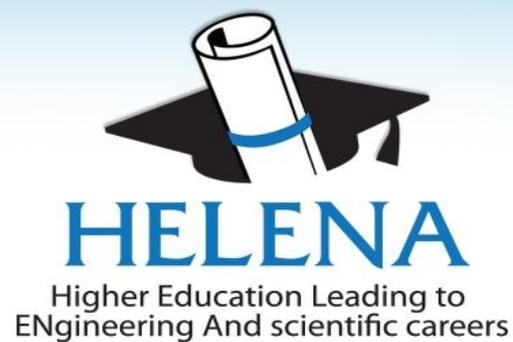




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Policy recommendations





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Executive summary

More girls than boys now complete their secondary education in 32 of the 34 countries that are members of the OECD, according to the recent report (OECD 2011). Moreover, female graduates greatly outnumber male graduates. Overall they account for 58% of graduates within OECD member states in 2009, the most recent year for which data are available, up from 54% in 2000. Men, however, continue to dominate the sciences: some 60% of science graduates are male. This proportion oversteps 75% in engineering and technology.

Europe presents a similar behaviour. The statistical indicators on engineering education demonstrate that in most European countries women now make up over half of the higher education student population, but make up a much smaller proportion in engineering and technology, ranging from 18% of students in the UK, to 35% in Serbia. Despite the fact that the greater proportion of higher education students is women, engineering is far from reaching parity with regards to numbers. It seems that the attractiveness towards engineering and technology sectors differs from male to female, where the women's share remains very low. Thus, equal participation of women and men in engineering occupations is still a major challenge for the European Union. Women presence in engineering appears as a key-issue for European economical and technical development, as well as a central achievement towards gender equality and social justice.

The history of engineering education in Europe may impact upon current developments; in particular tensions felt between theories and practice in the curriculum, and between the profession and Higher Education Institutions (HEIs). In this context, interdisciplinary degrees are argued to offer attractiveness to a bigger and diverse student population than single, traditional engineering degrees. The HELENA project¹, "Higher Education Leading to ENgineering And scientific careers", has been established to address the under-representation of women in engineering and technology higher education with the aim of exploring the students' perception and personal reasons for study choice and the influence of the cultural or social context in their decision and to analyse the success of "innovative" study programmes -which include interdisciplinarity- in comparison with the "traditional" ones in attracting more female engineering students.

As result of task 6.4 of HELENA project, this report will provide a synthesis of the main conclusions of HELENA and a set of recommendations for stakeholders in higher educational at national and European levels related with of E&T. The results and recommendations shown in this report have been built on the analysis of the findings of WP4, WP5 and previous tasks of WP6 of HELENA project, which offer a detailed picture of the engineering and technology higher education in Europe and cover a wide range of issues to contribute to enhancing the knowledge of women and their presence in every stage of E&T higher education; strengthening female participation in E&T higher education in Europe and thus in the related professions; supporting



female presence in E&T degrees and professional careers; identifying gender-specific needs of engineering professions and emerging fields attractive from women's perspective.

Even though HELENA's hypotheses could not be fully proved in all covered countries and case studies, enough evidence has been found in the empirical work and complementary literature studies to propose recommendations with respect to gaining more quantitative and qualitative data and challenging HEIs and educational policy to contribute to an equal participation in E&T and a more equal society.

Content redesigning has been recommended for attracting more female students to E&T education but the atmosphere and new teaching and learning formulas in engineering are also seen as encouraging factors for students, for females but also for males. Thus it is needed to make appropriate both, the curricula content and the methods and the climate of teaching and learning, to attract and satisfy the needs and interests of both women and men.

The proposed recommendations cover a wide range of issues and they have been grouped to be addressed to:

- Policy (additional efforts for updating surveys, databases, studies, etc. on a regular basis, Measures to progress towards gender equality in E&T fields, ..).
- Higher Education Institutions (Open the E&T curricula to a more interdisciplinary dimension; establishing new rules for increasing women's presence in E&T higher education; collaboration across academic communities).
- Women themselves.

The HELENA project recommendations could be used and integrated within new policies to improve gender equality for European higher education. Different key groups could benefit from them: policy-makers and educational actors related with E&T education at European and national level, and in particular for HEIs, to help them to improve the effectiveness of their educational policies and study programmes in attracting more female students to engineering disciplines. This approach will allow every group to make suitable decisions about their strategy for gender mainstreaming and educational management and policy.



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