European Commission

JOINT RESEARCH CENTRE

WORKSHOP ON EMPLOYABILITY OF CHEMISTS

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European Higher Education Aspects on Employability Issues

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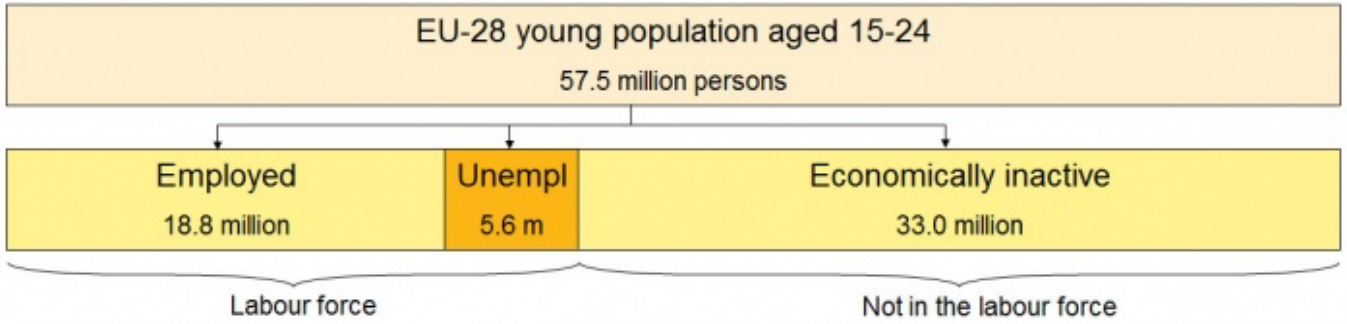
European Chemistry Thematic Network ECTN

European Chemistry Thematic Network

www.ectn-assoc.cpe.fr

European Parliament Research Service

http://epthinktank.eu/2014/03/26/are-universities-fostering-graduate-employability/



- **A person's labour force status falls into one of three categories: employed, unemployed or economically inactive. Eurostat uses the International Labour Organisation (ILO)'s definitions of employment and unemployment. The labour force, also called the active population, comprises those employed or unemployed.**

- **People are classified as being employed or unemployed irrespective of whether they are in education or not. In other words, Eurostat unemployment statistics do not exclude students from unemployment just because they are students. This means that the fact that someone is in education is irrelevant for his/her status regarding employment or unemployment.**

	Unemployment rate	Unemployment ratio
	2012	2012
EU-28	23.0	9.7
EA-17	23.1	9.6
Belgium	19.8	6.2
Bulgaria	28.1	8.5
Czech Republic	19.5	6.1
Denmark	14.1	9.1
Germany	8.1	4.1
Estonia	20.9	8.7
Ireland	30.4	12.3
Greece	55.3	16.1
Spain	53.2	20.6
France	24.6	9.0
Croatia	43.0	12.7
Italy	35.3	10.1
Cyprus	27.8	10.8
Latvia	28.4	11.4
Lithuania	26.4	7.7
Luxembourg	18.0	5.0
Hungary	28.1	7.3
Malta	14.2	7.2
Netherlands	9.5	6.6
Austria	8.7	5.2
Poland	26.5	8.9
Portugal	37.7	14.3
Romania	22.7	7.0
Slovenia	20.6	7.1
Slovakia	34.0	10.4
Finland	19.0	9.8
Sweden	23.7	12.4
United Kingdom	21.0	12.4
Iceland	13.6	10.2
Norway	8.6	4.8
Turkey	15.7	5.9

Youth unemployment rates and ratios (%), 2012

Source: Eurostat

EU faces a paradox: the youth unemployment rate stands at 23% while there are around 2 million unfilled vacancies across Europe, and a high number of employers cannot find the right mix of skills in the job market

The EU strategy for Higher Education (HE) supports HE institutions in keeping up with the job market through:

- **benchmarking employability**
- **improving the quality of HE**
- **fostering cooperation between businesses and universities**
- **monitoring skills needs and labour market evolutions**

HE institutions and academics, asked to prove the relevance or utility of their teaching and research for societal and economic needs, have concerns about preserving academic freedom and autonomy.

Recent report from the European Commission on "Modernisation of Higher Education in Europe: Access, Retention and Employability 2014."

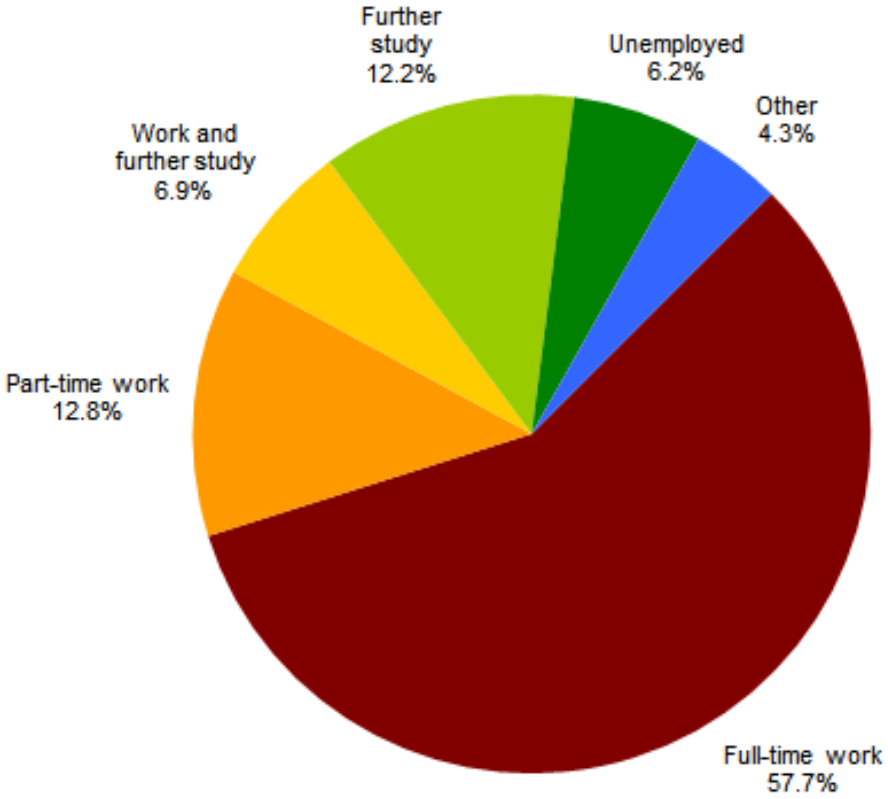
It suggests that employability not only depends on the quality of education graduates receive during their studies, but also on changes in the general state of the economy and the labour market, which are "the most important determinants of job opportunities."

Employability plays a central role in the European Commission's higher education reform strategy,

- ***Employment-centred approaches*** **focus directly on graduates' employment prospects: higher education institutions are responsible for preparing graduates for employment.**
- ***Competences-centred approaches*****, on the other hand, refer to the responsibility of higher and institutions to develop the skills and competences of graduates necessary to find a job.**
- **One prominent goal of setting up such evaluation processes is *to make employability-related information on higher education study programmes public*. This can inform current and future students on their potential career prospects.**

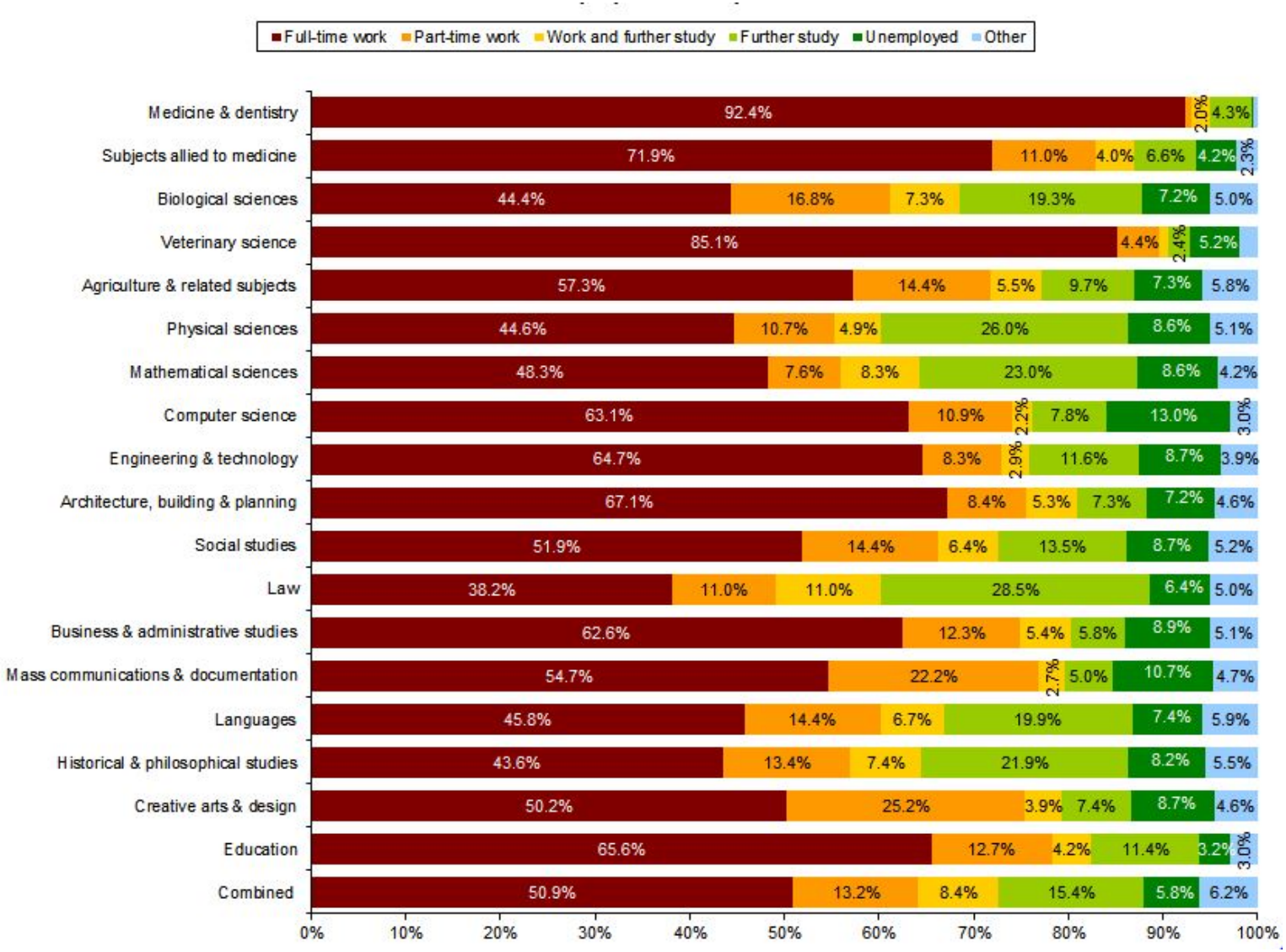
Within the Education and Training (ET) 2020 strategy, the Council of the European Union adopted a benchmark on graduate employability in 2012. According to this benchmark, "by 2020, the share of employed graduates (20-34 year olds) having left education and training no more than three years before the reference year should be at least 82 %"

Where students go after graduation



Destinations of UK domiciled leavers by activity, 2012/13.
Source: Higher Education Statistics Agency (HESA)

Destinations of UK domiciled full-time first degree leavers by subject area. Source: Higher Education Statistics Agency (HESA)



➔ **Employability is a primary issue in Europe and in a globalized world**

Job profiles are determined by industry

But two thirds of European chemical companies have difficulties filling vacancies*

Still there is a gap between HEIs and industry

e.g.: academia focuses on synthetic chemistry but 40% of EU chemical production involves formulation chemistry.

* **Rodney P. Townsend, Chairman of the *European Technology Platform on Sustainable Chemistry "SusChem"*, at the conference "Chemistry and the Bologna Process-Current Status and Future Needs" in Dresden, 2009).**

Table 1 Percentage of chemists working in a particular field (work specialty) compared to the percentage of chemists who obtained their highest degree in this field (from ACSNews (2008) C&EN 86:37–46

	Percentage of total	
	Work specialty	Highest degree
General chemistry	3	11
Classical chemistry	39	58
Analytical	15	11
Inorganic	3	10
Organic	10	24
Physical	4	10
Polymer	7	3
Other chemistry	43	18
Agricultural/food	3	1
Biochemistry	4	8
Biotechnology	4	1
Chemical education	7	2
Clinical chemistry	1	0
Environmental chemistry	6	2
Materials science	5	1
Medicinal/pharmaceutical	10	2
Other chemical sciences	3	1

From: Reiner Salzer, «Changing Careers in Chemistry», *Anal. Bioanal. Chem.* (2012), 402, 25-28

Pavel Drašar

Recommendations : Shaping debate and attitude

Dialogue, Communication and Collaboration between industry and Higher Education Institutions (HEIs)

Dialogue

• interactive process of designing bachelor programmes

• sustain fruitful dialogue and overcome sceptical sentiments

• comply with rules of fruitful dialogue (open, motivating, transparent, focussed, effective; delivering recommendations for action)

Communication

• promote the degree: communicate best practices and individual career success stories

Collaboration

• HEIs and employers collaborate to optimize match between educational outcome and industrial demand

- Placements/internships
- Committees on study programme design in HEIs open to industry
- Company representatives teaching at HEIs

Chemistry for the Future of Europe

Energy, Food, Environment

25 - 26 November 2014

Università degli Studi di Roma "La Sapienza"

Jointly organized by EuCheMS, Italian Chemical Society (SCI) and National Council of Italian Chemists (CNC) on the occasion of the Italian Presidency of the Council of the EU.

ECTN: A SUSTAINABLE FUTURE

FOR CHEMISTRY EDUCATION IN EUROPE

- **ECTN exists as an international non-profit association under Belgian law, established in 2002.**
- **ECTN comprises 120 institutional members, including higher education institutions and national chemical societies, from 31 European countries plus 8 worldwide.**
- **It was founded to give continuity to and to implement programmes of skills and knowledge in chemistry primarily, in science in general and in chemical engineering, pioneered and developed by six (three-years each) European network activities, spanning from 1996 until 2015, funded by the EC (Lifelong Learning Programmes).**

ECTN: identity and vision

from the «***new Statutes***»
approved at the last ECTN GA (Madrid – April 2014)

- **Implementing programmes for the assessment of skills and knowledge in Chemistry.**
- **Undertaking programmes on education and training, with innovative approaches.**
- **Fostering internationalisation of education programmes.**
- **Pursuing programmes for exchange of teachers and students.**
- **Providing certification of achievement at various levels of competences in chemistry.**
- **Providing the chemical community with printed and electronic publications and dissemination media in higher education.**
- **Setting, monitoring, validating quality standards/goals in higher education in chemistry.**
- **Cooperating with established European associations in the furtherance of its objectives.**
- **Extending the reach of all aspects of education in Chemistry beyond national borders.**

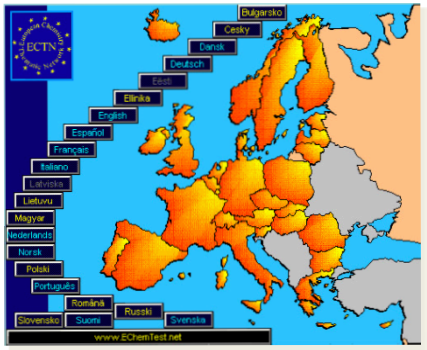
ECTN, has developed actions in the educational and professional development of a graduate chemist, managed by two standing committees:

“Virtual Education Community” VEC

which provides certification of achievement at various levels of competences in chemistry by printed and electronic means, and also provides the chemical community with printed and electronic publications and dissemination media in higher education.

“Label Committee” LC

that sets, monitors and renews quality goals in higher education in chemistry, assesses quality standards and provides quality accreditation of higher education courses to individual institutions.



"EChemTest"
the European Chemistry Tests

A multi-lingual series of tests available on Internet, that can be used for certification/validation of competence in chemistry at various levels. Associated e-learning facilities have been produced for

Students

seeking European academic exchanges

seeking self-evaluation

Professionals

seeking for career development and Industrial mobility

Anybody

interested in self-evaluating his/her knowledge in Chemistry

http://ectn-assoc.cpe.fr/echemtest/

The Chemistry Quality Eurolabels®

Eurobachelor®, Euromaster®, Eurodoctorate Labels*

The Bologna process requires universities in Europe to develop easily readable, comparable and compatible degrees.

HE Institutions can apply for Eurolabel®

which will be awarded for a period of 5-7 years in the first instance, with a possibility of renewal for further terms.

Eurolabels® are intended to promote international recognition

of the degree qualification and to document the willingness of the Institution to participate fully in the European Higher Education Area.

Awarded Institutions agree to recognise Bachelor and Master degrees

awarded by other Institutions holding the Chemistry Eurolabels®, thus providing right of access (but not admission) to their degree programmes.

* *In collaboration with accreditation bodies:* **ASIIN** (Germany), Società Chimica Italiana (**SCI** / Italy), Uniwersytecka Komisja Akredytacyjna (**UKA** / Poland), **ANECA** (Spain).

* Up to now almost 100 labels awarded.

Eurobachelor®, Euromaster®, Eurodoctorate

- **are intended to certify educational and professional quality levels. They guarantee the required educational structure of the HEI, allow international recognition and enhance mobility of graduates across the European educational and research space, as well as enrich the job marketplace;**

- **comply with the Bologna framework:**

➢ **Short cycle: 120 ECTS credits**

➢ **First cycle: 180 – 210 - 240 ECTS credits**

➢ **Second cycle: 90 - 120 ECTS credits**

➢ **Third cycle: ? ECTS credits**

For each cycle the Dublin descriptors apply - learning outcomes of programmes, formulated by the "Joint Quality Initiative" group, composed by representatives of ministries and Quality Assurance bodies.