



Chemical Sciences for Horizon Europe, education and employability

Education and the labour market, a case study from Belgium

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- 1. The chemical & life sciences industry in Belgium
- 2. Employability challenges for the industry







Federation for Chemistry & Life Sciences Industries



Representing about 730 companies



Chemical and life sciences industry in Belgium (Key figures 2017 essenscia

- Direct employment: 90,780
- Indirect employment:
- Turnover:
- Trade surplus:
- Investments:
- R&D-expenditures:

- 150,000
- € 65.8 billion
- € 23.7 billion
- € 2.2 billion
- € 4.4 billion





Antwerp hosts one of the largest chemical clusters in the world





Presence of leading R&D-centers in Belgium with focus on sustainable innovation where chemistry meets life sciences



4. INNOVATION

sponsible Care COMMITMENT TO SUSTAINABILITY

essenscia

Innovation champion of Belgium



 The sector spents 4.4 billion euros on R&D, an amount that has almost doubled in 10 years





Delivering more than one patent per day



- Chemicals, pharmaceuticals and biotechs account for 1/3 of all Belgian patents
- New record: 417 patents in 2017, an increase of 62% in 3 years



Number of Belgian patents

Instruments Electrical engineering Other fields* Mechanical engineering Chemicals, Pharmaceuticals and Biotech



Source: European Patent Office (www.epo.org) *toys, civil engineering, other consumer goods

The chemical industry is looking for (young) talent



• Job survey essenscia vlaanderen (june 2018)

More than 1,500 job opportunities Nine out of ten of the companies are hiring No experience needed in 40% of the vacancies Nearly two thirds of the

jobs is intended for bachelors, masters, doctors

Announcement of 4 world-scale investments in the past months





Borealis (Kallo) – 1 billion EUR Propane dehydrogenation (PDH) plant



Covestro (Antwerpen) – 300 million EUR New aniline plant Responsible Care® Nippon Shokubai (Zwijndrecht)– 350 million EURSuper absorbant polymers and acrylic acid



Ineos (Zwijndrecht) - 3 billion EUR Propane dehydrogenation (PDH) plant and new ethane cracker

Employees age evolution: biggest age group 50-54 in 2020 where chemistry meets life sciences

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2017 – Master level graduates in Flanders



Total number of graduates: 16,052 students

% graduates in sciences: 4,7% % graduates in applied sciences: 5,9%

2017 – vocational training outflow in Flanders – chemical process technology



Only 9 schools in Flanders provide operator curriculum (chemical proces technology)

134 graduates does not allow to cope with outflow forecasts

We need more students in STEM!



OFCL



Partner countries and accession candidates are indicated in italics. Source: Education at a Glance 2017: OECD Indicators, Fig. C3.1. essenscia and the Antwerp Management School joined forces in 2016 & 2007 and carried out a research project on the future of jobs in the chemical and life sciences industry given the impact of new technologies such as automation, robotics, digitalisation,...

Main outcomes can be summarised in 6 paradoxes

- 1. New technologies and jobs are best friends and sworn enemies at the same time
- 2. Shortage on the labour market goes hand in hand with demand for higher skills and competencies
- 3. Being expert and generalist at the same time is a challenge
- 4. Technical knowledge must by complemented by excellent social skills



- 5. Digital natives in the same team with digital immigrants
- 6. Education approach is not always in line with industry expectations

The study recommends the following measures to cope with the new challenges

- 1. Invest in your teams
- 2. Invest in your leaders
- 3. Focus on the added value of your people in the process
- 4. Stimulate knowledge exchange
- 5. Use the sectoral demography fund Responsible Care®



- 6. Invest in practice oriented education
- 7. Integrate social skills in training curricula



Attracting young talents to the chemical & life sciences industry - what do we do?

- where chemistry meets life scie
- Pioneering role in dual learning and apprenticeship systems in secondary education and at bachelor level
- **Dedicated training centres** for the chemical, plastics and pharmaceutical industry
- Numerous initiatives to promote STEM and encourage ۲ youngsters to choose for STEM-education
- We tell the story and explain why chemistry and life ٠ sciences are crucial in solving contemporary challenges





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