

## Sectoral Frameworks and Quality Assurance in Engineering Education

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**Keywords:** 'Coopetition', Bologna Process, Recognition, Sectoral Qualifications Frameworks, Field-specific Quality Assurance

### Executive Summary

Two key political, academic and economical issues in the prevailing scenario of this contemporary global World are those of transnational co-operation and mobility of students and professionals. In this context, an immense reform is taking place in Europe, under the codename *Bologna Process*. Initially, 11 years back from now, the commitment was on the creation of the European Higher Education Area (EHEA), an essential step for preparing Europe for this current paradigm of 'coopetition' in the World. On 11-12 of March 2010 the Ministers responsible for higher education (HE) of the 47 countries signatory of the Bologna Process agreements met in Budapest and Vienna, to formally launch the EHEA. For the next 10 years, now that the structure is essentially in place, we shall witness efforts to bring the substance of the Bologna reforms fully in practice: increasing significantly mobility and co-operation; bringing in new curricula, in a lifelong learning context, and new methods of teaching and learning, using modern tools ; putting in place effective recognition of qualifications; making the whole EHEA more attractive conditions for third countries to cooperate with European Universities.

Co-operation and mobility require academic and professional recognition. Recognition requires TRUST. Trust requires transparency and readability of academic curricula and professional qualifications. Such is achieved through transparent Qualifications Frameworks (QF) and Quality Assurance (QA) procedures, recognised and accepted by all partners and stakeholders.

This presentation is about qualifications frameworks and quality assurance guidelines and methods, issues that are intrinsically connected between themselves and to the core building block concept of Learning Outcomes (LO).

The "European Standards and Guidelines for Quality Assurance" (ESG, 2005) approved in Bergen, in the context of the Bologna Process, refer to the "Qualification Frameworks for the European Higher Education Area" on the basis of the so-called "Dublin Descriptors", equally approved in the Bergen conference (QF-EHEA, 2005). The latter are meta QF that identify levels of qualifications, employing general learning outcomes descriptors. Consistently with this approach, the ESG do not specify nor refer or quote specific subject areas.

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The issue is that the risk is unavoidable that “general” QA procedures, referred to meta QF, lead to paying more attention to the “educational process” than to the “content” and “job relevance” of the education. We shall come back to this major issue down in the text.

We propose that an open wide view of the concept of QF (QF in *lactus sensus*) should be adopted. QF unfold and are being developed at three major levels of descriptors characterized by different levels of detail, viz. - (i) The meta frameworks, including high level descriptors of competences, of a general nature, describing global qualifications associated to degrees; (ii) The sectoral frameworks, including sectoral descriptors grouped in scientific and technological areas, with direct relations to the different professions, and mostly directed to support quality assurance and recognition systems; and (iii) Branch level descriptors, adapting higher level statements to the specificities of disciplines, which aim at giving substance to the higher level descriptors. At these different levels, such descriptors express Outcomes at both Programme and Module levels.

Concerning QA systems, these should include clear and measurable objectives and standards, associated to an accepted QF. The understanding by all stakeholders of academic degrees and related specific knowledge, competences and skills of their graduates is essential for both internal and external evaluation and for recognition. This means that we have to develop and implement field-specific strategies and methodologies for QA that must be supported by sectoral and branch specific descriptors of qualifications.

In the context described the word “accreditation” will be employed as linked to a field-specific QA approach, in which the aims and contents of the educational programmes are to be specified. Recalling the definition as given in the EUR-ACE Framework Standards (ENAE, 2008a) and their “Commentary” (ENAE, 2008b): “Accreditation of an engineering educational programme is the primary result of a process used to ensure the suitability of that programme as the entry route to the engineering profession.”. Hence, sectoral and branch specific descriptors of outcomes, applied in combination with the ESG, should lead to “pre-professional accreditation” and Mutual Recognition Agreements for academic and/or professional purposes.

The issue is not to abandon “general” QA approaches, that lead to a relevant evaluation of the educational process, but rather to understand the relevance of “field-specific” QA, being clear that the latter accentuate the need for aligning the goals of educational programmes with the expectations of the relevant stakeholders, in order to be comparable and ensure their relevance for the labour market. They further underline that higher education institutions, while autonomous, are nevertheless accountable to their constituents, which includes an obligation to demonstrate the relevance of their output. Thus, field-specific QA systems give credibility and concreteness to the whole “Bologna”/EHEA system.

## References

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