



Europe needs to make its STEM strategy a reality now

The European sectoral social partners in the chemical, pharmaceutical, plastics and rubber industry, industriAll European Trade Union and the European Chemical Employers' Group (ECEG), urge the European Commission to step up its effort to implement its European STEM¹ strategy and make it a reality in all Member States.

We welcome the strong focus the European Commission has been giving over recent years to develop solid STEM, digital, green, and transversal soft skills for both youth and adult workers across Europe. Acquiring those skills provides foundations for resilience, lifelong learning, lifelong employability, social inclusion, active citizenship, and personal development, as stressed in the 2020 Council Recommendation on vocational education and training. They also ensure our industries are equipped with the skilled workforce they require to remain competitive and innovative.

The European Commission has been multiplying its announcements about upcoming initiatives aimed at increasing STEM graduates²; at promoting the development of new higher education STEM curricula for engineering and ICT³; and at making the STEM fields more attractive to women⁴. The EU is also calling on Member States to foster the acquisition of competences in STEM, and motivate more young people, especially girls and young women, to engage in STEM careers⁵. Those calls and good intentions have yet to materialise in practice. With the increased scale and pace of change in our industries, turning good wishes into concrete actions and developing the training of workers already active within the sector, as well as people who are unemployed, has become a burning priority.

We recognise that education and training remain a Member State competence, and that the EU Treaty grants no possibility for EU law to regulate in that area. However, European projects, such as the Green Deal, and global developments like digitalisation, merit a European approach. The European Commission has increased available funding in recent years for national skills strategies⁶, coordination of national and local initiatives⁷, guidance to Member States⁸, and information support⁹. As far as STEM skills are concerned, the European Commission should play a supporting and advisory role,

¹ Science, Technology, Engineering, and Mathematics

² See Action 7 in the 2020 European Skills Agenda for sustainable competitiveness, social fairness and resilience, <https://ec.europa.eu/social/main.jsp?catId=1223&langId=en>

³ See the 2020 European Commission's communication on a European Education Area by 2025.

⁴ See Action 13 of the 2020 European Commission's communication on a Digital Education Action Plan 2021-2027.

⁵ 2018 Council Recommendation on key competences for lifelong learning.

⁶ Through the ESF+, Erasmus+, NextGenerationEU programmes, as well as the Recovery and Resilience Facility, for instance.

⁷ Think of the European and national Digital jobs and skills coalitions, or the blueprints and pacts for skills for sectoral cooperation between industry associations, social partners and VET providers in targeted industrial ecosystems.

⁸ See the 2020 Council Recommendation on vocational education and training for sustainable competitiveness, social fairness and resilience.

⁹ Including CEDEFOP skills forecasts.



paving the way to ensure that Europe has enough well-trained workers, employees and researchers with STEM profiles, one of the key competences for the future.

Today, only one in five young people in Europe graduates from STEM tertiary education, which is less than two million STEM graduates every year¹⁰. To stay competitive and retain the chemical industry in Europe, we need a skilled workforce - ranging from vocational excellence to PhD-level innovation talent and researchers. STEM skills are vital in responding to the (structural) changes induced, for example, by climate goals, digitalisation, or the Chemicals Strategy for Sustainability.

We know already that the chemical industry will face a deficit of skilled workers by 2030. The 2018 Korn Ferry study showed that our sector would run an 11% labour shortage in 2030, all related to STEM disciplines. The European Centre for the Development of Vocational Training (CEDEFOP) stresses that cross-sectoral demand for STEM professionals will increase by 8% by 2025¹¹.

The twin transitions will considerably change the task profiles of several occupational groups, mostly STEM-related: electro-engineering workers, machine and plant operators, other manufacturing workers, researchers and engineers, as well as science and engineering technicians. In today's smart factories, all workers need IT skills.

IndustriAll Europe and the ECEG propose a STEM strategy for the European chemical industry. Such a strategy requires a clear assessment of the status quo and of future needs, and a clear description of the necessary steps to bridge the gap. It should define the roles and responsibilities of all actors, taking national or regional differences into account.

The STEM strategy must aim for social equity. Besides young people, workers already active within the sector and people who are unemployed, it should target women who are underrepresented in tech-related professions and studies: only 1 in 3 of today's STEM graduates is female. Closing the gender gap would have a positive impact on both employment and GDP¹².

Also, the STEM strategy within the education system is complementary to the priority missions of this sector, namely: the promotion of self-confidence, the personal development of each student, the appropriation of knowledge and know-how, the acquisition of competences allowing someone to take an active part in the economic, social and cultural life. Similarly, the social partners indicate the importance of education in view of training future responsible citizens, capable of contributing to the development of a democratic, united, pluralist society, respectful of the environment and open to other cultures.

The strategy may contain the following actions for boosting STEM talent development:

For the European Commission:

- Promote annual/biannual STEM labour market analyses to identify the STEM labour gap, unemployment in STEM occupations, labour demand in STEM occupations, and calculate the

¹⁰ https://ec.europa.eu/eurostat/statistics-explained/index.php/Tertiary_education_statistics#Graduates

¹¹ <https://www.cedefop.europa.eu/en/data-insights/rising-stems>

¹² <https://eige.europa.eu/gender-mainstreaming/policy-areas/economic-and-financial-affairs/economic-benefits-gender-equality/stem>



share of non-academic STEM occupations for the coming years¹³. Training and education plans must be derived from this, with accompanying information and advertising campaigns to interest people in the professions in demand.

- Fund re-skilling and upskilling activities related to careers in STEM, for example via the Research and Restructuring Fund (RRF), or sector-specific national funds¹⁴.
- Promote EU-wide cross-border consortia between training and education providers (secondary schools, apprenticeship providers, higher education, and academia) and industry to boost innovation and R&D, and the fast, practical implementation of new solutions; support interested parties in the application for funding and building of partnerships.
- Advise Member States how to improve STEM training and education in schools from an early age and encourage the uptake of STEM apprenticeships and studies.

For the Member States:

- Design future-proof occupational pathways for job-to-job transitions, recognition and validation of formal and non-formal training.
- Strengthen the knowledge component in STEM vocational education programmes, to facilitate later reskilling, upskilling or training, and enable workers to adapt at any time to new requirements arising from the twin transitions.
- Secure that every single worker has access to training in STEM, of a good enough quality to lead to a qualification that is validated through transparent and clear recognition and certification systems which allow for comparability.
- Develop the training of unemployed and low-skilled persons in order to facilitate their socio-economic insertion within civil society
- Encourage and support well-paid internships for STEM students, as foreseen in the collective agreement of the Spanish chemical industry¹⁵.
- Promote cooperation with (chemical) technological companies - with the EU's financial help - to boost the development of technical solutions. Such examples exist among the universities of applied sciences in Finland.
- Introduce nationwide STEM and/or digital awards: Germany, for example, has introduced nationwide 'STEM friendly school' and 'Digital school' awards. It also promotes an initiative called 'Creating STEM future'¹⁶, which includes, among others, data on STEM graduates, STEM needs of the industry, etc.

For the social partners:

- Establish cooperation with primary schools to attract children towards STEM¹⁷ via interactive, tailor-made programmes.

¹³ <https://mintzukunftschaften.de>

¹⁴ <https://www.vci.de/fonds/startseite.jsp>

¹⁵ XX CONVENIO GENERAL DE LA INDUSTRIA QUÍMICA

¹⁶ <https://mintzukunftschaften.de/mint-freundliche-schule-2/>

¹⁷Some examples: Essencia, Belgium '[We are chemistry](#)' or "the biggest chemistry lesson". France Chimie, regional and national competition in chemistry for high school students, [National Olympics on chemistry](#) or the



- Get fully involved in the design, implementation and monitoring of European and national STEM strategies, including via ambitious targets for vocational learning, education and retraining and skills development.
- Use joint bodies to develop training for staff already working in the sector and for unemployed and low-skilled persons, for example *Co-valent* in Belgium.
- Promote skills intelligence¹⁸.
- Maintain and improve working conditions to increase the attractiveness of the sector.

Europe needs to implement a STEM strategy that will strengthen skills intelligence with social partners, VET providers and public authorities, anticipate and manage structural changes, which will develop the knowledge of workers already active in the sector and attract new workers, especially women, to the chemical sector.

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Observatory for chemical industries. Federchimica, Italy, [annual events](#) at schools to attract high school students to opt for chemistry. For all examples, please consult social partners' [toolbox](#), pp. 7_9

¹⁸ Identifying, analysing, synthesising and presenting quantitative and/or qualitative skills and labour market information.