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Labour and skills shortages in the European Chemical industry

Introduction:

The European labour market is currently undergoing several interlinked challenges, which also affect the chemical sector. Among these, labour and skills shortages represent the major concern. The twin transitions and, the rapid and constant technological changes aggravate forecasting and assessing skills and competence needs required by our sector in the upcoming years. What is certain, is that the chemical industry will need more people with STEM background (ranging from vocational excellence to PhD-level innovation talents and researchers) alongside new set of skills, if it wants to stay competitive, succeed in the twin transitions and effectively deliver on the Chemicals Strategy for Sustainability (CSS).

According to the 2021 labour shortages report by the European Labour Authority (ELA), STEM and healthcare related occupations include the highest concentration of labour shortages¹. As of

¹ <https://www.ela.europa.eu/en/media/725> (last access: September 2023).

today, only one in five young people graduates from STEM tertiary education every year, corresponding to less than two million graduates².

According to ECEG's Croatian member, [HUP](#), only 1,5% students enrolled to study chemical engineering for the academic year 2020/2021 in **Croatia** – a constant trend since 2016. Out of the total number of enrolled students in the 1st year of chemical engineering studies, only 29% has successfully made it to the 3rd year³.

If this is not adequately addressed at the European level, our sector will run an 11% labour shortage by 2030, all related to STEM disciplines⁴.

In **France** the chemical industry is experiencing recruitment difficulties for certain types of occupations, such as R&D, production at all levels (including production operators, managers), maintenance, especially technicians, logistics, sales technicians and sales engineers⁵. The main reasons identified behind the manpower shortage in the French chemical sector are:

1. The industry's and/or sector's lack of appeal,
2. A mismatch between business needs and young graduate training,
3. Search for rare skills, highly skilled technical specialists.

To address this challenge, chemical businesses in France adopted concrete strategies, including apprenticeship schemes, in-house promotion systems for operations management positions, recruitments drives and partnerships with schools and training organisations⁶.

² https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Tertiary_education_statistics#Graduates (last access: September 2023).

³ Source: https://podaci.dzs.hr/media/w24asnrf/si-1688-studenti-u-akademskoj-godini-2020_2021_web.pdf (last access: September 2023).

⁴ "The Talent Strategy to support a Thriving Chemical Industry towards 2050", Korn Ferry (2018).

⁵ According to *Pôle Emploi*, the professions experiencing the highest rate of difficulties in recruiting are, amongst others: warehouse managers, supervisors and equivalent in mechanical manufacturing and construction equipment operators. Real-time data is available at: <https://statistiques.pole-emploi.org/bmo/bmo?fg=CE&le=0&pp=2023&ss=1> (last accessed: September 2023).

⁶ Report "Cartographie des métiers et des compétences incluant un focus sur le risque d'obsolescence des compétences et métiers en tension dans la branche chimie", by Katalyse & Boosters (2021). Available at: <https://www.francechimie.fr/media/633/opco2i-branche-chimie-katalyseboosters-rapport-091221.pdf> (last access: September 2023).

ECEG suggests the following solutions for addressing skills & labour shortage challenges

An [EU Social Partners' project on demographic change](#) in the chemical sector showed that the number of 55–64-year-old employees is increasing across all Member States. The latter is the main cause of skills and labour shortage in the sector, which sees most of its highly skilled employees retiring, without an adequate replacement in place⁷. ECEG identifies two complementary solutions:

1. Labour mobility and integration of third country migrants

The Korn Ferry study of 2018 highlights that the European chemical sector might need to attract people with the right skills from outside of the EU, most probably from countries with a surplus of graduates in STEM, such as India⁸. Attracting and retaining labour migrants from third countries is a valuable tool to effectively address the issue of labour shortage in the sector. To facilitate this process, actions need to be taken both at the European and national levels, such as:

- To simplify administrative procedures and develop a flexible legal framework for legal migration to the EU. This would mean:
 - o Successful implementation and transposition of the revised **Blue Card Directive**⁹ by Member States;
 - o Finalisation of the recast of the **Single Permit Directive** and the subsequent simplification of the procedures for obtaining a single permit for both work and residence¹⁰;
 - o The modernisation of the **EU Family Reunification Directive**;
 - o The development of a well-designed [EU Talent Pool](#), which is **voluntary, user-friendly** and **interoperable** with existing systems and platforms both at national and EU levels,

⁷ Report “The impact of Demographic change in the chemical industry in Europe”, T. Tivig, D. Eggert, C. Korb from a joint project by ECEG, EMCEF, FECCIA funded by the European Commission (2010). Available at: http://www.demographicsinchemistry.eu/fileadmin/pdf/Chemiestudie_en.pdf.

⁸ “The Talent Strategy to support a Thriving Chemical Industry towards 2050”, Korn Ferry (2018).

⁹ Directive EU 2021/1883 on the conditions of entry and residence of third-country nationals for the purpose of highly qualified employment, and repealing Council Directive 2009/50/EC. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021L1883> (last access: July 2023).

¹⁰ At the time of drafting the paper (September 2023), the Council of the EU reached an agreement on the revision of the Single Permit Directive. Negotiations between the Council and the European Parliament were still undergoing.

such as LinkedIn, EURES, CEDEFOP's Skills OVATE, Labour Migration Platform, European Labour Authority, etc¹¹.

- To facilitate **recognition** of foreign **skills and education** improving transparency in the comparability of qualifications, making the procedure less burdensome and increasing the **range of tailor-made qualification modules** for regulated professions.
- To promote and simplify mobility of foreign workers within the EU, thanks to the recast of the **EU Long-term residents Directive**.
- To support **language learning** in the host country¹².

2. Up-/re-skilling of the European workforce

European workforce needs to be adequately prepared with the right skills set to respond to the twin transition, including engineering, technical, and scientific skills, advanced digital skills, management and monitoring skills, soft skills and cross-cutting competences¹³.

If effectively involved, **social partners** (employers and trade union representatives) at all levels can help securing skilled European workforce by:

- **Updating curricula and qualifications.** For the chemical sector, ECEG together with [Ledarna](#) (Swedish Federation of managerial staff in the chemical industry) and [FECCIA](#) (European Federation of Managerial Staff in the Chemical and Allied Industries) developed curricula framework on digital skills for [workers](#), [employers](#), [managers](#) and [academia](#), respectively¹⁴.

¹¹ ECEG's position on the EU Talent Pool is available at: https://www.eceg.org/files/ugd/977a5c_d9aff7f3cf074895ad340424a193a3e6.pdf (Last access: September 2023.)

¹² Looking at the specific case of Ukrainians, for example, the European Union Agency for Fundamental Rights reported that they generally have a good knowledge of the English but the knowledge of other non-Slavic languages is rare. Yet, 40% of Ukrainian refugees have not attended any language courses since their arrival.

¹³ Final Report "On the Road to Climate Neutrality 2050 – the Role of Social Partners in the Decarbonisation of the Chemical, Pharmaceutical, Rubber and Plastics Industries" (March 2023) available at: https://news.industrial-europe.eu/documents/upload/2023/7/638245789206351555_Final_report_EN_chemneut.pdf. BAVC reported that in the German chemical industry there is a growing need for specialists and managers in the fields of technology and engineering, computer science, artificial intelligence, and digitalization and sustainability.

¹⁴ The curricula were developed in the framework of the social partners' project "*Identifying and Meeting Digital Skills Needs in the European Chemical, Pharmaceutical, Rubber, and Plastics Industry*". It was also developed an in-depth research, available at: https://www.eceg.org/files/ugd/977a5c_45e9b1536b8245bfa90bf1602a2a7db4.pdf and a supporting document

- **To align future competences with the operational needs.** It is crucial to develop and teach new competencies based on professional activities/needs. To ensure this, training and continuing education regulations shall be designed by social partners together with training experts from companies, as for example in Germany.
- **Collecting quality and up-to-date data through skills intelligence.** To better understand the skills needs of the labour market and, subsequently, develop skills strategies German Social Partners in the chemical sector, the German Federation of Chemical Employers' Associations, [BAVC](#) and the Mining, Chemical and Energy Workers' Union, [IGBCE](#) developed the [Future Skills Report](#) in cooperation with HR Forecast. It is based on analysis of job portals and job profiles with the use of AI and Big Data analysis. It identifies not only the top jobs and skills that are in demand in the sector, but also the key trends in terms of skills shortages which can emerge if the demand is not sufficiently addressed¹⁵.

In May 2023, another transformation study was published by the German Federation of Chemical employers' associations ([BAVC](#)). "[The Chemical industry workspaces 2030](#)"¹⁶ which presents concrete actions for politicians and companies management to ensure workforce retention, skilled workforce attraction (also from third countries) and skills profile extensions, especially in the areas of sustainability and digitalisation. The study predicts a 25,000 Full-Time Equivalent (FTE) higher employment requirement by 2030 – an increase of 6% the chemical sector in Germany if the transformation succeeds, and the loss of 15% of the workforce, 63.000 FTE, should it fail. The study also highlights that if energy prices in Germany remain this high, a noticeable proportion of the chemical production might no longer be based in Germany, thus negatively impacting the demand for skilled workers in all the sectors linked to the chemical industry.

to the curricula framework, available at:
https://www.eceg.org/files/ugd/977a5c_ee6a7fbb75eb4aa98e3520c5a1d2e20a.pdf (Last access: September 2023).

¹⁵ <https://future-skills-chemie.de/en/> (last access: September 2023).

¹⁶ The full study is available in German at: https://www.bavc.de/downloads/News/Chemie-Arbeitswelten_2030_finale_Studie.pdf (last access: September 2023).

- **Coordinating the Erasmus+ Blueprint project “ChemSkills”** ¹⁷, contributing to the skills intelligence for the European chemical sector, with an objective of developing digital and green skills, as well as competences to produce safe and sustainable by design chemicals.
- Developing and fostering a **learning culture**.
- Promoting **STEM education and entrepreneurship**.
- Programming, monitoring and implementing **EU Funding** opportunities to support **up-/re-skilling activities of the workforce** in the sector, such as European Social Fund+, the Recovery and Resilience Facility, Erasmus+ and Horizon Europe.

ECEG calls on European policy makers to take into account the above listed aspects in close collaboration with the Member States. Simplified administrative procedures are just a first step to responding to the European demographic paradigm and the subsequent labour shortage.

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About ECEG

ECEG, the European Chemical Employers Group, founded in 2002, is a recognised European Sectoral Social Partner, representing the chemicals, pharmaceuticals, rubber and plastics industries in Europe. Our sector provides approximately 3.3 million direct jobs in more than 94.000 enterprises.

¹⁷ ECEG is the project manager and the leader of the consortium.