

A STATE UNIVERSITY IN TSO ROLE: FUNDAMENTAL CONTRIBUTION TO NUCLEAR SAFETY AND SECURITY REGIME IN A SMALL COUNTRY THROUGH PROVISION OF COMMENSURATE EDUCATION, TRAINING AND SCIENTIFIC/TECHNICAL EXPERTISE

– Experience of Montenegro –

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1. Introduction

Successful implementation of international norms on the safety and security of radioactive sources requires a number of prerequisites at the State level, including adequate legal, institutional, financial, technical and human resources. Among these, it is often taken for granted that necessary **knowledge and competence** do exist *per se*. However, this is not always the case, just the contrary – time, efforts and resources are frequently wasted because these fundamentals are not built solid at first.

Montenegro is a small, developing and “non-nuclear” country (no nuclear installations) – the use of radiation sources being modest and limited to a few ordinary applications (primarily in medicine). Even though, there is (or will be in the foreseeable future) significant need in nuclear knowledge, competence and expertise – directly or indirectly related to nuclear safety and security issues

2. University of Montenegro

University of Montenegro (UoM) is the only state university in the country and the only one providing higher education, scientific research and expertise in natural and technical sciences, including nuclear/radiation-related ones. It is the statutory obligation of UoM to do so, and to do it in a manner commensurate with country needs. By far the most relevant expertise in the country is either concentrated at UoM or is deriving out of it. It goes therefore without saying that UoM has fundamental role in meeting national nuclear/radiation-related goals, safety and security included.

Finding itself in a triangle between

- narrow scope of radiation activities/facilities
- limited resources available in the country and
- domestic responsibility and international norms/obligations in the field of nuclear safety and security

a small country will likely recognize two principles to be followed in order to meet its goals in a realistic (focused, effective and efficient) way: **commensurateness and competence**. Being competent and finding the right measure (“not less, not more”) is thus imperative for all stakeholders in the field – users, regulators and TSOs. In Montenegro, UoM is expected to have the pivotal role in both.

To the above aims, Centre for Nuclear Competence and Knowledge Management (UCNC) was established at University in 2009, with support from IAEA; subsequent IAEA expert mission re-affirmed the steps undertaken and encouraged the activities foreseen.



University of Montenegro campus and IAEA Expert Mission to the UCNC

3. Networking

Networking is becoming increasingly important for building/sustaining national bodies of knowledge, competence and expertise in nuclear/radiation-related issues. This is particularly valid for those countries whose domestic resources are limited and/or where no critical mass of the above three constituents exists, which could enable the system to sustain on its own. IAEA-based international networks for nuclear security education (INSEN) and training&support (NSSC), even relatively recent, proved pivotal/fundamental in this respect.

At UoM, Department of Physics several targeted educational courses were launched at post-graduate level, following INSEN guidelines; the pioneering educational materials developed within the network represent now basic literature for both students’ and lecturers’ use.

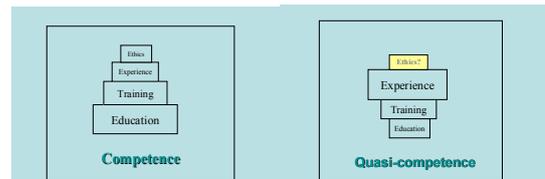
UoM participates actively in the IAEA nuclear knowledge management (NKM) activities and makes use of the information system (INIS) and networks when sourcing relevant information. UoM is also national contact point for INES (International Nuclear and Radiological Event Scale) and has trained staff for properly reporting in case of incident/accident.

4. Education – the fundament of competence

As a result of our INSEN activities, curricula for several nuclear safety and security related courses were developed and courses were introduced (as part of optional courses menu) into post-graduate educational programmes of Applied Nuclear Physics at the University of Montenegro, Department of Physics:

- Fundamentals of Nuclear Safety and Security
- Radiation/Nuclear Security – Practical Aspects
- Nuclear Forensics
- Nuclear Physics for Regulators
- Nuclear Knowledge Management

In addition, awareness about nuclear safety and security issues (education and training in particular, but also the need for commensurateness) rose considerably among academic staff. However, it is our impression that this was not the case (at least not to the same extent) among other stakeholders (regulatory bodies, relevant ministries and police departments, emergency centres, etc.) – we are determined to improving that in future.



Education as the fundament of competence and competence vs quasi-competence

Finally, while striving for competence, clear distinction should be made between education and training. Education builds up knowledge, while training develops ability to its practical application; both education and training are necessary for competence.

Most importantly, **training cannot replace education** – training is meaningful only when superposed onto an adequate education. Messing up these terms may lead to a false perception of knowledge and competence (quasi-knowledge and quasi-competence) – which, in a long run, is inevitably going to have safety and security compromised.

5. Conclusion

UoM current position and perspective for the future in terms of TSO is aimed at

- becoming national centre of competence/expertise in nuclear-related issues;
- assessing, creating, preserving and transferring nuclear knowledge, according to Montenegro needs, primarily through
- developing/offering curricula on relevant topics at all levels of university education;
- offering consultancies and technical support services to regulatory authorities and other relevant stakeholders;
- being advisory body to the government for nuclear/radiation-related issues and
- focal point for dissemination and exchange of NK, in particular with IAEA and EU;
- promoting nuclear applications for peaceful purposes, in particular medicine, industry, agriculture, environmental protection, etc.;
- becoming national radiation protection centre;
- supporting young students and scientists in nuclear field and facilitate their mobility/ exchange with reputed institutions abroad and
- delivering proper and timely information/assessments/comments to the public and media on relevant nuclear/radiation-related subjects.

In pursuing these goals, UoM will continue to benefit from the assistance of the IAEA (through various modalities IAEA offers), as well as from the EU (through even more modalities/programmes available to accessing countries). In doing so, the two sources of assistance are expected to be met with a sense of complementarity and/or synergy rather than overlapping and/or redundancy.

It is assumed that the state support – currently limited due to unfavourable economic/ financial situation – will be available in the measure of the country’s commitment to its IAEA membership and EU integration.