

## Deloitte: STEM skills increasingly vital for growth and competitiveness But in 10 years, Italy sees only +1% enrollment in STEM degree programs

- *In Italy, only 27% of students are enrolled in tertiary education pathways in STEM fields, and the figure drops to 10% when considering female STEM students out of the total student population*
- *62% of those enrolled in STEM education pathways have done scientific high schools, while only 13% of those enrolled in STEM pathways come from humanities studies*
- *The idea that STEM is "difficult" remains widespread: 21% of surveyed students think so*
- *24% of students and 23% of young workers recognize the importance of STEM for decarbonization and green transition*

**Milan, March 8, 2024** - While **STEM** skills are increasingly important for tackling major global challenges, enrollment in **science-technology** degree programs (**Science, Technology, Engineering and Mathematics**) is not growing in Italy: in ten years the percentage of STEM enrollees has risen by only one percentage point. And the **gender gap** has not closed yet: out of the total number of enrollees in tertiary education (universities, Institutions of Higher Education in Art, Music and Dance and Higher Technical Institutes), women in STEM fields are only 10% of the student population. This is the finding of the position paper "**R-Evolution STEM. Technical and scientific skills for the future of work**," produced as part of the **STEM Observatory** and sponsored by the Italian **Deloitte Foundation** and **Deloitte's Public Policy Program**.

"The lack of awareness of STEM disciplines and their educational and professional opportunities continue to result in low affluence to technical and scientific paths in our country. In addition, the persistence of gender and socioeconomic barriers that preclude studies or careers in STEM fields, particularly of women, clearly emerges, resulting in the loss of an opportunity for social progress and economic growth for the entire country", comments **Fabio Pompei, CEO of Deloitte Central-Mediterranean**.

"In order to turn the tide and capitalize on the great cultural and economic potential of STEM skills, it is necessary to work on three levers of action: universalize STEM, encouraging an approach to these disciplines from an early age; intervene on gender and socioeconomic barriers to ensure equitable access to STEM education and professions; and educate and update the skills of the workforce through lifelong learning," explains **Guido Borsani, president** of the Italian **Deloitte Foundation**.

### **STEM crucial for scientific research and the green transition**

In recent years, global macro-trends have made the importance of STEM skills increasingly evident. Young people are most aware of this: for 6 in 10, STEM knowledge will be a crucial resource for advancing scientific and technological progress. In particular, one in three students stress the importance of STEM in **science, health and medicine** (33%). About one in four respondents - 24% of students and 23% of young workers - recognize the importance of STEM for **decarbonization** and the **green transition**. 28% of students and 26% of young workers emphasize its importance for the **circular economy**, reduction in resource use and optimization of consumption cycles.

## **STEM student population in Italy is not growing: +1% in ten years**

Despite the growing importance of **STEM** disciplines, the percentage of undergraduate students enrolled in STEM degree programs in Italy remains **stagnant**: in ten years (from the academic year 2012-2013 to 2021-2022) the growth of STEM students out of the total number of students was only one percentage point, from 26% to 27%. Moreover, there remains a strong **gender gap**: out of the total number of students, only 10% of women pursue tertiary STEM education.

## **Origin of STEM students: scientific high schools predominate**

Within tertiary STEM education, 62% of students come from scientific high schools, 17% from technical or technological colleges and, to a lesser extent, from business and vocational colleges (4%) - while only a minority share, 13%, come from a humanities education. Analyzing the individual STEM subsets, moreover, some peculiarities emerge: for example, 47% of those enrolled in tertiary education paths in Computer Science and ICT Technologies come from technical institutes.

## **Study paths chosen based on passion for the subject, but for many, STEM is "difficult"**

It is not surprising, then, that the **perception of STEM disciplines as difficult** is among the main deterrents to STEM: a judgment that is expressed by 21% of students and rises to 25% for non-STEM majors. Alongside this perception of STEM as complex subjects, there remains, as in past editions, **the importance of passion and personal interest** in the subject as a **criterion for choosing a school path**, both for students (48%) and young workers (41%).

## **STEM educational offerings: satisfactory for 1 in 2, but teaching is perceived as dated**

Considering a wide variety of motivations and decision criteria, young people expressed a predominantly **positive** judgement of their education. About half of students (52%) and young workers (46%) consider themselves very or fairly satisfied with the main course of study they have undertaken. However, the educational offerings and courses provided in Italy are perceived as dated when compared to other countries (24%).

## **STEM choice motivations: career and earnings prospects are the key drivers**

What are the **motivations** that lead to choosing a profession after graduation? The main motivations that lead to choosing STEM study paths are **passion and personal interest in the subject**: this is the case for the majority of surveyed students (48%) and young workers (41%). At the same time, **the expectation of professional growth** is still a determining criterion for more than a third of students (37%) and a quarter of young workers (26%). In entering the world of work, career choices are driven primarily by the opportunity for **career and growth** (32%) and **economic expectations** (31%).

## **STEM careers: 1 in 2 satisfied, but only 34% consider Italian job opportunities competitive**

Once in the working world, **positive judgments** prevail: overall, one in two respondents (50%) consider themselves very or fairly satisfied. Only one-third of young workers (34%) consider the job opportunities **in STEM fields** in Italy as "**very or fairly competitive**" when compared to the European average. The

prospects for young workers with a degree in STEM fields are more uncertain: in this case, the degree of confidence stops at 26%.

## **Skills for the world of work: more than 1 in 2 expect major changes**

More than one in two young people think that, within the next 10 years, the **skills required in the world of work** will be **profoundly different from what they are today** (61% for students; 50% for young workers), and they say they are concerned (50% for students; 49% for young workers) about the employment impact of the diffusion of **AI technologies**. The weight of these fears, moreover, seems likely to grow: the greatest fear is among the younger generation of students (61%) compared to young workers (49%).

**STEM graduates more versatile: 44% would leave their jobs without having already found another one**  
STEM graduates are not only more satisfied than average with their jobs (52% vs. 50%), but they are also more flexible: the idea of **leaving one's job** "without knowing where one will work next" holds true for 44% of STEM graduates vs. 40% of the total sample. This data highlights how a more advanced education produces greater versatility and discretion in job choices. Narrowing the time horizon, more than half of those employed with STEM degrees (53%) anticipate career changes **within 12 months** - compared to 47% from other faculties. Extending the time horizon to the medium term (3-5 years), the share of those who foresee career changes rises to 63% among young workers with STEM degrees, while the figure stops at 56% for non-STEM graduates.

## **More girls than boys in universities, but the Gender Gap remains in STEM faculties**

In Italy, analyzing data from the Academic Year 2021-2022, it is clear that women now make up the majority of the university population (56%). But a gender gap remains within the STEM pool: female students accounted for 37% in 2021-2022, a figure that has remained essentially unchanged over the past 10 years. The average figure of 37%, however, hides significant differences between different STEM degree programs: as of today, women make up 58% of the total number of students in science and 46% in Architecture and Civil Engineering, while they are still a minority in Industrial and Information Engineering (23%) and Computer Science and ICT Technologies (15%), a field that in turn is even more "niche" (8% of STEM graduates).

## **STEM women graduate earlier and better than men, but job market penalizes them**

Analyzing data from Almalaurea shows that women in STEM pathways, although fewer in number, achieve a **higher average graduation grade** (104.2 out of 110, compared to 102.3 for men) and have better success in terms of **regularity in their studies** (among women, 58% completed their studies on time compared to 53% of men). Despite better university performance, women remain disadvantaged in the world of work: five years after receiving a bachelor's degree, the employment rate is 94% for men and 91% for women.

## **Bias, stereotypes and gender discrimination in STEM**

According to 71% of students, women's participation in STEM pathways are hindered by **gender stereotypes**. The view of **young workers** partly mirrors that of students, although with less pronounced



values. One in two young workers (49%) say they have witnessed **gender discrimination** in their workplace.