Task 4.3 Provide information material useful for recruiting ECI and woman researchers (M3)

Women in science face several challenges in moving up the academic and administrative ladder due to systemic barriers and structural factors. Gender equality in scientific laboratories and institutions of higher education is not only about numbers but also about various micro and macro-level factors operating at the institutional level. There is now a definite consensus among the scientific community that the scientific job market should include more women at all levels of seniority. Female researchers, scientists, and professors should be able to participate at higher rates than current numbers both in the production of knowledge and high-quality research. The involvement of more women in sciences, realizing their scientific potential to the fullest would also set examples to younger female generations that would ultimately balance the gender inequality the current generation of scientists experiences. Another indirect but important impact of having more women in scientific careers would be stimulating young females and males to choose careers in science, technology, engineering, and mathematics (STEM) given that there is a general tendency for youth to steer away from relevant career paths.

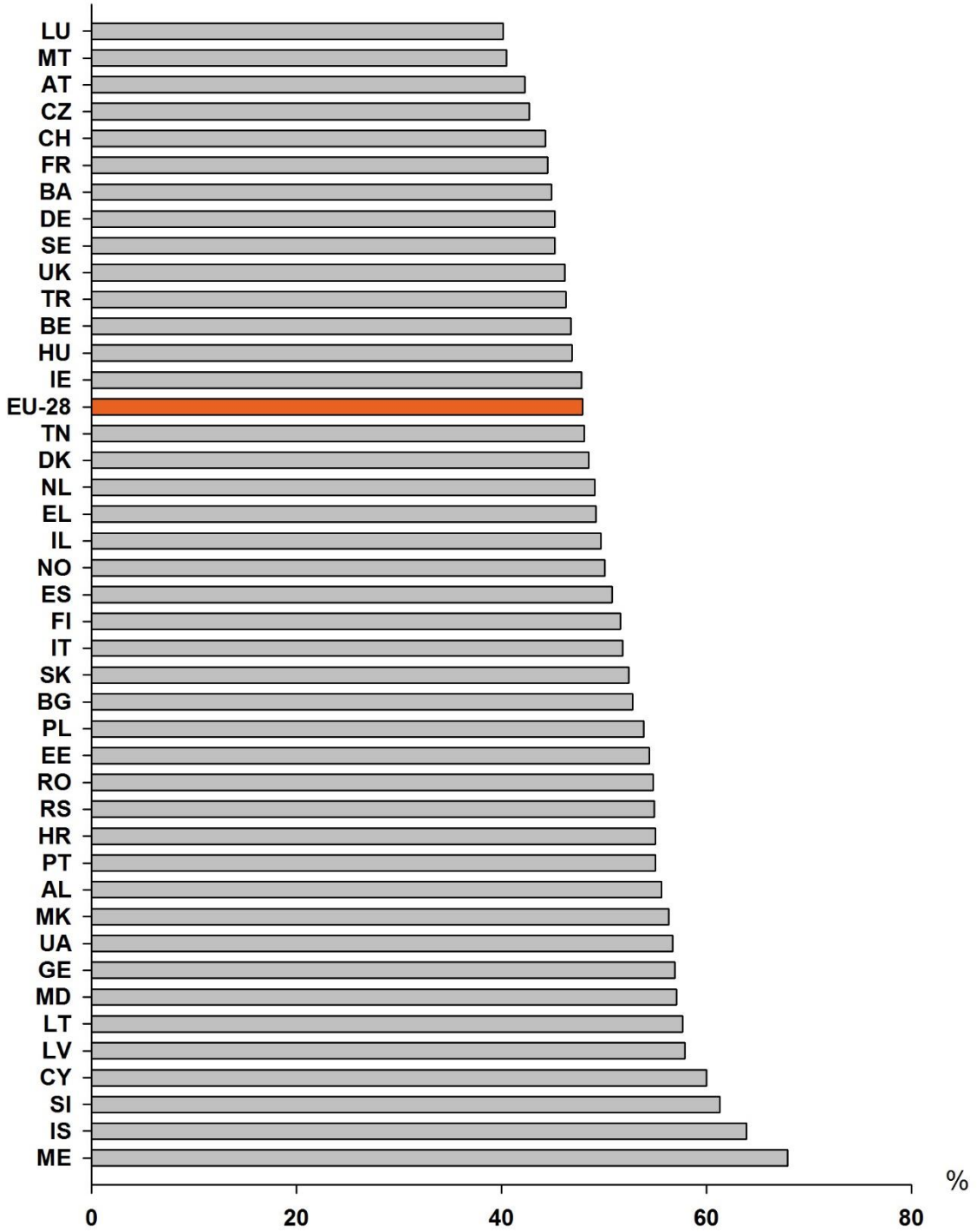
The issue of gender and excellence has been debated on the European science policy agenda since the early 2000s, and several EU expert groups and workshops have discussed the question[1]. This has resulted in the Gender and Excellence in the Making report (EC, 2004), and the WIRDEM report (EC, 2008b) on women in research decision-making. The balanced representation of women and men in science has been part of a strategic approach to bring forward equal opportunities in the field of scientific research, to enhance European competitiveness, and to realize fully the European innovation potential. According to the She Figures 2018 report[2], the presence of women among doctoral graduates increased between 2007 and 2016 both at the EU-28 level and the country level. Between 2007 and 2016, at the EU-28 level, the average annual growth rate of doctoral graduates was 2.3 % for women and 1.4 % for men[2]. The proportion of women among doctoral graduates ranged between 40 % and 60 % in 2016 in the great majority of countries examined. Women doctoral graduates are still over-represented in the fields of education (68 % of all graduates at the EU-28 level) and health and welfare (60 %). Their share among graduates in agriculture, forestry, fisheries, and veterinary science is 59 %. They are, however, significantly under-represented in the fields of information and communication technologies (21 %), and engineering, manufacturing, and construction (29 %). This same pattern is observed also at the national level. In most fields, gender equality has been reached in the majority of countries examined and no extreme values are observed even in the countries where the proportion of women is below the desired 40-60 % range. However, in education, the proportion of women among doctoral graduates ranged between 40 % and 60 % in only six countries: France (60 %), Spain (58 %), Hungary (55 %), Turkey (54 %), Croatia (52 %) and Luxembourg (40 %). In all of the remaining countries where gender distribution was unbalanced, the proportion of women among doctoral graduates was larger than 60 %. On the other side of the coin, women are strongly under-represented in ICT and engineering, manufacturing, and construction, since only four countries had a proportion above 40 % in ICT, and only two countries had a proportion above 40 % in engineering, manufacturing, and construction. In ICT, the four countries with a balanced proportion of women among doctoral graduates were Bulgaria (56 %), Serbia (50 %), Turkey (44 %), and Romania (43 %). In the field of engineering, manufacturing, and construction the corresponding proportion was 42 % in Poland and Serbia. Between 2013 and 2016, the proportion of women doctoral graduates grew in several narrow fields of Science, Technology,

1 The Gender Challenge in Research Funding: Assessing the European National Scenes. European Communities, 2009. ISBN 978-92-79-10599-9.

2 She Figures 2018. European Commission, 2019. ISBN 978-92-79-86715-6

Engineering, and Mathematics (STEM) in several countries. These fields were biological sciences, environmental science, and information and communication technologies.[2]

Figure 1. Proportion (%) of women among doctoral graduates, 2016. Source: Eurostat – Education Statistics (online data code: educ_uoe_grad02), UNESCO Institute for Statistics (Tertiary graduates by the level of education).



Notes: Exceptions to the reference year: IE, NL, IL: 2015; Data not available: FO; Definition differs: EU-28. Other: The ISCED 2011 classification is used: ISCED level 8 for doctoral graduates.

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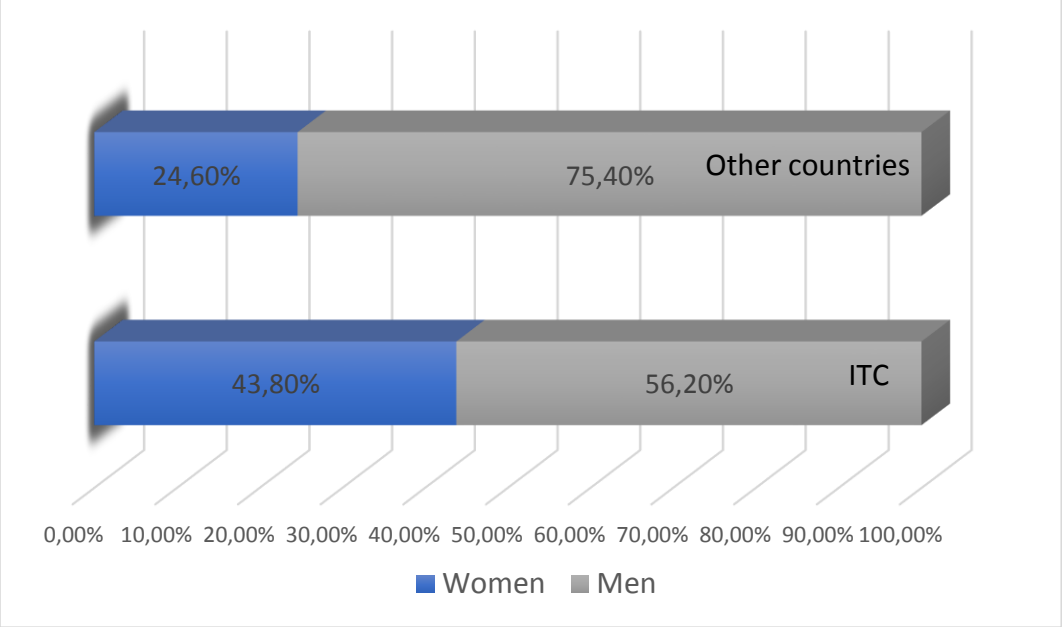
Inequalities between genders stand out more in science and engineering occupations at both the EU-28 level and country-level according to a 2017 report. In the EU-28, the difference between the proportions was 1.4 percentage points (4.5 % were male and 3.1 % were female). The gender gap has widened slightly since 2013 when the proportions were 4.1 % for men and 2.8 % for women. In 2017, six countries had a higher proportion of female scientists and engineers than males among the total labor force. The difference was the highest in Norway (6.7 % female S&E, 5.7 % male S&E) and Lithuania (4.0 % female S&E, 3.1 % male S&E). The highest difference in favour of men was in Finland (8 % male S&E, 3.3 % female S&E), Luxemburg (7 % male S&E, 2.3 % female S&E), and Switzerland (6.8 % male S&E, 3.3 % female S&E). Differences of less than 0.5 percentage points can be seen in Bulgaria, Croatia, Denmark, Ireland, Latvia, Poland, Portugal, Spain, Sweden, North Macedonia, Montenegro, and Turkey. An alternative view on women in science and technology occupations is provided in Figure 3.4. On the other hand, at both the EU-28 level and country level, the proportion of women in knowledge-intensive activities is higher than that of men. The difference at the EU-28 level is 15.5 percentage points while at the country-level it varies from 4.7 percentage points in Luxemburg to 22.4 percentage points in Iceland. Other countries with large differences were Latvia, Lithuania, Slovakia, and Poland[2].

Gender balance as well as encouragement and support of young early career researchers is one of the factors monitored closely in FIT4NANO Action. 36 of the 109 members involved in the action are women. 58% of these women come from ITC countries. In fact, the number of women participants from ITC countries is higher than from other countries.

Figure 2. The gender distribution of the FIT4NANO action.



In the MoU, a major task is to encourage diversity by assigning important management roles to women researchers, young researchers, and scientists from regions and countries that are currently underrepresented. The Action, therefore, promotes the active role of ECI and woman researchers by delegating important positions within the network to them. It is expected that this will increase the visibility and the confidence of female scientists when working with international partners or funding agencies, becoming an enabler of future cooperation initiated by female scientists. In this regard, 19 of the 48 MC members and 50% of working group leaders are women. Moreover, approximately 48% of MC members are from ITC countries. The science communication manager of the action is a young woman researcher, implying the

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efforts to encourage the participation of young scientists in management and decision-making processes. This is fully according with the MoU article statement: “As role models have proven to have a substantial impact on career decisions, a particular focus will be on women researchers, young investigators, and scientists from underrepresented countries when inviting speakers and participants to meetings and workshops”. Again, as stated in the MoU, all the intentions outlined above will contribute towards increasing gender balance and maintaining a young and dynamic scientific community in Europe.

In addition to promoting female scientists to take on leading roles and management positions, the action also aims to provide training to early-career scientists in FIB and its application for nanostructure fabrication, which is another task stated in the MoU. An important step in doing so is to establish effective communication among the members and their extended networks. Workshops and similar STSM grants are major tools in realizing so. Encouraging participation of early career researchers in the management steps ultimately could render initiatives of communication among these participants a likely possibility, eventually fulfilling one of the main tasks of the MoU.

While the Action is still in its infancy at the time of the report submission (M3), the following measures have already been implemented, and their success will be monitored.

- The Action encourages the participation of its ECI in summer student programs (e.g.: HZDR Summer Student Program).
- Action members open their online university courses for FIT4NANO ECI (e.g. Advanced Nanofabrication Course, Master on Advance Nanoscience and Nanotechnology, Universitat Autònoma de Barcelona).

It is expected that the above examples and further solicitation by the ISP and CG will lead to continuous activities in this direction. Here, the Action currently takes full benefit from the pandemic situation that led to an increase in the number of online lectures. These can easily be made accessible to many ECI outside the host institution. The Action will strive to use this momentum and encourage its members to continuously provide easy access for the Action members to their regular training programs. This best practice activity started by the Action will act as promoter for other networks and research groups to follow up with similar ideas and in this way increase the knowledge transfer to ECI and female researchers in all fields.

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