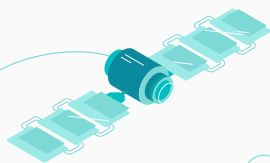


Diversity is paramount to a thriving European Space Sector

POLICY BRIEFING

New trends and challenges in the European space sector require practitioners in education and the space sector to shift their focus, strategies, and roles, and to include greater emphasis on inclusion and diversity, whether defined by gender, age, class, disabilities, special needs, socio-economic background or other characteristics. We highlight the need for European space policy in Horizon Europe to embed education and social inclusion that will improve the diversity, creativity and innovation in the space sector. We clarify the role of education as a key building block for this vision of a diverse and innovative space sector. Furthermore, we take the position that engaging with diverse perspectives will lead to a more literate and well-informed society, as well as more creative and sustainable space-related policies, research agendas and governance structures.



KEY RECOMMENDATIONS:

Make the European space sector as diverse as the European population by 2030.

Advance a diverse workforce in the European space sector by promoting unbiased and accessible hiring and evaluation processes.

Support inclusive and accessible education practices by providing the necessary tools and training teachers and students.

Fostering a more inclusive and diverse society requires a shift in systemic and cultural perspectives, strategy and commitment to coordinated actions that will shape science policies and space education. We draw attention to the need for engaging with more diverse publics and to provide the tools to accommodate the necessary cultural and behavioural change and go beyond raising awareness about the challenge.

01.

Equality and equal opportunities are high on the agenda for the EU

Higher education and employment opportunities are a result of a democratic process where citizens have equal possibilities for achieving the benefits they produce.

02.

Skills deficits throughout the European landscape

Digital strategies¹ for 2021 and beyond fail to recognise the challenge for education among young people to address digital skills in the modern age.

03.

Gaps in diverse representation is a loss of talent in the space sector

Attracting students and people from diverse backgrounds to the space sector will ensure that there is no loss of potential talent to build competitive workforce in the European space Sector. Inclusive and diverse research groups and institutions are more successful than more homogeneous ones^{2,3}.

04.

Links between social and environmental risk factors

The space sector is closely linked to global social and environmental issues. All individuals should have the opportunity to contribute to find new solutions to these global threats.

1 Reference: ec.europa.eu/digital-single-market/en/policies/digital-skills
2 Reference: capjournal.org/issues/26/26_07.pdf
3 Reference: [nature.com/articles/d41586-018-05316-5](https://www.nature.com/articles/d41586-018-05316-5)

The challenge

In STEM, women are still a minority at all steps of the academic ladder, this gap is wider than in other fields. Although more women than men obtain undergraduate degrees in the EU, the proportion of women declines at postgraduate level in science and technology and even more so in knowledge-intensive occupations: women make up only 17% of people employed in high-technology sectors⁴, including manufacture of air and spacecraft and related machinery. The position paper from the Advisory Group for Gender⁵ on gender integration in H2020 states that:

“Space is an area which is largely dominated by men, women are severely underrepresented in the aerospace sector. (...) The enduring nature of gender inequality and the sector’s significance in technological terms may signal the need for specific funding instruments focused on gender and culture change.”

The European space sector is also lacking diversity in its workforce in other dimensions of identity like, for example, race, abilities, sexual orientation, and class. There is little data published on number people with a minority background, disabilities or LGBTIQ* individuals in the space sector in Europe. The situation at astronomy and physics university departments in the US⁶, however, indicates that these groups are severely underrepresented. Only 2.1% of astronomers identify as Black or African-American and 3.2% as Hispanic, Latina/o, or of Spanish origin and extremely few are Native or indigenous. Moreover, these numbers have remained essentially constant between 2004 and 2012.

Gender statistics’ globally:

29%

of science researchers globally are women

20%

of space industry in 2016 are women

11%

of all space travellers have been women

These statistics are on par with numbers from 30 years ago.

We note that girls gain strong interest in STEM-related subject up to age 11, and declines in interest have become more apparent from age 15 onwards. The gap between girls and boys in interest in subjects like engineering and mathematics is wide. In general, girls are slightly more likely than boys to perceive STEM studies as “difficult and confusing”, and less likely to feel they are good at these subjects⁸.

As recent as 2017, the Space Awareness⁹ project carried out a European-wide survey with 8000 students aged 9–16 to assess attitudes relating to space science and space careers. Girls and boys alike had very positive attitudes towards space, but girls were substantially less likely to see a future for themselves in space sciences. Although most agreed that they wanted to find out more about careers related to space and that studies in space science can be helpful in getting a range of jobs.

4 Reference: ec.europa.eu/eurostat/web/products-eurostat-news/-/EDN-20190211-1

5 Reference: ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=28824&no=1

6 Reference: aip.org/sites/default/files/statistics/faculty/africanhisp-fac-pa-123.pdf

7 Reference: unoosa.org/oosa/en/ourwork/topics/spaceforwomen/index.html

8 Reference: stemalliance.eu/news/detail?articleId=4408832

9 Reference: space-awareness.org/en/news/space-awareness-evaluation-reporting-summary/

What can we do?

Immediate and ongoing [1-2 years]

- Integrate a dedicated education policy in the European space strategy in Horizon Europe, targeting young people at a time in their lives when they are preparing to make major career decisions.
- Promote hiring and evaluation processes that are accessible and free of (unconscious) biases. Train the relevant staff in the use of non-biased and accessible selection and evaluation methods.
- Promote open education practices and resources to widen access to quality education.
- Encourage EU projects and organisations to communicate and educate scientific knowledge and results in various, inclusive formats, such as a.o. multi-language materials, braille and spoken files, and beware of using gendered language.
- Support initiatives inside and outside the classroom that engage academia, families and educators from different education levels, targeting different demographics including young children and teenagers. Actively contact schools from disadvantaged neighbourhoods.
- Support projects and activities that highlight past and present contributions of women and minorities to the advancement of the space sector, and depict at least 50% females and at least 20% persons of minority groups in promotional materials.
- Promote a diverse workforce and inclusive working environment in the European space sector.
- Exploit the international and collaborative nature of space science that uniquely positions it for global citizenship education and solidarity, showcasing open-mindedness to other cultures and backgrounds.
- Raise awareness through public outreach about the persistence of this challenge to continue the necessary culture change.
- Provide inclusive and accessible teacher trainings to facilitate participation of diverse teachers and encourage more hands-on, inquiry-based teaching to increase the students' confidence in approaching STEM. Equally, the space sector can contribute by showcasing female and minority role models and by providing more information to schools about career pathways in STEM.
- Training workshops for students showcasing the accessibility of tools and databases needed to work in the space industry, to show that the accommodations already exist.

Short and midterm [3-5 years]

- Obtain the missing data about gender balance and diversity in the entire European space sector to understand the scope of the challenge and plan for a long-term solution.
- Adapt databases, research journals and other tools in the space sector to be accessible to those with disabilities. This creates an improved user experience for all.
- Dedicate a fixed percentage of the budget for the space sector to education, inclusivity and diversity measures (at least 0.5% of the total framework programme).

Long term [10 years]

- Make the European space sector as diverse as the European population by 2030.
- Achieve a level of participation of persons with disabilities in the space sector comparable to that of other groups in the European society.

About spaceEU



spaceEU is a European-funded project that fosters a young, creative and inclusive European space community. It implements an exciting space outreach and education programme to spark the interest of young people in STEAM (Science, Technology, Engineering, Arts and Maths), and to encourage them to consider space – related careers. The project inspires and broadens young minds, develops a sense of European and global citizenship, and through our shared human relationship with space, fosters long-term partnerships between people from different countries and cultural backgrounds.

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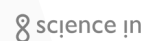


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