Chemical Sciences for Horizon Europe, education and employability

Education and the labour market, a case study from Belgium

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Agenda

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

- Direct employment: 90,780
- Indirect employment: 150,000
- Turnover: € 65.8 billion
- Trade surplus: € 23.7 billion
- Investments: € 2.2 billion
- R&D-expenditures: € 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

Lead plants: worldwide technical competence centers in the Belgian chemical cluster (BASF Antwerp, Evonik, Covestro,...)
Innovation champion of Belgium

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

Source: essenscia – members’ survey; provisional figure 2017
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

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

Nippon Shokubai (Zwijndrecht)
– 350 million EUR
Super absorbant polymers and acrylic acid

Covestro (Antwerpen)
– 300 million EUR
New aniline plant

Ineos (Zwijndrecht) - 3 billion EUR
Propane dehydrogenation (PDH) plant and new ethane cracker
Employees age evolution: biggest age group 50-54 in 2020
Will education bridge the gap?

2017 – Master level graduates in Flanders

Total number of graduates: 16,052 students

45% 55%

% 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 process technology)

98% 2%

134 graduates does not allow to cope with outflow forecasts
We need more students in STEM!

% of STEM-degrees

- < 40%
- > 30%
- > 25%
- < 20%

Source: Education at a Glance 2017: OECD Indicators, Fig. C3.1.
Industry 4.0 and employability challenges

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
Industry 4.0 and employability challenges

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
Industry 4.0 and employability challenges

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?

- 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 youngsters to choose for STEM-education

- We tell the story and explain why **chemistry and life sciences** are **crucial** in solving **contemporary challenges**
essenscia

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