and descriptions of the main aspects are outlined in detail in the following sub-chapters.

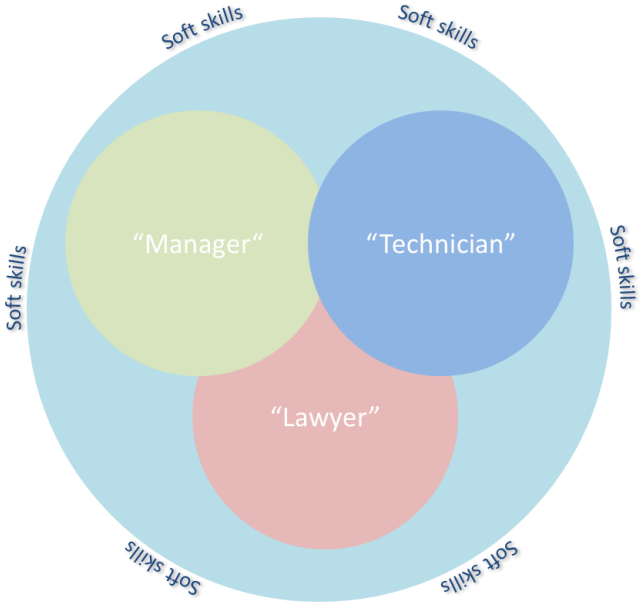

Figure 1: Integral approach of multidisciplinary skills of graduates

3.1 Skills for an integral management of natural hazards

Graduates of a master degree programme dealing with natural disaster risk management should have the capabilities for managing **multidisciplinary holistic approaches**. Due to the fact that different stakeholders (e.g.: companies, citizens, authorities, NGO´s, etc.) are affected by natural disasters the areas of activities and responsibilities are widely spread.
In addition, competences for developing and executing **mid-term or long-term strategies** are necessary for coping natural disasters within relevant policy and operational frameworks.

Populist measures with short-term effects should be avoided to prevent people from future negative impacts.
Due to the fact that responsible decision-makers (e.g.: minister, mayor, etc.) are usually no experts in the field of natural hazards, graduates of the new master curricula should have the skills to prepare information for them. The development and evaluation of different **alternatives** counts toward this preparation and forms the base for an **objective decision making**.
In case of a natural disaster skills for planning and **managing emergency** and **crisis situations** are indispensable. Of particular significance here are the abilities to remain calm and to retain overview.

3.2 Technical know-how for necessary construction measures

Holistic knowledge about **typical natural hazards** (e.g.: types, development, recurrence intervals, etc.) is necessary to be able to analyse the causes of natural disasters and to understand complex interconnections.
In addition, graduates should have a **technical understanding of structural measures** (e.g.: planning, designing, construction, etc.), due to the fact that these constructions are often used to protect people.
Implemented measures might have **short- and/or long-term effects** on neighbouring areas or even countries. Graduates should **be aware of these effects** and have to consider them in planning processes.
In respect of the ongoing climate change competences to find **sustainable and environmental-friendly** solutions are indispensable.

3.3 Fundamental knowledge about valid natural hazard legislation

Due to the fact that natural disasters can have huge impacts on different sectors, which are subject to various laws, the management of natural hazards requires a fundamental knowledge about valid national legislation.
Additionally, **awareness about higher-level legislation** (e.g.: EU Floods Directive, EU Water Framework Directive, bilateral or multilateral agreements etc.) is necessary to meet the international legal requirements.
Usually a wide range of **institutes and authorities** are responsible for developing and executing international, federal, provincial and/or municipal laws. **Knowledge** about these bodies and **contacts** to relevant persons are **crucial**.

4 Occupational fields

The expected employment opportunities include access to:

- Public and private authorities in charge of natural disaster risk management (national, provincial, municipal)
- Professional firms and consulting firms employing structural, civil or environmental engineers
- Public or private research institutes applied to the study of the conditions of the environment and risk management (University, research centre, etc.).
- Emergency services planning and managing crisis situations
- International agencies (United Nations, European Union, non-governmental agencies, etc.)