Studies about Green Jobs and Green Education in Germany, Hungary, Poland and Romania

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I. Abstract

The joint German – Hungarian –Polish – Romanian Project EUBILD-UNAKLIM 2016-1-DE02-KA204-003254 in the ERASMUS + Scheme KA2 (Strategic Partnerships) designs an international adult-learning furthering education course. It will take place in the participating countries, training languages are the national languages plus English. Environmental and cross-sector topics will be addressed. A “green” job search and a questionnaire among employers, financing and educational institutions were performed across the partner countries. The online questionnaire was supported by structured interviews, about 5 in each participating country. The search was performed between November 2016 and February 2017. In addition to questionnaire and job search, furthering education offers in portals across the partnership countries were searched. The objective was to find the main topics and numbers of the furthering education courses.

The objectives of the job - and questionnaire research were to find differences in open job offers across the partner countries and the keywords used, differences in employers’ opinions on staff skills and the training topics provided by the furthering education organisations. In case differences were found there, the planned course will take them up and will close these gaps. Thus increasing the topic adaptation to the employers’ needs, and bringing more course participants into employment. Statistical evaluation compared countries, institution types, employers and furthering education- and financing institutions. The results were visualised in pie charts, histograms, and - where applicable - trend lines.

Preliminary results show clear priority in ranking of the new “green” job categories with differences in countries and institutions. The questionnaire results show differences in topic selection between employers and furthering education bodies. In furthering education, 49 institutions offered education in 14 topics in Germany. 45% of the institutions only offer one course. Very popular topics are offered in many German towns and add up to a significant course number in total. In Hungary, Poland and Romania, the green job market is smaller, the systematic search is not yet developed.
The findings will form the base for the course curriculum design and will close the gaps between employers’ expectations for “green” job topics and existing training curricula.
Key words: furthering education, adult learning, environmental topics, green jobs, statistics

II. Study on further education and employment offers in environmental, nature and climate protection in Germany

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1. Introduction

The term "green jobs" is not adequately defined. There are different interpretations and classifications for it. We would like to follow the given terminology of the "green economy" as it is currently discussed as "a new way of doing business in which the environment and the economy are positively linked to increase social well-being" [1]

Green jobs are, according to the United Nations Environment Program, defined as "work in agriculture, production, research and development, administration, and service activities that help maintain or restore environmental quality sustainably. "These are, but are not limited to, jobs that help to protect the ecosystem and biodiversity, reduce energy, material and water use through efficient strategies, promote decarbonization of the economy, minimize or completely prevent all forms of pollution."

It can be assumed that the development of the "green economy" will create new standards for an innovative economy and will also lead to new qualification requirements for employment. [2] In addition, many companies today include environmental aspects in product development and plant design, so environmental protection is increasingly becoming an integral part of business. This importance of environmental protection is not always easy to quantify, making it difficult to estimate the need or the workforce in this industry. [3]

Our study aims to examine the qualifications that exist in this field, especially for the unemployed, and also where the demand for labour in the green sector lies and to what extent. In collaboration with the country studies of our partners from four countries (Poland, Romania and Hungary), this study forms the basis for the development of a European further education concept in environmental, nature and climate protection. Funding from the ERASMUS+ Program, Strategic Partnerships, has been made available for this project.

1 (BMU, UBA 2012:Green Economy, in: BMU(Hrsg.):Umwelt 6/2012,Berlin; BMUB(2014)Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit(Hrsg.): Greentech made in Germany 4.0-Umwelttechnologie-Atlas für Deutschland, München; Qualifikationen, Berufe und Branchen für den Übergang in eine Green Economy-eine Bestandsaufnahme in Umwelt, Innovation, Beschäftigung 01/2017, www.umweltbundesamt.de/publikationen)

2 (UBA(Hrsg.) Qualifikationen, Berufe und Branchen für den Übergang in eine Green Economy-eine Bestandsaufnahme in Umwelt, ,Innovation, Beschäftigung 1/2017, www.umweltbundesamt.de/publikationen)

3 (siehe auch „Beschäftigung im Umweltschutz“ in umwelt, Innovation, beschäftigung/april 2016, www.umweltbundesamt.de/publikationen/beschaeftigung-im-umweltschutz-1

2. Methodical approach

2.1 Identification of existing training opportunities in the field of environmental, nature and climate protection

To determine the existing training opportunities offering programs for further education 63 portals on the Internet had been searched through. Keywords were used for filtering. Only training offers with a duration of more than 5 days were considered.
The principle of course announcements is that only open courses are listed in the databases. First, a course has started it is removed from the databases. The research only considers the advertised courses at a certain time. The listings are constantly changing. The present research refers to a time period from mid-November 2016 to mid-February 2017. The alphabetical listing of course offers excludes double counting. In some cases it occurred that several further education possibilities had been offered by the same provider at different locations at the same time. More details are given in the evaluation of the results.

2.2 Determination of job offers in environmental, nature and climate protection

There are numerous online job exchanges in Germany, which also list job offers in the Green Economy. However, it is incredibly difficult to search here with keywords and exclude double entries. Differentiated research with electronic support over a longer period exceeds the time frame and financial considerations of the study. For this reason, targeted job exchanges were searched, which are specialized in "green jobs". That was a total of 32 job exchanges in the period from mid-November 2016 till mid-February 2017. For more differentiated considerations the job exchange "Green Jobs.de" was consulted.

2.3 Conducting surveys and structured interviews

Interviews were conducted with representatives from business, NGOs and education, following a questionnaire prepared in advance with all project partners. This questionnaire was part of a broad survey in all participating countries, which is evaluated centrally in a combined study including the results of all partner countries.

3. Results

3.1 Further education offers for adults in the field of environmental, nature and climate protection.

3.1.1 Current status of courses offered in the field of adult education.

63 portals offering further education training had been searched. In the period from mid-November 2016 to mid-February 2017 only 140 different training courses in the environmental sector were found in these databases. Taking into account the job offers in the field of the environment at different locations in the same period the total amount is 2,701.

In order to establish a relationship to the overall supply of training courses for that period, we have tried to determine the total sum of all offers. This was only possible with the help of the "Kursnet" database, as it has a counting function. Counting the other databases would have become extremely time-consuming.
But even if one puts the 2,701 further education offers in relation to the total offer of training courses in "Kursnet" amounting to 2,080,033, the result is only 0,13%.
The further education training offers in the green area are, according to our analyses, rated only <0.13% of all further education offers combined.

In a study of a book serious about Environmental, Innovation, Employment (03/20141) issued by the Federal Environmental Department (Umweltbundesamt) the importance of additional qualifications "for the transformation towards a green economy" the importance to acquire newly demanded competences was analysed. Against this background the number of <0.13% appears to be very low. During the further proceeding we will try to carve out this point in connection with the job offered in the green sector.
Our research resulted in the fact that 49 educational institutions provided environmentally relevant courses during the research period. The maximum variety of topics offered by these educational institutions was 14 subjects, the minimum of offered subjects were one per provider. The percentage of the distribution of the diversity of topics is shown in Table 1. Some courses are offered in one city only, others in up to 175 cities all over Germany. The final number of courses offered arises from the number of topics multiplied with the number of cities were courses are offered.

1. „Arbeit und Qualifikation in der Green Economy“, Umwelt, Innovation, Beschäftigung,03/2014 (Hrsg. UBA) www.umweltbundesamt.de/publikationen/arbeit-qualifikation-in-der-green-economy

Table 1: Which providers of further education programs offer how many courses

Number of Institutions	Number of Courses	% of Institutions	% of Courses
22	1	44,90	0,04
3	2	6,12	0,07
9	3	18,37	0,11
2	4	4,08	0,15
1	5	2,04	0,19
1	6	2,04	0,22
1	7	2,04	0,26
1	8	2,04	0,30
1	12	2,04	0,44
1	15	2,04	0,56
1	21	2,04	0,78
1	44	2,04	1,63
1	89	2,04	3,30
1	127	2,04	4,70
1	180	2,04	6,66
1	721	2,04	26,69
1	1456	2,04	53,91
49	2701	100,00	100,00

It turns out that almost half (44.9%) of the providers offer only one course, 6% two courses and almost one in five (18%) offer three courses. More than 5 course topics are only offered by one provider. Noteworthy are the courses offered in a variety of cities and will therefore result in a very high absolute number (from 127 courses to 1,456 courses). These are courses with heavily asked for topics such as energy consultant for renewable energies, environmental management representative, quality, environment and occupational safety, environmental auditor, environmental controlling and environmental management, hydro power plants and energy-efficient construction.

3.1.2 Statistics about adult education in the EU

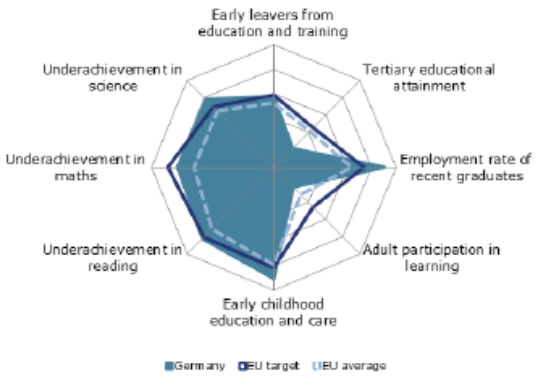
The European Commission has provided statistical data with help of its "Education and Training Monitor 2016", which also provides an insight into the state of adult education compared to the average level in Europe (see Table 2 and the accompanying chart 1). This shows, for example, that participation in the "lifelong learning program" in Germany was 8.1% below the EU average of 10.7% in 2015. It is also noticeable that public investment in education was also below average compared to the European level.

Table 2: Key indicators

			Germany		EU average	
			2012	2015	2012	2015
ET 2020 benchmarks						
Early leavers from education and training (age 18-24)	Total		10.5%	10.1%	12.7%	11.0%
Tertiary educational attainment (age 30-34)	Total		31.8%	32.3%	36.0%	38.7%
Early childhood education and care (ECEC) (from age 4 to starting age of compulsory education)			96.4% [11]	97.4% [14]	93.2% [11]	94.3% [14]
Proportion of 15 year-olds with underachievement in:	Reading		14.5%	:	17.8%	:
	Maths		17.7%	:	22.1%	:
	Science		12.2%	:	16.6%	:
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		88.9%	90.4%	75.9%	76.9%
Adult participation in lifelong learning (age 25-64)	ISCED 0-8 (total)		7.9%	8.1%	9.2%	10.7%
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		4.3%	4.3% [14]	5.0%	4.9% [14,p]
	Expenditure on public and private institutions per student in € PPS	ISCED 1-2	€6.743	€6.839 [13]	:	: [13]
		ISCED 3-4	€9.160	€9.231 [13]	:	: [13]
		ISCED 5-8	€13.086	€12.492 [13]	:	: [13]
Early leavers from education and training (age 18-24)	Native-born		9.3%	8.6%	11.6%	10.1%
	Foreign-born		:	:	24.9%	19.0%
Tertiary educational attainment (age 30-34)	Native-born		33.1%	33.1%	36.7%	39.4%
	Foreign-born		:	:	33.8%	36.4%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		85.6%	88.2%	69.7%	70.8%
	ISCED 5-8		93.8%	93.3%	81.5%	81.9%
Learning mobility	Inbound graduates mobility (bachelor)		3.3% [13]	3.3% [14]	5.5% [13]	5.9% [14]
	Inbound graduates mobility (master)		10.0% [13]	10.2% [14]	13.6% [13]	13.9% [14]

Sources: Eurostat (see section 9 for more details); OECD (PISA).
Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source; b = break in time series, d = definition differs, p = provisional, u = low reliability, 11 = 2011, 13 = 2013, 14 =2014.
Further information can be found in the relevant section of Volume 1 (ec.europa.eu/education/monitor).

Figure 1. Position in relation to strongest (outer ring) and weakest performers (centre)



Source: DG Education and Culture calculations, based on data from Eurostat (LFS 2015) and OECD (PISA 2012).
Note: all scores are set between a maximum (the strongest performers, represented by the outer ring) and a minimum (the weakest performers, represented by the centre of the figure).

3.1.3 Funding opportunities for further training in environmental, nature and climate protection

Throughout Germany there are numerous possibilities for the promotion of education and training. Continuing education, which can also be applied in the "green area". Enclosed in Table 3 is a list of the most important[1]:

Table 3: Germany-wide funding opportunities for initial and continuing vocational education and training

Designation	Target audience	Scope of support / funding source
Advancement BAfög	Dropout or Bachelor graduates, persons without initial training with professional experience, without age limit, independent of income, condition: recognized chamber degree	40% grant, 60% low-interest bank loan from KfW up to a total of EUR 15,000 Training course costs Funding via local authorities for educational support (AFBG))
AVGS §45 SGB II Activation and vocational integration measures (support for orientation on the labour market, personal socio-educational counselling and support, support in the first months of new employment)	Unemployed persons with ALG2 benefit receipt	With activation and placement voucher up to 100% promotion/employment agency, JobCenter
Vocational Rehabilitation	People who, for health reasons, can no longer carry out their work	Further training or retraining / employment agencies, pension insurance institutions
Education voucher (or individual support in Berlin)	Jobseekers Registered or threatened by unemployment	Payment of course fees and travel expenses / employment agency
education premium	Employed persons (with an annual income of up to 20,000 euros), promotion of educational opportunities that are important for their current or future work.	50% of the event fees, max 500.00 Euro/federal programme BMBF
educational leave	Promoting lifelong learning initiative for professionals	Employees pay the costs of further training, employers continue to pay the salary during the training measure/federal programme (regulated differently in the federal states)
education loan	Students in advanced training phases	Max. 7200 Euros per training period (in Berlin)/Federal programme
IFLaS "Initiative to accompany structural change."	Low-skilled benefit recipients, employees without completed vocational training who are threatened with unemployment, people returning to work, people re-entering the labour market	Full support via education voucher/JobCenter or employment agency

1 https://www.forum-berufsbildung.de/beratung-und-foerderung/

	completed vocational training threatened with unemployment, persons returning to work, persons re-entering the labour market	
WeGebAU "Training of low-skilled and employed older workers in enterprises."	1)Employees with vocational qualification from small and medium-sized enterprises to secure their job or to improve employability in the event of impending loss of their job. 2)Low-qualified persons without a recognized vocational qualification (Berlin) to make up for a recognized vocational qualification 3)Low-qualified persons with a vocational qualification who have not worked in their occupation for more than 4 years	1)At least 160 hours or 4 weeks for older employees aged 45 and over Subsidy 75% of the measure costs, <45 years up to 50%. 2) 6-24 months, funding 100% measure costs + wage subsidy 3)100% measure costs + wage subsidy
training premium	Registered unemployed participants who have successfully passed the intermediate or final examination (only in the case of degrees awarded by the chambers of commerce).	1000 Euros or 1500 Euros if passing the intermediate or final examination/employment agency
continuing education scholarship	Promotion of talented young professionals, graduates who have completed vocational training	Further education scholarship for 3 years for professional or interdisciplinary further education with state-approved degrees/BMBF funding
ESF Federal Programme "Promoting Vocational Education and Training for Sustainable Development"	Funding Directive BBNE	Federal Administration Office (BVA), Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
ESF Program QvB Qualification before employment (Land Berlin)	Unemployed persons in ALG2 benefit receipt	Funding via standard unit cost flat rates per participant through ESF and state co-financing
ESF programme Women-specific measures	Unemployed, job seekers,	Funding up to 100% from ESF and state funds
ESF programme International Continuing Education (Berlin)	Participants in ALG2 and ALG1 Reference	Funding up to 100% from ESF and state funds

Further funding opportunities for the individual federal states can also be found in the current funding database of the Federal Ministry of Economics and Energy at http://www.foerderdatenbank.de/Foerder-DB/Navigation/Foerderrecherche/suche.html .

3.2 Job offers in environmental, nature and climate protection

3.2.1 Search

As mentioned above, special research was carried out on 32 job exchanges specializing in green jobs. The research took place between mid-November 2016 and mid-February 2017 (this only highlights the offers).
A total of 16,778 green job offers were found in the Green Job Exchanges. In addition, there are double entries in the job exchanges; however, this could not be counted within the time and financial framework. It was estimated that there would be 10% doubling. Furthermore there are additional green offers in the general job exchanges, which are not taken into account here and which can overlap.

This resulted in an estimated 15,100 job offers in the green sector between November 2016 and mid-February 2017. According to a job survey conducted by the Institute for Employment Research, IAB (as of March 2016, www.iab.de/de/befragungen/stellenangebot.aspx), 510,000 vacancies were registered on the 1st labour market in Germany in the 4th quarter of 2016, which would represent a share of 2.96%.

Another study shows when surveying job exchanges in Germany, compared with those in Europe in general, approximately 4.0 % of vacancies were recorded for Germany, measured on the basis of normal job offers over the entire year of 2012 (NeuJOBS WORKING PAPER No 4.2/December 2013, Bert Colijn: Green Jobs in Europe and the Increasing Demand for Technical Skills).
At this point it has to be taken into account that in the period of examination (in the winter months of Nov.-Feb.) there were disproportionately few job offers in the classic "green" occupational fields of agriculture, livestock farming, forestry and horticulture due to seasonal factors. In the aforementioned study by Bert Colijn, which looked at the whole year, this sector took up the highest percentage of job offers with 26.67%.
Within the job exchanges, all job offers between mid-November 2016 and mid-February 2017 were evaluated and counted in "greenjobs.de", one of the most important German databases offering "green jobs". The researched data were recorded in substantial detail with the entire content of the job offers. This makes it possible to evaluate the job offers according to various parameters. Research was carried out on:

- Provider
- Detailed description of the offer

- Categorization of the provider according to there status of private company, social organization, public institution
- Number of offers
- Date and Link

besides Jobs were identified and then categorized:

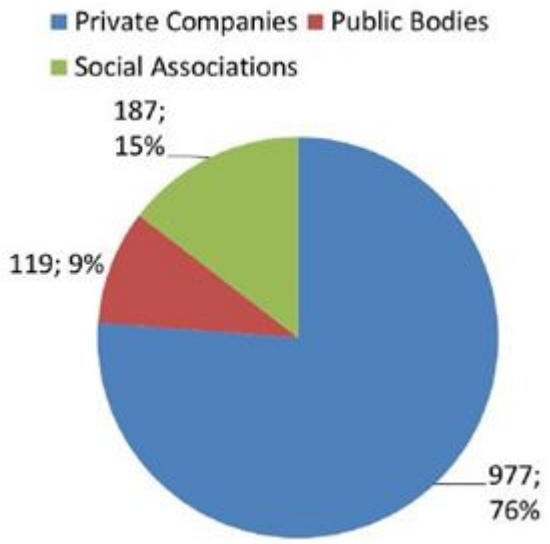
- By jobs / job descriptions across industries (number of jobs)
- By sector (number per branch)
- By occupation (number per occupation field)

1,406 job offers in the "green area" were identified and considered.

3.2.2 Results

Most job offers came from the private sector, followed by social organizations and public institutions.

Figure 2 Provider of "Green Jobs"



The following jobs were offered the most:

Technicians, electricians, mechanics, lab technicians, network supervisors are at the top with almost 23% of all jobs advertised, followed by project leaders and project managers with almost 13%.

Administrative activities (assistant, clerk) and scientific staff (renewable energies) are frequently asked for with almost 6%

With 4% each, are following the category spatial planning (with landscape planning, GIS and landscape architecture) and the category promoter (with marketing, acquisition and marketing).
Almost 4% is accounted for by the category Service, Sales and Distribution and the category IT Specialist.

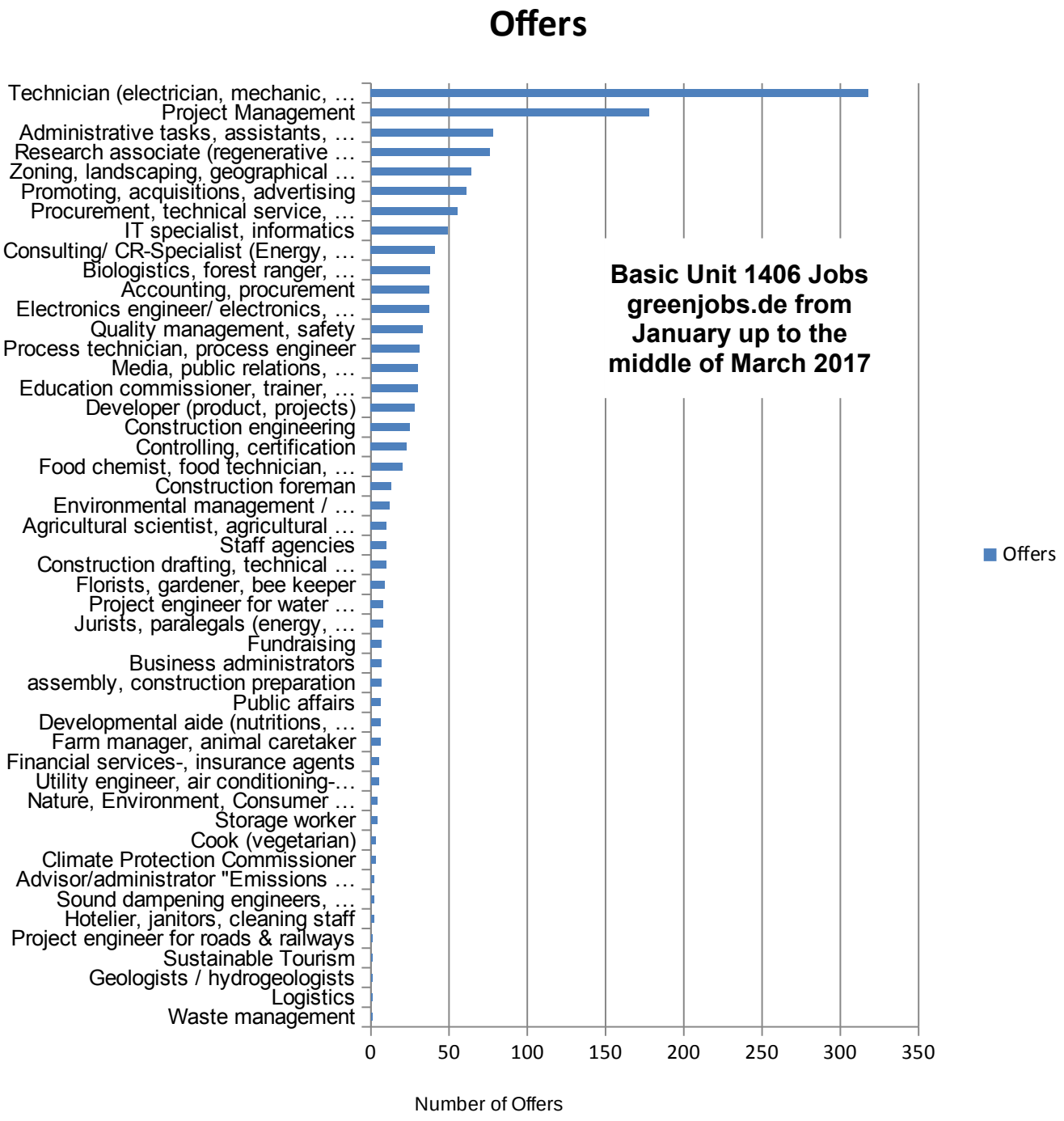
About 3% to 1.5% is accounted the biologists, foresters, landscape ecologists, engineers, QM-commissioned, education consultants (2.13%), civil engineers, certification category, food engineer.
Followed by <1% are construction supervisors, environmental planing, agronomists, florists, gardeners, project engineers, lawyers, fundraising, development aid workers, Heads of Department, consultants, geologists and hydrologists.

Table 4 shows the ranking of vacancies. (own research)

Jobs	Offers	Share in %
Technician (electrician, mechanic, laboratory assistant, network monitoring)	318	22,62%
Project management	178	12,66%
Administrative jobs, assistent, official	78	5,55%
Scientific assistant (renewable energy, studies …)	76	5,41%
Landscaping/geographic information systems/landscape architecture	64	4,55%
Promoter, sourcing, marketing	61	4,34%
Perchasing department, technical service, sales department	55	3,91%
IT-professional, computer scientist	49	3,49%
Consulting/ CR (???)-Specialist (Energy, Sustainability)	41	2,92%
Biologistics, forest ranger, landscaping ecologist, nature prottection, gardener	38	2,70%
electronics engineer/ electronics, automation	37	2,63%
Accounting, procurement	37	2,63%
Quality management, safety	33	2,35%
Process technician, process engineer	31	2,20%
Education commissioner, trainer, environmental pedagogy	30	2,13%
Media, public relations, communication	30	2,13%
Developer (product, projects)	28	1,99%
Construction engineering	25	1,78%
Controlling, certification	23	1,64%
Food chemist, food technician, chemist, microbiologist	20	1,42%
Construction foreman	13	0,92%
Environmental management / environment planning	12	0,85%
Construction drafting, technical drafter	10	0,71%
Staff agencies	10	0,71%
Agricultural scientist, agricultural ecologists	10	0,71%

Florists, gardener, bee keeper	9	0,64%
Jurists, paralegals (energy, environment, natural preservation)	8	0,57%
Project engineer for water protection, water/sewage	8	0,57%
Mechanic, construction preparation	7	0,50%
Business administrators	7	0,50%
Fundraising	7	0,50%
Farm manager, animal caretaker	6	0,43%
Developmental aide (nutritions, energy, networks)	6	0,43%
Public Affairs	6	0,43%
Utility engineer, air conditioning-heating-ventillation	5	0,36%
Financial services-, insurance agents	5	0,36%
Storage worker	4	0,28%
High commissioner: Nature, Environment, Consumer Protection, Waster Water Removal	4	0,28%
Climate Protection Commissioner	3	0,21%
Cook (vegetarian)	3	0,21%
Hottelier, janitors, cleaning staff	2	0,14%
Sound dampening engineers, sound measurements	2	0,14%
Advisor/administrator "Emissions free Inner cities", electromobility	2	0,14%
Advisor/administrator "Circulatory economics, waste management & planning	1	0,07%
Logistics	1	0,07%
Geologists / hydrogeologists	1	0,07%
Advisor/administrator "Sustainable Tourism & Regional Development"	1	0,07%
Project engineer for roads & railways	1	0,07%
Total	1406	100%

Figure 3: Job offers – Ranking



Most jobs were offered in the following industrial sectors:

Within the jobs industrial sectors were summarized. Here we lean on the categorization of the UBA study (environment, innovation, employment 03/2014: Arbeit und Qualifikation in der Green Economy (work and qualification in the Green Economy), http://www.umweltbundesamt.de/publikationen/arbeit-qualifikation-in-der-green-economy.de). (data based on own research)

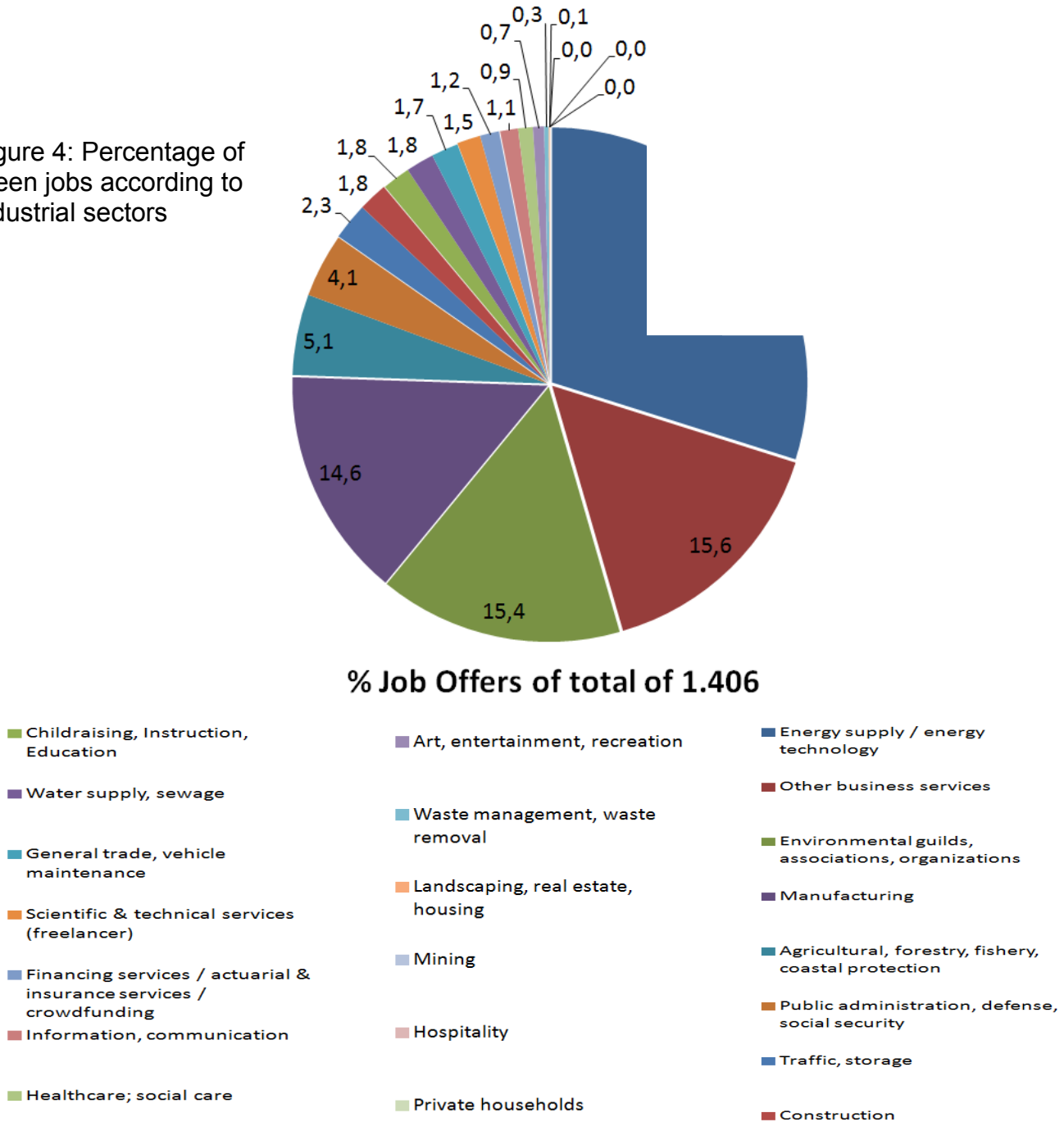
Industrial Sectors (based on UBA study 03/14)	Offers	%
Power / Energy technology	420	29,9
Other economic services	220	15,6
Other services, environmental organizations, associations, organizations in general	217	15,4
Processing Trade	205	14,6
Agriculture and forestry Fishery, Coastal Protection	72	5,1
Civil Service, Defence, Social Insurance	57	4,1
Traffic, Stock keeping	33	2,3
Construction Industry	26	1,8
Education, Tuition, Learning	25	1,8
Water Supply/Sewage	25	1,8
Trade in general, Maintenance of Vehicles	24	1,7
Freelance scientific and technical Services	21	1,5
Financial Services-/Supply of Insurance Services / Crowdfunding	17	1,2
Information, Communication	16	1,1
Public Health Sector, Social Service	13	0,9
Art, Entertainment, Recreation	10	0,7
Waste management	4	0,3
Property Management and Housing	1	0,1
Coal Mining, non-metallic mineral processing	0	0,0
Hotel and Restaurant Industry	0	0,0
Private Households	0	0,0

Table 5: Vacancies according to industrial sectors

With almost 30 %, most jobs are offered in the energy supply / energy technology sectors. Followed by the general service sector with almost 16% and services in environmental associations, clubs and other organizations with 15.4%. A total of 1,062 new jobs were searched for here. This corresponds with 75.5% of all job applications. The high proportion of services in this area is interesting.
The sectors: Land forestry fishing and coastal protection; public administration were looking for employees* in 5.1 to 4.1% of cases, a total of 9.2% or 129 job applications.
The sectors of transport, warehousing, construction, education, teaching, water, general

trade, freelancers, financial services and communications sought between 2.3% and 1.1% new employees, a total of 13.2% of whom were based there. This corresponded to 187 job applications.
Sectors: Health, art, waste disposal, housing registered 28 vacancies or 2%.
There were no vacancies in coal Mining, nonmetallic mineral processing, hotel and restaurants industry and private households.

Figure 4: Percentage of green jobs according to industrial sectors



Job vacancies were offered in the following occupational fields (selection of the occupational fields according to the UBA study “Qualifikation, Berufe und Branchen für den Übergang in eine Green Economy - eine Bestandsaufnahme“ in Umwelt, Innovation, Beschäftigung 01/2017) ("Skills, occupations and sectors for the transition to a green economy - an inventory" in Environment, Innovation, Employment 01/2017):

Table 6: Designation of the occupational fields

Abbreviation	Designation of the occupational fields	Number	%
BF21	Engineers	260	18,49
BF39	Commercial clerical occupation	180	12,80
BF22	Chemists, physicists, natural scientists	146	10,38
BF23	Technicians	115	8,18
BF35	Management, audit, business consultancy	69	4,91
BF38	IT core occupations	69	4,91
BF1	Farming, livestock industry,, forestry, horticulture	68	4,84
BF7	Metal construction, metal plant construction, sheet construction, Installation, assembly worker	62	4,41
BF36	Administrative professions in the public sector	57	4,05
BF37	Finance sector, accounting department	51	3,63
BF30	Other commercial professions (excluding wholesale, retail, banking)	46	3,27
BF40	Office support profession, telephone operators	46	3,27
BF11	Electrical professions	39	2,77
BF24	Technical draughtsperson, related professions	24	1,71
BF32	Traffic occupations	23	1,64
BF50	Teachers	19	1,35
BF31	Advertising professionals	17	1,21
BF43	Security professions	14	1,00
BF44	Legal professions	14	1,00
BF51	Publishing,, Library, translation, administrativ professions	10	0,71
BF29	Bank and insurance specialists	9	0,64
BF49	Social professions	9	0,64
BF19	Inspector, dispatch ready makerDesigners, photographers, advertising manufacturers	8	0,57
BF46	Designers, photographers, advertising manufacturers	8	0,57
BF18	Construction occupations, wood and plastic processing	6	0,43
BF9	Vehicle construction, aircraft construction, maintenance professions	4	0,28
BF20	Unskilled workers	4	0,28
BF34	Packers, warehouse and transport workers	4	0,28
BF25	Surveying	3	0,21
BF26	Special technical forces	3	0,21
BF28	Wholesale and retail merchants	3	0,21
BF33	Aeronautical and maritime professions	3	0,21
BF5	Paper production and processing, printing	2	0,14
BF16	chefs	2	0,14

BF17	Beverages, manufacture of luxury foods, other nutritional professions	2	0,14
BF27	Sales professions (retail trade)	2	0,14
BF54	Cleaning and disposal professions	2	0,14
BF4	Chemical and plastics professions	1	0,07
BF42	Caretaker / janitor	1	0,07
BF53	Hotel and restaurant professions, domestic economy	1	0,07
BF2	Miners, mineral minersStone working, building material production, ceramics, glass trades	0	0,00
BF3	Stone working, building material production, ceramics, glass trades	0	0,00
BF6	Metal production and processing	0	0,00
BF8	Industrial mechanic, toolmaker	0	0,00
BF10	Precision engineering, related professions	0	0,00
BF12	Spinning professions, textile production, textile finishing	0	0,00
BF13	Textile processing, leather production	0	0,00
BF14	Bakery, confectionery and confectionery production	0	0,00
BF15	butcher	0	0,00
BF41	Personal security, guard occupations	0	0,00
BF45	Artists, musicians	0	0,00
BF47	Health professions with licence	0	0,00
BF48	Health care professions without license	0	0,00
BF52	Occupations in personal hygiene	0	0,00
Total		**1406**	**100**

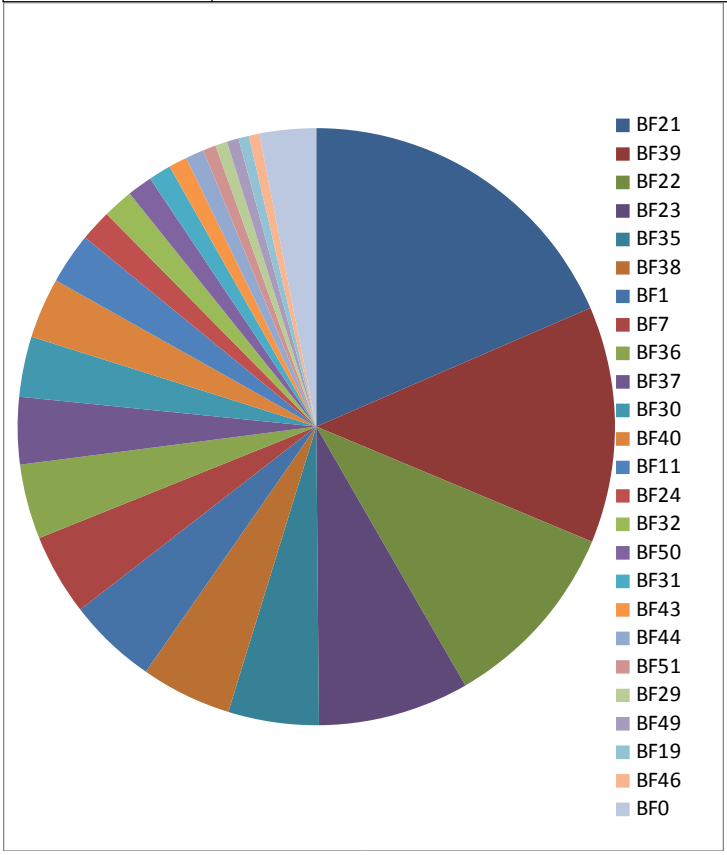


Figure 5: All occupational fields below 0.5% are summarized in the graph under BF0.

Most offers here are for engineers with 18.49%. Chemists, Physicists, scientists and technicians are represented with 18.59%, which is 37.08% followed by commercial office occupations with 12.80%.

The following occupational fields account for between 5% and 3% respectively: Management, auditing, management consultancy, IT core occupations, agriculture, animal forestry, horticulture, metalworking, plant construction, sheet metal construction, installation, assemblers*, administrative occupations in the PRS, finance, accounting, bookkeeping; other commercial occupations (excluding large, retail, banking), office assistants, telephone operators*; electrical occupations. Together, these are 507 offers, which corresponds to 36.06% of all offers.

There were 14 offers each for jobs in the security field and legal occupations.
For the following occupational fields, between 10 and 8 offers were found during the study period: Professions in the field of: publication, library, translation, related scientific occupations; banking, insurance, social occupations, product inspectors, mail order companies*, designers*, photographers*, advertising manufacturers* with a total of 44 offers (3%)

6-4 offers each were found for the occupational fields: construction, woodworking, plastics processing, automotive, aircraft construction, maintenance occupations; unskilled workers, packers, warehouse and transport workers.

3-2 offers were found for the following job descriptions: Surveying and mapping, special technical personnel, wholesale and retail traders, aviation and shipping occupations, paper production and processing, printing, cooks, beverages, manufacture of luxury foods, other nourishing occupations, sales occupations (retail trade), cleaning occupations, waste disposal occupations. With a total of 22 offers, they account for just under 1.6% of all offers.
With only one job offer each, the chemical and plastics occupations, caretakers, hotel and restaurant occupations and housekeeping were represented. For the occupational fields of stone processing, building material production, ceramics, glass occupations, metal production and processing; industrial mechanics, toolmakers; precision mechanics, related occupations; spinning occupations, textile production, textile finishing, textile processing, leather production, baking, confectionery production, butchers, personal security, security service in general, artists, musicians, health care occupations with license and without license, occupations in personal hygiene there were no offers.

Out of it can basically be deduced that above all occupational fields with higher qualifications play a greater role in this segment. This only applies to the short period of our research, which was carried out in winter time, where seasonal activities are pushed into the background.

3.3 Summary of structural interviews - Germany

In addition to the survey (via electronical LimeSurvey) 5 structured Interviews have been conducted: The representative of an employers` association, a delegate of a training and research institution, one NGO representative as well as two educational institutions were each interviewed.

Employer association

The employers` association is active in mining, geology, environment and energy. It represents about 50 companies and institutions and is involved in international networking too.

The environmental and climate aspects are very important for this association.
In their opinion, there are not enough offers of further education training covering environmental, nature and climate protection, so they are seeing a definitive need for it. Especially on the basis of the development of law, directives and norms in this sector it is necessary to offer additional training.
They reinforce the demand for training in cross-sector knowledge too, first of all in project management and teamwork for the personnel.

For the future they expect a rising number of open job positions with “green”, “sustainable” and cross-sectoral knowledge. **The main reasons for this in the opinion of this association are current ecological and political issues, not at first economical.**

In the case of recruiting, it is important for the association to have formal degrees and work experiences at once. Formal degrees are the basics and further education should follow for improving the skills and adapting them to meet current demands. The recruiting strategy used by the employers` association is mainly based on job advertisements, recommendations and free applications.

Training and Research institution

The interviewed training and research institution offers a platform for further education on modular/building block way for enterprises in the field of energy construction in cooperation with universities in the region of Berlin-Brandenburg. Energy construction and Electro Mobility are the main topics of education. This relatively new institution (about 3 years) is already working in whole Europe and Northern Africa. But in their opinion further education in this field for adults is highly under-represented in Germany and especially in the Eastern region of Germany. Aspects of environmental, nature-and climate protection, as well as sustainability play in this institution a very important role. So do cross-sector knowledge and abilities besides the specific topics.

The highest importance in the cross-sector knowledge has:

- self-Management
- IT-competence
- team work
- cross-sectional approach to problem solving
- project management
- leadership
- project marketing and proposal writing

One additional demand and focus is multidisciplinary.

The main skills to be conformed to laws, directives and norms are in the fields of quality management, knowledge management, environmental management, sustainability codex, CSR (Social Corporate Responsibility) and obligation to report. The responded institution expects a highly rising number of open job positions with “green”, sustainable and cross-sectoral knowledge in the future. **In their opinion the most important reasons for this are clearly economical.** This means, that additional qualifications are necessary to meet this demand in environmental-, nature and climate protection.

The most important way for recruiting personnel is free applications and recommendations. Important staff qualifications are formal degrees, reference letters and personality at first and work experiences as the second. Further education as addition to the formal degree, internship and foreign skills equally ranking follows. However, non formal degrees and educations are highly accepted. They should complete the professional skills in particular such topics as sustainable development, transformation processes and methodical knowledge.

The interviewed institution conducted annual questioning of companies in the region of Berlin-Brandenburg. The question for initiation of further education would be answered at first with new technics, technologies, treatment and IT and at second with the request of the employees (see ibbf: Betriebliche Weiterbildung in den Unternehmen des Clusters Energietechnik Berlin-Brandenburg, 2014.) This shows a further new aspect of interests: employees realize that further education is of fundamental importance for them and employers have to respect this fact as a factor of competition on employment market.

<u>NGO representative:</u>

The respondent NGO is active in the environmental sector, especially in gardening, **environmental education** and creativity. The target groups are mostly young people and refugees. They work in an international network.
Their further education courses are financed by national and municipal budget. The duration of their courses is only one day, or they offer modular short courses without internship. The qualification criteria of participants are to get work experiences, reference letters, knowledge refreshing and integration.

Cross sectional knowledge is very important for the NGO, especially Project Management, self- management, team work, cross-sectional approach to problem solving.
They are expecting a rising number of open job positions with green, sustainable and cross- sectoral knowledge in the future by economic reasons first of all. So they are anticipating a higher demand for further education in this field.

The main goals of education for them are integration in the society, knowledge update, problem solving ability in cross-sectional topics and social goals.

The trainers should have work experiences, specific additional knowledge, personality, and training experience in the pedagogic field. And so they seek train-the trainer programs especially for intercultural competences, awareness increasing for more cultural competences.

The interviewed NGO pitied, that there are fewer offers of further educations for adults. There are a lot of offerings for children, at least.

Educational institutions:

Both of the educational institutions are solely funded by the federal state, though they are internationally linked. They are consistently expecting an increasing demand of green job vacancies, requiring interdisciplinary knowledge of sustainability.
The main reasons given were of political and ecological issues. The two institutions derived a substantial need for further education in the sector of environmental, nature and climate protection.
To cover this need, the respondents requested qualified trainers with the required knowledge and skills and asked for specific training programs for trainers with a focus on renewable energy, water management and environmental protection.

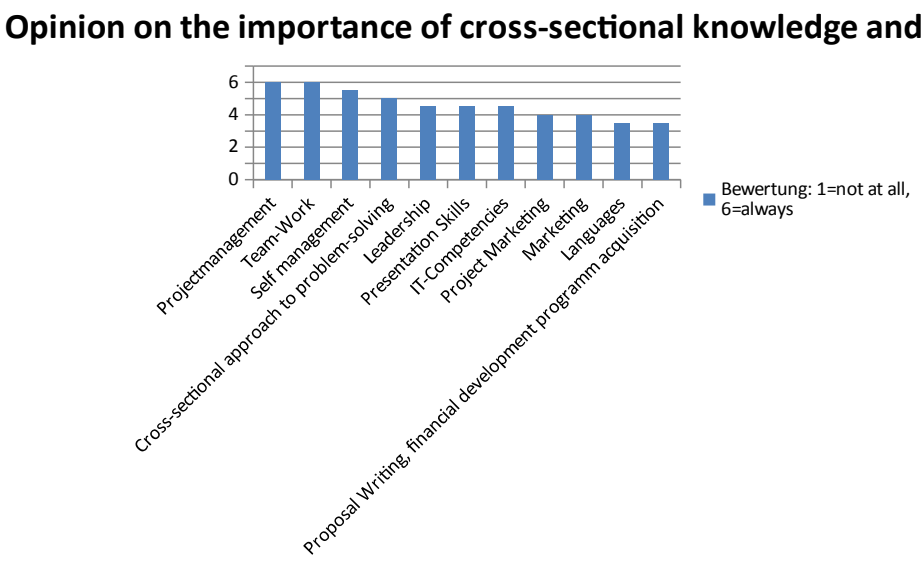


Figure 6: Evaluation of the interview with educational institutions on key qualifications

In addition to specialist topics both considered the communication of cross-sectoral knowledge important, with project management skills and team work being primary requirements.

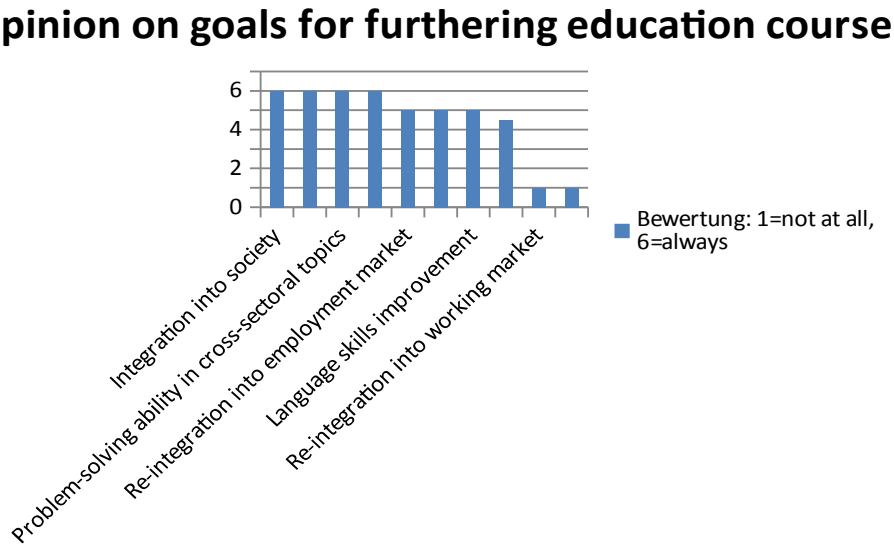


Figure 7: Evaluation of the interview with the educational institutions on continuing training objectives

The respondents expect updating knowledge, social integration, the ability to master cross sectoral topics and strengthening of social skills as an outcome of further education.

4. Employment in the field of environmental protection

The updated publication of the Federal Environment Agency of 2016 on employment in environmental protection1 assumes that environmental protection is an important factor for the entire labour market with a share of 5.2% of all employed persons (in 2012). In 2012, more than two million people were employed in environmental protection for the first time. It is also interesting to note that the same study found that the largest share of employment in environmental protection, 63%, was in the area of environment-oriented services with 1.38 million employees.

Our research in the job offers, categorized by sector, also shows a high proportion of services with 31.4%. However, energy suppliers/energy technicians were not taken into account with a share of around 30%, so that a similarly high overall share can be expected and the trend is confirmed.

In the field of renewable energies, current estimates for 2014 in Germany show employment of around 350,000 people.

In its study, UBA also diagnoses that there is great potential for employment in the export of environmental and climate protection technologies as well, since global demand is created here due to limited natural resources, increasing environmental damage, especially in emerging countries, and the challenges posed by climate change.

According to this study, well-trained skilled workers are a key factor in securing and expanding employment and safeguarding the competitiveness of companies. For this reason, the integration of environmental protection aspects in vocational training, further education and study content is seen as having great potential, also with regard to achieving Germany's environmental and climate protection goals and the Paris Climate Protection Agreement.

The current Environmental Technology Atlas for Germany "GreenTech made in Germany 2018" published by the Federal Environment Ministry1 shows how strongly the GreenTech market has already arrived in the key sectors.

1 Umweltbundesamt: Beschäftigung im Umweltschutz, Entwicklung und gesamtwirtschaftliche Bedeutung, aktualisierte Ausgabe 2016 in umwelt, innovation, beschäftigung// april 2016, (Employment in environmental protection, development and macroeconomic importance, updated edition 2016) www.umweltbundesamt.de/publikationen/beschäftigung-im-umweltschutz-1

2 Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit, Referat GI5, „Greentech made in Germany 2018“ ,Text: Roland Berger GmbH, www.bmu.de/publikationen, www.greentech-made-in-germany.de

Source: Roland Berger (2017)

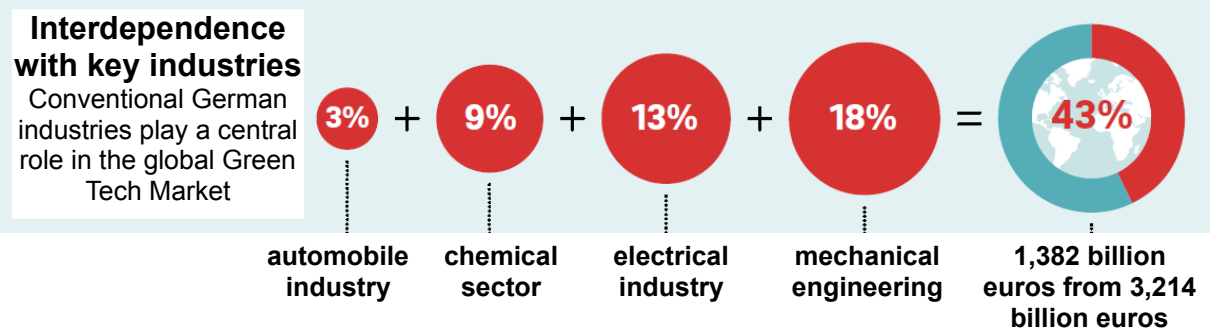


Figure 8: Interdependence with key industries

This also has an impact on the Green job market, as the following chart illustrates.

Source: Roland Berger (2017)

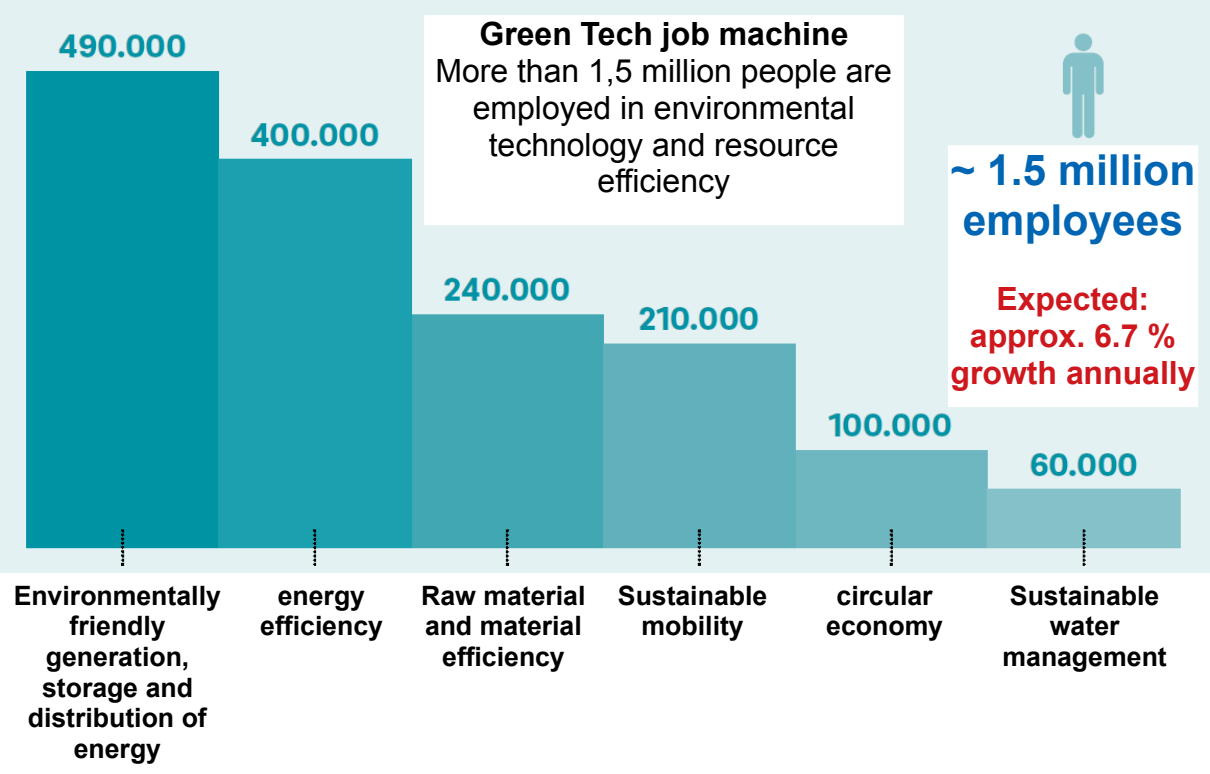


Figure 9: Employees in the GreenTech industry

The most important factors here are the environmentally friendly generation, storage and distribution of energy and energy efficiency. This development is also driven by the German government's "energy turnaround" policy.

5. Skills required, qualifications in the green economy

In his study (ibid.), Bert Colijn not only looks at job offers in the green economy in Europe, but also examines the skills required.
He categorizes according to the following criteria: Basic skills, complex problem-solving skills, systemic skills, technical skills and resource management skills.

The most popular Green occupations in the following order were "technical skills", "resource management skills" and "complex problem-solving skills"[1]

The study of the Federal Environment Office concerning qualifications, jobs and industrial sectors for a transition to a Green Economy

The Federal Environment Agency (Bundesumweltamt) has prepared a study on qualifications, occupations and sectors for the transition to a green economy - An inventory[2]. In this comparative study of the overall economy with selected sectors that are particularly relevant for the transition to a green economy, it comes to the conclusion that the proportions of formal qualifications are similar. The degrees behind it, however, are to be clearly different in content. With a developing "greening" there is an above-average demand for technical and engineering degrees. This is particularly evident when looking at the occupational fields.

The IAB-Discussion Paper 16/2015[3] comes to the same conclusion, which shows that highly innovative environmental technology fields such as measurement technology, analytics, engineering sciences and research showed a more positive development concerning employment in the period 2009-2012 compared to other companies. It even goes so far that eco-innovations drive the employment market more than other innovations in the economy. Only in nature conservation and landscape management there are negative developments in employment recorded.

The high demand for technical and engineering degrees, but also for natural scientists, is also confirmed in our research. However, according to our research, commercial office occupations also play an important role in the green economy, which can be explained by the above-mentioned growth in trade and exports for environmental and climate protection technologies.

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1 Bert Colijn“Green Jobs in Europe and the increasing demand for technical skills”, Neujobs working paper No.4.2, January 2014, S.21, Projekt NEUJOBS

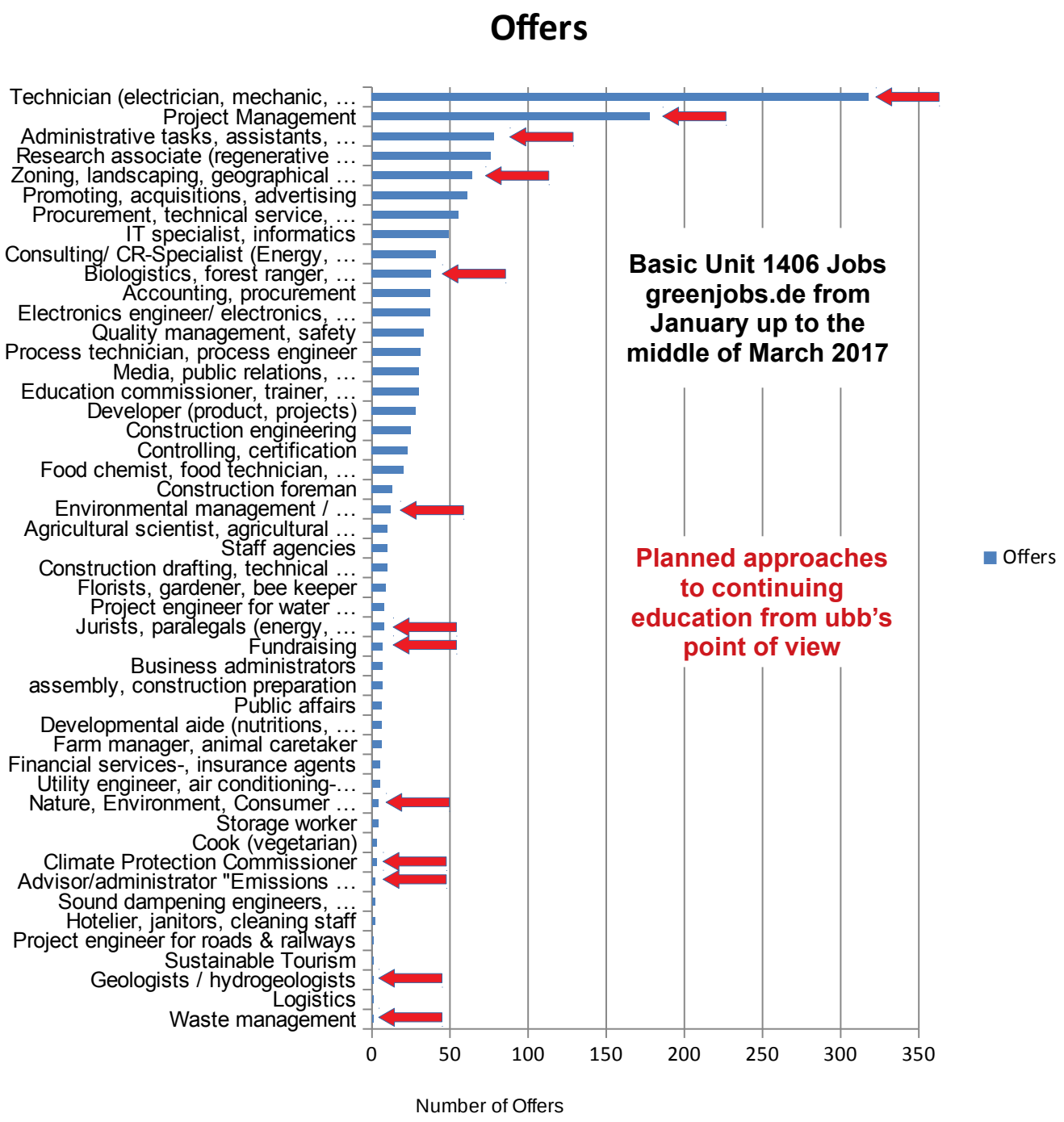
2 „Qualifikationen, Berufe und Branchen für den Übergang in eine Green Economy-eine Bestandsaufnahme“ von Stefanie Bauer, Ines Thobe, Dr. Marc Ingo Wolter (GWS) Osnabrück; Dr. Robert Helmrich, Manuel Schandock (BIBB), Bonn; Dr. Gerd Zika, Christof Röttger (IAB), Nürnberg; Franziska Mohaupt (IÖW), Berlin, veröffentlicht in umwelt, innovation, Beschäftigung 01/2017

3 IAB-Discussion Paper 16/2015 Institute for Employment Research of the Federal Employment Agency Regensburger Str. 104, D-90478 Nuremberg
Editorial staff: Regina Stoll, Jutta Palm-Nowak, Website: www.iab.de Download of this Discussion Paper http://doku.iab.de/discussionpapers/2015/dp1615.pdf (ISSN 2195-2663)

6. Comparison of job offers with topics of our planned course.

To create the curriculum, the planned topics were faded into the job ranking. We were then able to check whether the topics met the demands of the market.

Figure 10: Job offers meet continuing training content



These needs are taken into account in the development of the curriculum.

7. Summary

Further training in environmental, nature and climate protection:
Given the large number of training courses on offer, only 140 different courses in this subject segment were identified throughout Germany in the period from November 2016 to February 2017 (using a keyword search).
If multiple courses at different locations are taken into account, a total of 2701 further training courses are offered in environmental, nature and climate protection. This is less than 0.13% of the total number of continuing education courses offered during the period of examination. This means that training courses in this subject area are also under-represented with regard to job offers in the "green economy".
There are numerous funding opportunities for further training, which can be increasingly used for this subject area.

Job offers in environmental, nature and climate protection:

The search for "green" job offers revealed a share of around 3% measured by the number of vacancies reported according to IAB statistics for the period under review. That was 15100 job offers. It should be noted here that in the period under review (November-February) the demand for the traditional occupational fields of agriculture, animal husbandry, forestry and horticulture was disproportionately low due to seasonal reasons, so that the annual average proportion was even higher, as confirmed by the study by Bert Colyien[1] for 2012, which found that "green" jobs accounted for 4% of all jobs on offer.
Classification of vacancies:

Areas of activity:
considering the "green jobs" offered, it becomes evident that activities in the technical field (22.62%) and in project management (12.66%) are most in demand. For activities in the administrative sector, in science, landscape planning and marketing offers are also relatively high, at between 4% and 5% each, measured against the total number.

Occupational fields:
When categorizing occupational fields, it it becomes clear which qualifications are in demand in the green sector. The four most important are engineers, commercial occupations, scientists and technicians.
This shows that in this segment higher basic qualifications are in greater demand for employment.

1 Bert Colijn“Green Jobs in Europe and the increasing demand for technical skills”, Neujobs working paper No.4.2, January 2014, S.21, Projekt NEUJOBS

Qualifications in the Green Economy

Against the background of rising employment in the "green economy" (5.2% of all employed persons in 2012[1]), the integration of environmental protection aspects in vocational training, study content and also in continuing education is seen as an essential factor for securing and expanding employment and for safeguarding the competitiveness of companies, according to the UBA study of 2016 12.

Further training in environmental, nature and climate protection can provide the

necessary skills that are in demand on the market as additional qualifications. In addition to technical skills and basic knowledge, these include management skills and the ability to view and solve problems in a complex manner. This also includes the development of skills for innovative work.

It is not primarily necessary to develop entirely new "green occupations" but above all to make the existing occupations "greener". We see this as the task of qualifications.

The curriculum to be developed is based on the findings of this study in order to meet the demands of the market.

1 Umweltbundesamt: Beschäftigung im Umweltschutz, Entwicklung und gesamtwirtschaftliche Bedeutung, aktualisierte Ausgabe 2016 in umwelt, innovation, beschäftigung// april 2016, www.umweltbundesamt.de/publikationen/beschäftigung-im-umweltschutz-1

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BMUB(2014)Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit(Hrsg.): Greentech made in Germany 4.0-Umwelttechnologie-Atlas für Deutschland, München; Qualifikationen, Berufe und Branchen für den Übergang in eine Green Economy-eine Bestandsaufnahme in Umwelt, Innovation, Beschäftigung 01/2017, www.umweltbundesamt.de/publikationen)

(UBA(Hrsg.) Qualifikationen, Berufe und Branchen für den Übergang in eine Green Economy-eine Bestandsaufnahme in Umwelt, ,Innovation, Beschäftigung 1/2017, www.umweltbundesamt.de/publikationen)„Beschäftigung im Umweltschutz“ in umwelt, Innovation, beschäftigung/april 2016, www.umweltbundesamt.de/publikationen/beschaeftigung-im-umweltschutz-1

„Arbeit und Qualifikation in der Green Economy“, Umwelt, Innovation, Beschäftigung,03/2014 (Hrsg. UBA) www.umweltbundesamt.de/publikationen/arbeit-qualifikation-in-der-green-economy

http://www.foerderdatenbank.de/Foerder-DB/Navigation/Foerderrecherche/suche.html

https://www.forum-berufsbildung.de/beratung-und-foerderung/
http://www.umweltbundesamt.de/publikationen/arbeit-qualifikation-in-der-green-economy

Umweltbundesamt: Beschäftigung im Umweltschutz, Entwicklung und gesamtwirtschaftliche Bedeutung, aktualisierte Ausgabe 2016 in umwelt, innovation, beschäftigung// april 2016, www.umweltbundesamt.de/publikationen/beschäftigung-im-umweltschutz-1

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„Qualifikationen, Berufe und Branchen für den Übergang in eine Green Economy-eine Bestandsaufnahme“ von Stefanie Bauer, Ines Thobe, Dr. Marc Ingo Wolter (GWS) Osnabrück; Dr. Robert Helmrich, Manuel Schandock (BIBB), Bonn; Dr. Gerd Zika, Christof Röttger (IAB), Nürnberg; Franziska Mohaupt (IÖW), Berlin, veröffentlicht in umwelt, innovation, Beschäftigung 01/2017

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Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit, Referat GI5, „Greentech made in Germany 2018“ ,Text: Roland Berger GmbH, www.bmu.de/publikationen, www.greentech-made-in germany.de

Attachments

Overview for researching further education offers in environmental, nature and climate protection

Results of the research and description of the 1406 job offers of the portal www.greenjobs.de in the period under study

III. Study about Green Jobs and Education in Hungary

Presented by Polip Ifjúsági Eggesület, Szekszárd, Hungary
Current Version, August 2018
Developed and funded within the framework of the ERASMUS+-Project of the European Union: „European Educational Concept in Environmental- Nature- and Climate Protection to safeguard a cross border sustainable development - EUBILD UNAKLIM“

Green jobs and education – in Hungary

1. The position of environment protection in Hungary

In Hungary the issue of environment protection has become an important issue relatively late, f. ex:: fist the schools joined the Day of the Earth movement in 1990, 20 years after its international introduction.
National environmental frameworks:

International Sustainability Council 2007

National Sustainability Development Strategy 2007

National Energy Strategy till 2030 2012

National Sustainability Development Framework Strategy 2013

In the first period of market economy the issue of environment was not given much priority. The effects of previous damages can still be detected.
There are few things that helped to speed up the environment conscious attitude

- environmental desasters that struck the country (cyan pollution, red sludge, unresolved water base problems dating back to the change of the system, chemicals used in agriculture…) disasters related to climate change, global warming
- the EU accession, acceptance of agreements, market expectations
- green NGO-s, parties were founded
- NGO supported awareness raising in some issues (i. e. protests, consciousness forming activities were launched)
- the acceptance of environment consciosness at the level of the individuals and businesses meanwile the national organisational board – that would coordinate them at national level - is missing. It is represented only at local actions
- employment crisis

- internationally available financial resources – mainly EU funds – to support researches and projects with trainings on environment protection, green economy and attitude forming

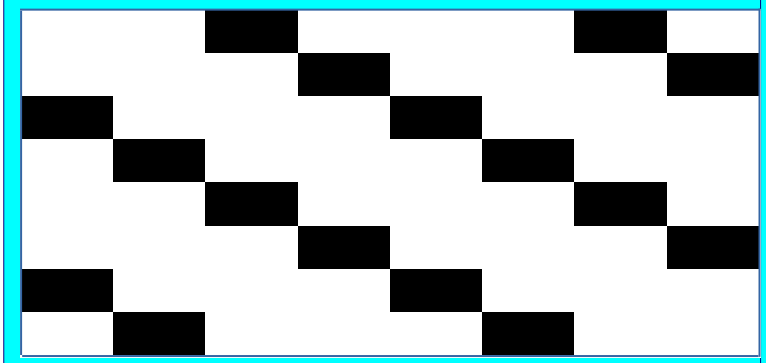
These are the factors that would inspire NGO-s and eco-conscious citizens to carry out larger actions exceeding local interest from EU fundings

Good example for climate training founding by EU source:

The Energy Club in Hungary has been working on the dissemination of a new attitude towards the topic. The Club is a combination of a non-governmental methodology research center and a departmental-political institute in the form of association.
Besides, local governments have an influential role in this matter, and started to deal with the issue seriously, maybe, because problems that come up (in connection with pollution or economic impacts) need urgent actions locally. A new organisation called ”Climate-friendly settlements” with 35 members were formed in order to make adjustment to the inevitable changes easier, and help them cope with challenges, and set up their own climate strategy.

Source: https://www.energiaklub.hu/projekt/klimavalasz-kepzesek-az-eghajlatvaltozashoz-valo-alkalmazkodas-elosegitesere-helyi-szinten-3751

Activities related to environment industry and the environment sector

Business activities **Scopes of Environment**	**Applied equipment, production of special materials**	**Construction of buildings, Installation of facilities**
Direct pollution management		
Air -, water-, soil-, noise etc. reduction, defusion, measuring		
Garbage collection and placement		
Resource management		
Nature protection		
Garbage procession		
Renewable energy		
Bio products		
Indirect environmental activities		
Eco-friendly construction		
Eco-design		
Other clien technologies		

2. Adult education system and green adult educations - in Hungary

In Hungary there is an adult education law which regulate the out-of-school system trainings and the institutes too. A national statistic office collect party data about this sector (https://www.ksh.hu/docs/hun/xftp/stattukor/felnottoktatas13.pdf)

Define adult education

In Hungary at present there is a school-based education: pupils start their school year at 6 with primary school. It is compulsory to study up to 16 years of age. The secondary school time - in high school or in vocational school - takes time till 18 age. After secondary schools students can continue their studies in a university or in this point can study in an adult educaiton training.
The concepts used in „adult education" or „adult education training" does not yet have a clear, conceptual system. The terms used in different documents are not always the same. The concept of adult education, adult training, broadly refers to the training of people who have reached the age of majority, but some documents are also used with other meanings.
The concept of adult education can be used in the Adult Education Act, where it is used for training outside the school system. It is essential that the participants of the training are not students or have a student relationship with the training institution. Adult education can take part in a person who has completed his compulsory schooling but can also engage in adult education while fulfilling the compulsory schooling requirement.
Teaching can also be organized by day, evening, correspondence or other special work schedules.
Adult training can be provided by a wide variety of types of organizations: legal persons, business associations without legal personality, individual companies, private entrepreneurs, public education institutions maintained by the State Institution Support Center for National Public Education.

Adult training can be very varied, such as:

A) vocational training for obtaining a vocational qualification (OKJ vocational qualification) under the Act on Vocational Education and Training,

(B) other supported professional training ,

(C) general supported anguage training,

(D) other supported training not included in points (a) to (c).

However, the Adult Training Act does not regulate many training typically used by adults. Such training includes training in professional service (military, police, etc.), certain trainings of civil servants, professional training in the health sector, and further training of teachers.

In summary, it can be stated that adult education, adult training, is divided into several areas, that is, it can be grouped in several ways.

The most commonly used categories for the training institution are:

1. school education or training: aimed at obtaining general, secondary or tertiary education and / or professional qualifications, regulated by the National Education Act and the Act on Higher Education at the legal level,

2. out-of-school training outside the traditional school system: these are fundamentally governed by the Adult Education Act - except for those that are already covered by other legislation (these are usually training related to specific sectors).

Controlling authority in the filed of adult trainings:

Trainings in non-formal adult education have been controlled by the state since 1st June 2016. The state determines the number of participants of the one- year cycle courses, supports the trainings for jobs in shortages with regard to subsidized (state-aided) qualifications in non-formal education regulated by the adult education law.

The National Adult Education and Vocational Training Office www.nive.hu gives proposal for the vocational training structure in each county, and in each job three categories were defined.

1) state-aided (fully supported)

2) Partly supported

3) Non supported

Varied of training organisations:

- Business and non-profit organisations without external support focus mostly on their market potential, they can develop and organise research from EU resources
- NGO-s and multinational companies with their business culture bring about new needs and attitudes
- Besides NGO-s in the background several academic research centers, universities, colleges and associations took part in attitute-forming, hosting conferences in green topic

- Environment protecion has no privileged place in the training structure of the national training system

Connecting green adult trainings to green job offers:

We have looked into the environmental trainings in the field of both vocational and adult training. It can be concluded that among the position of non-formal education trainings the number of those who get qualifications related to nature, - environment,- and climate is relatively low.

It needs further analysis to clarify the exact number of participants of the present adult trainings, whether the wide training option meets the existing demand, and how the employee demand can be related to the idea of the ”green workplace”. It is essential to define the concept of the ”green workplaces” in order to match the idea of the green workplace with the relevant training.

Good example for national founded cource: :

Fully supported courses in Tolna county

- Environment technician
- Environment administrator
- Environment-measures field technician

These can take 1-2 years of adult training after secondary school studies.

Adult educations in green topic – May 2017:

These are finishing with special examination and certificate

Name of the qualifications	Organiser	Length of training
Municipal environmental technician	RIVIERA Adult Education Institution 4400 Nyíregyháza, Új utca 35. Telefon: 42/313-032	240-360 hours
	Géniusz Plusz Educational Company 1085 Budapest VIII. ker József krt. 69. fsz. 15. E-mail: info@geniuszplusz.hu 2500 Esztergom Kiss J. U. 82. E-mail: info@geniuszplusz.hu Tel.: 0620/255-5339	240-360 hours
Environmental technician	Géniusz Plusz Educational Company 1085 Budapest VIII. ker József krt. 69. fsz. 15. E-mail: info@geniuszplusz.huTel.: 0620/255-5339	960-1440 hours
	Roth Gyula Forestry Secondary School 9400 Sopron, Szent György utca 9. (+36) 99 / 506-470 (+36) 99 / 506-479 rothszki@t-online.hu	960-1440 hours
	KOTK Economy Secondary School Külgazdasági Szakgimnázium, 1074 Budapest, Szövetség utca 37. Telefon: 1-344-5202	960-1440
	OKTÁV Adult Education Institution Továbbképző Központ Zrt. Budapesti Iroda 1143 Budapest, Gizella út 42-44. Irodavezető:Juhász Dorottya Telefon: (1) 201 2408 E-mail: bpoktav@oktav.hu	960-1440 hours

	Energetic Secondary School 7030 Paks Dózsa györyg u. 95. 74/519-300 E-mail.:eszieszi.hu	960-1440 hours
	Szegedi SZC Gábor Dénes Secondary School 6724. Szeged Mars tér 14. E-mail: gabord@gdszeged.hu Telefon: 62/558-750	960-1440 hours
Environmental measurement technician	Székesfehérvári SZC Bugát Pál Secondary School 8000 Székesfehérvár, Gyümölcs utca 15. Tel.: 06-22-312-073 E-mail: bugattitkarsag@gmail.com	240-360 hours
	Géniusz Plusz Educational Company 1085 Budapest VIII. ker József krt. 69. fsz. 15. E-mail: info@geniuszplusz.hu 2500 Esztergom Kiss J. U. 82. E-mail: info@geniuszplusz.hu Tel.: 0620/255-5339	240-360 hours
Rural Development Technician	MÁTRIX Adult Education Institution 6000 Kecskemét, Énekes utca 2 - 3. (Énekes utca és Alkony utca sarka) Hrubi Diána képzési adminisztrátor Tel.: 06/70 779-7087 Email: hrubi.dia@matrixoktatas.hu	480-720 hours
Environmental administrator	OKTÁV Adult Education Institution Sinka Mihály tanfolyamvezető 33/435-755/170, 20/777-9243 sinka@oktav.hu debrecen@oktav.hu	960-1440 hours

Nuclear Environmental Technician	Energetic Secondary School 7030 Paks Dózsa györyg u. 95. Tel.: 74/519-300 E-mail.:eszieszi.hu	240-360 hours
Nuclear technician	Energetic Secondary School 7030 Paks Dózsa györyg u. 95. Tel.: 74/519-300 E-mail.:eszieszi.hu	740-800 hours
Agricultural and plan protection Technician	MÁTRIX Adult Education Institution 6000 Kecskemét, Énekes utca 2 - 3. Hrubi Diána képzési adminisztrátor Tel.: 06/70 779-7087 Email: hrubi.dia@matrixoktatas.hu	480-720 hours
	BARHÁCS Education Company 1089 Budapest, Vajda Péter u. 10/a. Telefon/Fax: (36)1 216-4658 / (36)1 215-7041 e-mail: barhacs@barhacs.hu	480-720 hours
	Projekt Educational Company 1063 Budapest VI., Szív utca 40. III. em. Telefon: (20) 337-8964 Tel./Fax: +36-1/604-2505 E-mail: varga.adrienn@oktatasok.hu	480-720 hours

	"IOSZIA" Dual Education Company 1066 Budapest, Teréz körút 12. Telefonszám: +36 (37) 301-649 Email cím: kepzes@ioszia.hu	480-720 hours
Water Technician	Szegedi SZC Gábor Dénes Secondar y School 6724 Szeged Mars tér 14. E-mail: gabord@gdszeged.hu Telefon: 62/558-750	900-1300 hours
Agricultural Technician	MÁTRIX Adult Education Institution 6000 Kecskemét, Énekes utca 2 - 3. (Énekes utca és Alkony utca sarka) Hrubi Diána képzési adminisztrátor Tel.: 06/70 779-7087 Email: hrubi.dia@matrixoktatas.hu	960-1440 hours
	Diana Vadász Adult Education Seconday School Fundation 6640 Csongrád, Jókai Mór u. 14. Tel., fax: 06 63/483-790	960-1440 hours
Agricultural Technician	Géniusz Plusz Educational Company 1085 Budapest VIII. ker József krt. 69. fsz. 15. E-mail: info@geniuszplusz.hu 2500 Esztergom Kiss J. U. 82. E-mail: info@geniuszplusz.hu Tel.: 0620/255-5339	240-360 hours
	Studium Education Studio 3529 Miskolc, Csabai kapu 25. Tel: 46/401-006	240-360 hours
Cooler, Air conditioner and heat pump equipment installer	Budapest Öveges József Engeneering Secondary School 1117 Budapest, Fehérvári út 10. (06) 1/246-1579 (06) 1/246-1580	480-720 hours

	Eszkimó Academie 108 Budapest, Kozma utca 4. telefonszám: +36-1/445-00-40	480-720 hours
	MÁTRIX Adult Education Institution 6000 Kecskemét, Énekes utca 2 - 3. Hrubi Diána képzési adminisztrátor Tel.: 06/70 779-7087 Email: hrubi.dia@matrixoktatas.hu	480-720 hours

Summary of research in green adult education:

- Basically, companies offer paid training
- There is a wide range of topics in the professional field
- In the official occupational centers the green topics are no priority as a supported training, rather than tranings which give general kwonledge f. ex: general administrator
- It is possible that if there will be more job offers in the green field - the Official Labor Center could initiate such trainings
- Employers can send their staff to free training sessions - in this case, lost time is their cost

3. Green job offers – Hungary

Green jobs is not a priority in job advertisements, it is difficult to decide what is a green job: any job done in a green economy (eg a driver) or a job is not a green economy, but it can be classified as a green job (eg. Environmental protection worker).

Our research was conducted on the www.profession.hu website between 1 March and 30 April 2017, for 60 days, where the full offer will be published, and from 1 to 30 June 2017. We were looking for bids on a green jobs portal where jobs are considered a green job by our self-classification, so the jobs advertised here are also diverse (eg cook).

During the first period, from March 1 to April 30, 2017, during the 60-day period, we have found the following job offers at the www.profession.hu job offer website, which has been taken over by other websites. www.workania.hu.

Our working method was the following: we were looking for jobs on the site for the project, then we opened the whole offer, read the details, and decided whether the employer's institution or organization could be classified in the green economy.

We used the definition of the „green" workplace is taken from the study of Dr. Vilma Éri

1. PART: Analysis job offers between 01.03.2017 – 30.04.2017. from national jobs portal:

Job offers	Number of hits	Percent of total hits
Project Management	472	13,30%
technician (electrician, mechanic, laboratory assistant, network supervisor)	435	12,12%
IT specialist, informatics	412	11,47%
administrative tasks, assistants, process officer	369	10,28%
media, public relations, communication	277	7,71%
promoting, acquisitions, advertising	255	7,10%
process technician, process engineer	249	6,93%
quality management, safety	196	5,46%
construction engineering	162	4,51%
food chemist, food technician, chemist, microbiologist	106	2,95%
assembly, construction preparation	104	2,89%

financial services-, insurance agents	72	2%
construction foreman	71	1,97%
logistics	71	1,97%
developer (product, projects)	65	1,81%
electronics engineer/ electronics, automation	63	1,75%
research associate (regenerative energies, studies)	40	1,11%
florists, gardener, bee keeper	39	1,08%
business administrators	33	0,91%
biologistics, forest ranger, landscaping ecologist, nature prottection, gardener	32	0,89%
utility engineer, air conditioning-heating-ventillation	21	0,58%
Advisor/administrator "Sustainable Tourism & Regional Development"	17	0,47%
Hottelier, janitors, cleaning staff	11	0,30%
education commissioner, trainer, environmental pedagogy	8	0,22%
zoning, landscaping, geographical information systems (GIS), landscape architecture	3	0,08%
Advisor/administrator "Circulatory economics, waste management & planning	3	0,08%
project engineer for water protection, water/sewage	1	0,02%
jurists, paralegals (energy, environment, natural preservation)	1	0,02%
Cook (vegetarian)	1	0,02%
Climate Protection Commissioner	0	0%
sound dampening engineers, sound measurements	0	0%
geologists / hydrogeologists	0	0%

2. PART: Analysis job offers between 01.05.2017 – 31.05.2017. from the same national jobs portal than previous period:

Job offers position	Details	Employer
Project manager and assistant	A manager and an assistant position for a Social enterprises development project	IFKA Industry Development Company
Waste management assistant	Experience with at least 3 years of waste management or similar.	VERTIKÁL Waste Company

Examining Engineer - Project Coordinator	We are looking for a new employee to perform accredited measurement and sampling tasks - with experiences	Encotech Company
Projectmanager	Project manager position in a national park	Duna-Ipoly National Park Directorate
Nature conservation assistant	Assistant position in a national park	Hortobágyi National Park Directorate
Project assistant	Project manager position	GreenDependent Company

Source: http://www.greenfo.hu/

We attached an excel file with graph about the job offers to this research.

Job offers from another website in the same period:

Job offers position	Details	Employer
Lead environmental administrator	Waste water and composting - administrator	VASIVÍZ Water Company
Energetic	Energetic and technical support for investments	Richter Gedeon Company
Research and development leader	Special filed: Gas chromatographic biogas quality determination and evaluation of results	FIBAG Biogas Company
storekeeper	Storekeeper in the biggest used processing network in the courty	BIOFILTER Environmental Company

Laboratory technician	Filed: Forestry plant	FALCO Company
Electrician	looking for an electrician for the environmental company's site	GREENPRO Environmental Company
Worker protection advisory	Work and fire advisory	ERGONOM Environmental Company
Mathematician - biologist researcher	Special filed: Algorithm development related to bioinformatic analyzes	ENVIROINVEST Environmental Company
Security and safety officer	bioinformatic plant – analyzes working protection	Richter Gedeon Company

Source: https://www.profession.hu/

Summary of research in green job offers:

⇒ We asked the Ministry of National Economy for their help if they have a database that separates the green jobs – the answer was that there is no such report at the national level

⇒ The green topic is not so much to get into larger specifications or to make separate statistics, to get attention. There is an aspiration to strike this strategy - but we look at the current labor market, we see that we are not focusing on this. In the tendencies there is an increase in this area, and this is not controversial.

⇒ The size of Hungarian job market is not comparable with the larger EU countries job markets - especially not in green jobs .

EUBILD-UNAKLIM

Mineral and Energy Economy Research Institute
Polish Academy of Sciences

IV. Study on Polish activities and funding opportunities of furthering education programs for unemployed academics in green jobs

Presented by Instytut Gospodarki Surowcami Mineralnymi i Energią Polskiej Akademii Nauk, Krakow, Poland
Current Version, August 2018
Developed and funded within the framework of the ERASMUS+-Project of the European Union: „European Educational Concept in Environmental- Nature- and Climate Protection to safeguard a cross border sustainable development - EUBILD UNAKLIM“

Erasmus+

Study on Polish activities and funding opportunities of furthering education programs for unemployed academics in green jobs

The study was conducted under Output 1 “Study to national activities and funding opportunities to furthering education programs for unemployed academics in green job”.

1. Green jobs market in Poland

In recent years, the European Union has emphasized the so called “green growth”. It is the result of commitments taken by EU Member States in the “Europe 2020” development strategy for reducing greenhouse gas emissions by 20%, achieving energy efficiency increases by 20% and increasing the share of renewable energy by 20% in the perspective of 2020. It creates opportunities for job creation, and in particular the so-called green jobs (Europe 2020). Increasing the employment in environmentally friendly sectors is key to socio-economic governance. Green jobs affect resource and energy savings and their efficient use to reduce the climate change and environmental pollution. Green jobs are created in the sector of goods and services related to environmental protection.
The definition of green jobs in Poland has not been sanctioned but the fact is that they can emerge in every sector of the economy, provided that employees are directly or indirectly involved in the improvement of the environment in the concerned area and will endeavour to eliminate harmful effects, short- or long-term on the environment (*Zazielenienie lokalnych rynków pracy w Polsce, 2010*).
Lack of definition and supporting institutions makes it difficult to precisely define the actual and projected number of green jobs and to plan appropriate support measures. Creating green jobs have to require adequate support at all levels of management and policy decisions, both at international, EU and national levels (Szyja, 2015).

1.1. Searched Job portals

As a part of the Output 1 research, a few job portals were searched. The largest one is pracuj.pl but in polish labour market was founded only one portal (regular updated), specialised in green Jobs – portal www.teraz-srodowisko.pl. Portal is a B2B journal for specialists and employees from environment protection sector and all who interest in this subject. The total of 174 offers in the green topics were found in this portal between January and May 2017.

The green jobs were categorized into following sectors:

Sector	Job offers	Number of offers
Construction and architecture	Revitalization specialist (1),	**9**
	Environmental management and management specialist (2), Investment manager (1),	
	Power Specialist (2),	
	Infrastructure maintenance specialist (1),	
	Construction manager (1),	
	Coordinator / Manager of sanitary works (1)	
Education and communication	Sales specialist (1),	**3**
	Project manager (1),	
	Market Research Specialist (1)	
Energy	Energy auditor (4),	**26**
	Technical specialist (3),	
	Technical Analyst (2),	
	Energy Efficiency Manager/Auditor (2),	
	Energy Customer Advisor (3),	
	Investment Manager (2),	
	RES Commercial adviser (3),	
	RES Specialist (2),	
	Process Technician (1),	
	Product Manager (2),	
	Key project Management Specialist (1)	
	Construction engineer (1)	
Soil & ground	Environmental Specialist (2),	**4**
	Inspector (1),	
	Laboratory analysts (1)	
Waste management	Environment Inspector (2),	**17**
	Recycling Sales Representative (1),	
	OHS Specialist (3),	
	Environmental Specialist (3),	
	Sales Representative (2),	
	Environmental advocate (1)	
	Specialist in Waste Management (3)	
	Composting manager (1)	
Spatial planning	Environmental Specialist (3),	**6**
	Laboratory Specialist (1),	
	Spatial development specialist (2)	
Air and climate	Environmental Monitoring Specialist (2),	**6**

	Environmental Inspector (2),	
	Manager of Projects in the Climate and Energy section (1),	
	Laboratory specialist (1)	
Industry and engineering	Electrical Installation Designer / Electrician (2)	**20**
	Specialist in the laboratory (2),	
	Laboratory analyst (3),	
	Process Engineer (5),	
	Production Manager (3),	
	Employee for Health and Safety (3),	
	Environmental Protection and Chemicals (4)	
Agriculture	Inspector (3),	**4**
	Soil lecturer (1)	
Risk (Inspector for the environment)	Environmental Specialist (2),	**4**
	Specialist in Nuclear Safety Department (1),	
	Laboratory analyst (1)	
Natural environment, biodiversity	Specialist (5),	**9**
	Laboratory Assistant (2),	
	Inspector (2)	
Water	Environmental Specialist (5),	**16**
	Project Manager (4),	
	Sales Representative (4),	
	Business management (3)	
Transport	Key Project Management Specialist (1)	**1**
Business management	Specialist in Sales Support (4),	**17**
	Regional manager (2),	
	Technical sales advisor (4),	
	Product Manager (3),	
	Employee for Health and Safety (1),	
	Specialist in Renewable Energy (2),	
	Photovoltaic consultant (2),	
Environmental management	Environmental Specialist (9),	**44**
	Environmental Inspector (8),	
	Laboratory specialist (6),	
	Laboratory analysts (6),	
	TOTAL	**174**

The percentage of offers by the category has been presented on Figure 1. Among all green job offers the most numerous were: in the environmental management (24%) energy sector (14%), in industry and engineering sector (11%). At present, the greatest demand on the market is on: environmental specialists (9 offers), environmental inspector (8 offers) and energy auditors (6 offers).

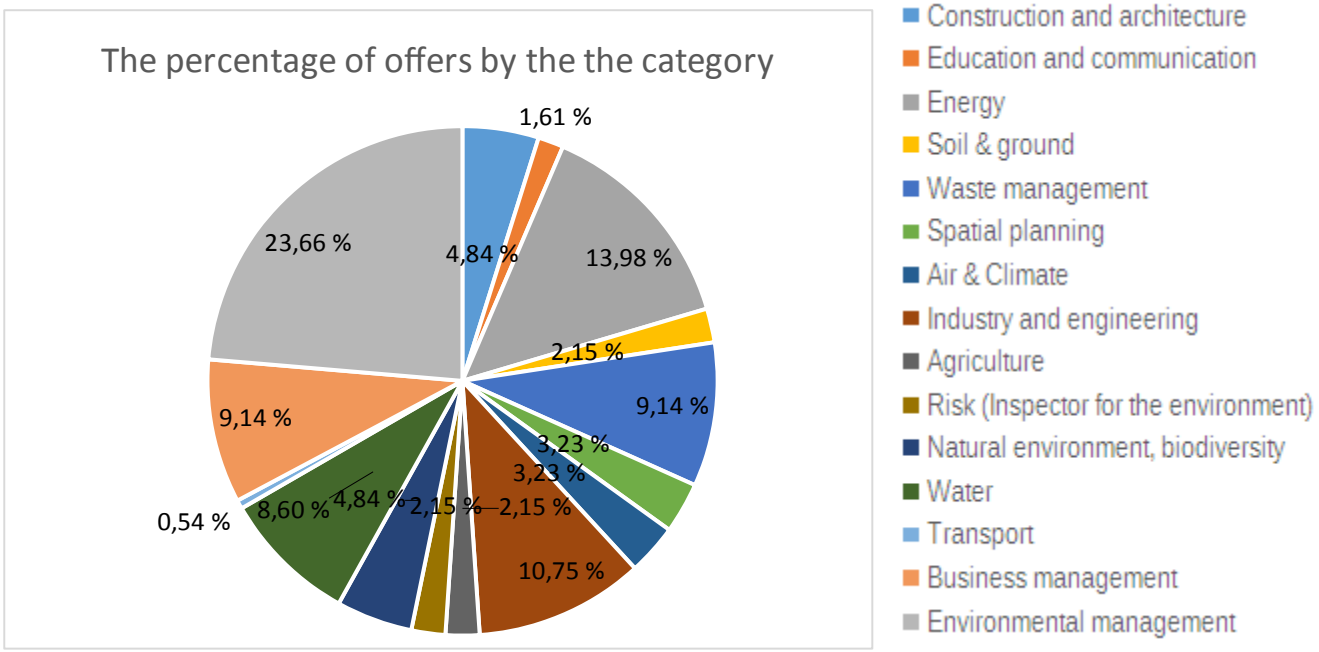


Fig. 1. The percentage of offers by the category

Preliminary conclusions

1. <u>In Poland, develop of green job sector is slower than for e.g. in Germany.</u>

   In Germany, thanks to the implementation of a series activation and support measures, about 380,000 green jobs have already been generated. In Poland this type of statistics has not been started yet, and the modernization of the energy sector is proceeding very slowly (lack of support for pro-consumer and civic energy) [*Biuletyn Mazowieckiego Obserwatorium Rynku Pracy, March 2015*].
2. Lack of systematic analysis of the sectors and industries (indicators -> identify and remove barriers)
3. No official definition of “green jobs”, “green economy”, “green sectors in the economy” in Poland.
4. In Poland exist a potential in green jobs market

References:

Europe 2020, European Commission, 2010
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Szyja P., 2015 – Zielona gospodarka w Polsce stan obecny i perspektywy. Nierówności Społeczne a Wzrost Gospodarczy, nr 41 (1/2015), ISSN 1898-5084

2. Adult education in Poland

This chapter is based on the publication *„Uczymy się przez całe życie. Przewodnik po kształceniu ustawicznym." Nowicki J. & Wiśniewski P. (in polish only) and EU reports available* on the European Commission website "*Education and Training Monitor 2016" and Eurostat.*

Adult education in Poland is often refereed as „**Continuing Education**" defined as 'education in schools for adults as well as the development of general knowledge, vocational skills formation and ability development in out-of-school forms by persons who have graduated from compulsory education´.

Adult education in Poland include following terms:

- **Adult education** (AE) associated with **adult education and training** (AET). The scope of adult education and training exceeds considerably the scope of school and higher education and traditional training courses. AET is also provided as on-the-job practical training or as organized activities of communities.
- **Continuing education** (CE), defined only in the School Education Act. CE is a small part of AET, covering, under the Act, education in schools for adults (where the number of learners has been decreasing) and four types of adult training organized by institutions specified in the regulations on school education

In Poland, adult education and training is potentially targeted at adult population (over the age of 18) of 31.5 million people (Central Statistical Office, 2014). The group providing the European point of reference are those aged 25-64 involved in AET in the period of four weeks preceding an AET survey – there are 22.3 million people in this age bracket in Poland.

According to Eurostat, the participation of adult Poles in AET has remained below the EU-28 average for many years now. Adult education and training is the most diversified area of education in Poland; this is due not only to the diversity of its target groups, their age as well as social and professional status, but also to the wide range of AET providers.
Continuing education in Poland on the one hand is embedded in the **education system**, that is:

- schools for adults,
- lifelong learning institutions,
- facilities for practical training,
- centres for further training,

- higher education institutions,

On the other hand, it is conditioned by the **free market** and run by:

- centres for training, further training and improvement of personnel,
- natural persons conducting business activity,
- associations, foundations, companies, cooperatives and others (functioning on the basis of separate Recipes).

The characteristic feature of the Polish system of lifelong learning is its identification with the education of adults, which in our country is characterized by dispersion and is carried out by the dynamically developing market of training services and organized training system of the unemployed, including the academic education and self-education.

The creation and development of lifelong learning policy and the implementation of lifelong learning in Poland are responsible for: Ministry Science and Higher Education (more ww.nauka.gov.pl), Ministry of National Education (More on www.men.gov.pl) and the Ministry of Labor and Social Policy (more At www.mpips.gov.pl).

The educational system for adults in Poland is regulated by following legal acts:

- *The Polish Constitution of 2 April 1997* (Journal of Laws No. 78, item. 483, as amended. d.);
- *Act on the Education System of 7 September 1991* (Journal of Laws of 2004. No. 256, item. 2572, as amended. D.);
- *Act on employment promotion and labor market institutions of 20 April 2004* (Journal of Laws of 2015. Pos. 149, as amended. D.);
- *Labour Code Act of 26 June 1974 year* (Journal of Laws of 2014. Item. 1502, as amended. D.);
- *Act on tax on goods and services of 11 March 2004* (Journal of Laws of 2011. No. 177, item. 1054, as amended. D., Art. 43 paragraph. 1 point 26-29), and its acts regulations.

2.1. Strategic and programme documents

To guide the development of lifelong learning in Poland following strategies have been developed:

1. National Development Strategy 2007-2015
   The assumptions are to be realized among others: by increasing the availability and enrichment of school curricula and educational institutions, developing professional qualifications in the workplace, implementing a nationwide information system on lifelong learning opportunities, and encouraging investment in education.
2. Operational Programme “Knowledge, Education and Development” (**PO WER**)
   Scope covers activities in the fields of employment, social inclusion, education, higher education, health, good governance. In addition, support social innovation and transnational cooperation in areas and initiatives for employment of young people.

3. The perspective of lifelong learning
   Sets out the goals and directions for action in lifelong learning in Poland by 2020, promoting a new approach to education, equal treatment of all stages of life and acknowledging learning outcomes in qualification systems.
4. National Qualification Network
   Document describes the qualifications obtainable in Poland and describes the nature of the hierarchy of levels of qualifications. The Polish Qualifications Framework ensures consistency and completeness of learning outcomes, which are described in 3 categories: knowledge, skills and social competence.

2.2. Market of training services in Poland

The dynamics of the labor market increases the demand for lifelong learning and gaining new qualifications. In nowadays adult education also is centred on the labour market. Training activities in Poland can be run by non-public institutions in three ways:

1. **In the form of economic activity under the Freedom of Economic Activity Act,**
   Educational activities not including a school, institution or school team may be undertaken in accordance with the provisions of the Act of 2 July 2004 on Freedom of Economic Activity (Journal of Laws of 2005, item 584).
   According to this law, training services are included in the business. In formal terms, they do not differ from other service activities. Therefore, the training activity does not require any specific conditions or authorization, concession, consent or notification. It is no need to show the professional qualifications of the trainers and whether or not they have the appropriate premises. It means that any person interested in conducting such activities may exercise it without obstruction.
2. **By non-governmental organizations conducting public benefit activities,**
   It is a socially useful activity, usually conducted by non-governmental organizations in the field of public tasks specified in the Act of 24 April 2003. On Public Benefit and Volunteer Work (Journal of Laws of 2014. Pos. 1118).
3. **In the form of a school or non-public institution under the Education System Act**.
   Schools and non-public institutions may be established by legal/natural persons after obtaining an entry in the records maintained by a local government unit responsible for running the appropriate type of public schools and institutions. Pedagogical supervision of schools and non-public institutions is performed by the appropriate curators of education.

Training may also be provided by higher education institutions, according to the Law on Higher Education (Law of 27 July 2005 on higher education - Journal of Laws of 2012, item 572, as amended).

Accreditation - Institutions providing continuing education in out-of-school forms and teacher development centres can obtain accreditation. Taking a course run by an accredited institution increases the changes of employment and also gives the opportunity to credit this form of education when undertaking adult education.

2.3. Form of learning

Adult education and training programmes (Table 2.3.1). School settings are public and non-public schools for adults, whereas non-school settings refer to public continuing education centres, practical training centres, as well as further- and in-service training centres. There is also a system working to train the unemployed and job-seekers.

The educational system for adults in Poland has traditionally relied almost exclusively on formal in-school education but in recent years out-of-school opportunities for learning and training have increased.

Table. 2.3.1. Forms of education in Poland

Formal (in school)	**Non-formal (out-of-school)**
Schools (secondary schools, basic vocational schools, general upper-secondary schools)	**Public Continuing Education Centres** (CESs) **Practical Training Centres** (PTCs), **Further and in-service training centres:** vocational qualification courses, occupational skills courses, courses of general competencies, other courses allowing acquisition and development of knowledge, skills and qualifications
Public and non-public higher education institutions (HEIs) 1st, 2nd & 3rd cycle programmes; postgraduate programmes, open university courses (e-learning), conferences, workshops & seminars	**Non-public institutions for continuing education and practical training** administered by associations and individuals
	People's universities
	Employers: courses, on-the-job training, job shadowing, rotation, replacement, learning clubs, supervised individual learning, fairs, conferences, coaching's, mentoring, cooperation with equipment & software suppliers
	Employers' organisations and **trade unions**
	Training institutions, including those registered in the Register of Training Institutions (RIS)
	Public employment services: support tools, including training, practical placements, vocational training for adults
	Research institutions, research foundations and **PAS units**: non-degree postgraduate programmes and doctoral

	programmes, courses, conferences, seminars, workshops
	Institutions specialised in specific areas of study

School education

Schools and institutions educating adults can be established and run by:

- a unit of local self-government,
- a legal person,
- a natural person,
- The minister responsible for the profile of the school or institution.

Out-of-school education

To obtain and supplement general knowledge, skills and professional qualifications in lifelong learning institutions (CEC), practical training centres (PTC) and centres for further training and further training (FITC) (Table 2.3.2). Continuing education in extracurricular forms can be either permanent or extramural.

Table. 2.3.2. Public institutions providing continuing education for adults in Poland

Type of institution	Activities	Forms of continuing education for adults
Continuing education centres (CEC)	186 CECs, excluding schools (source: SIO*, 30 Sept. 2015): • offer vocational qualification courses and vocational skill courses, general competences courses and other courses; • provide continuing education in schools for adults within a CEC; • provide career guidance and information, • cooperate with employers and their organizations, labour offices and other national and foreign centres for continuing education.	Vocational qualification courses and vocational skill courses; general competences courses; and other courses provided in schools for adults within a CEC
Practical training centres (PTC)	157 PTCs (source: SIO, 30 Sept. 2015): • offer vocational qualification courses and vocational skill courses, general competences courses and other courses; • provide practical training for students in vocational schools; • organize supplementary courses for juvenile workers; • cooperate with employers, labour offices and other vocational education providers; • cooperate with in-service teacher training centres to support vocational education and training teachers.	Vocational qualification courses and vocational skill courses, general competences courses and other courses

Further and in-service training centres (FITC)	368 FITCs (source: SIO, 30 Sept. 2015): • offer vocational qualification courses and vocational skill courses, general competences courses and other courses; • may additionally organise theoretical training sessions for juvenile workers; • cooperate with employers, labour offices and other vocational education providers.	Vocational qualification courses and vocational skill courses, general competences courses and other courses
Vocational and continuing education centres(VCEC)	New type of a continuing education provider established by the amendment to the School Education Act of 19 August 2011. VCECs are to combine activities of vocational schools and continuing education providers. They consist of at least one of the above-mentioned continuing education institutions and at least one school providing vocational education. 92 CECs combined with schools (source: SIO, 30 Sept. 2015): • are authorised to provide all services as for institutions included in an VCEC, and: ○ provide career guidance and information; ○ cooperate with employers and their organizations.	Vocational qualification courses and vocational skill courses, general competences courses and other courses provided in schools for adults within a CEC

Source: https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/index.php/Poland:Main_Providers#Public_institutions_providing_continuing_education_for_adults

Vocational qualification courses may be provided by schools as well as public and non-public educational institutions. They have extended the range of institutions involved in education and training activities.
According to the School Education Information System (SIO), there are **2 142 non-public continuing education and practical training centres**, including **8** which operate together with schools as an educational complex.

2.4. Opportunities to improve qualifications by the unemployed in Poland

2.4.1. Trainings

Labour market services in the organization of training for the unemployed and jobseekers are implemented by the powiat labour offices in cooperation with national employers, training institutions, examiners, postgraduate organizers and social dialogue institutions.
Organized to improve the professional and other qualifications of the unemployed and jobseekers, increasing their chances of obtaining o job:
- lack of professional qualifications,
- need to change or supplement qualifications,

- loss of ability to work in a profession so far,
- lack of active job search skills.

Training organized by the powiat labour offices takes place in the form of a course, carried out according to the syllabus, with an average of not less than 25 clock hours/week, up to 6 months. People are entitled to a scholarship.

Training costs are paid in the powiat labour offices in three forms: individual training, group training and under the training voucher for persons up to 30 years of age.

2.4.2. Training loan

For unemployed or job seekers to enable them to take up employment/maintenance of employment, getting other gainful employment or business that require special qualifications. A loan to finance the cost of training to the amount of 400% of the average salary.

2.4.3. Postgraduate studies

According to the Act of 27 July 2005, the Law on Higher Education, non-degree postgraduate programmes are a form of education provided by HEIs and intended for applicants who have completed at least a first-cycle programme. Students are awarded a (non-degree) postgraduate qualification upon completion of a programme which lasts no shorter than 2 semesters, corresponding to at least 60 ECTS.

In the academic year 2014/2015, there were 434 HEIs in Poland, including 302 with a non-public status (Central Statistical Office, GUS). Any HEI may provide non-degree postgraduate programmes in the academic areas corresponding to at least one field of study in which it offers degree programmes. HEIs can also provide non-degree postgraduate programmes in other areas upon the consent of the minister responsible for higher education and consultation with the General Council for Science and Higher Education (*Rada Główna Nauki i Szkolnictwa Wyższego*).

In 2015, 151 555 students, with female students representing 72%, were following non-degree postgraduate programmes.

2.4.4. Internship and internship voucher

Acquiring by unemployed practical skills to perform work by carrying tasks at the workplace, without entering into an employment relationship with the employer. The unemployed may be sent to work for a period of 3 to 6 months. Unemployed persons under the age of 30 can apply for an internship of no more than 12 months.

Another possibility to finance an internship for the unemployed is the so-called internship voucher. Voucher is available to unemployed persons up to 30 years of age and provides a guarantee of placement.

2.4.5. Professional preparation of adults

A form of practical adult education or adult apprenticeship, pursued without entering into an employment relationship with an employer. The program includes the acquisition of practical skills and theoretical knowledge, which ends with an examination.

Two forms: 1. Practical preparation - enabling accession to the qualification examination in the profession or journeyman's exam (practical vocational training can last from 6 to 12

months; and 2. learning to work - acquisition of selected professional qualifications or skills necessary for the performance of specific occupational tasks; qualification specific to occupational classification and specializations for the labour market needs (apprenticeship may last from 3 to 6 months).
An unemployed person may be referred by the county employment office For an internship or preparation of occupations at the workplace and a notified application Out of the office in which he / she desires to qualify And at the place where the vocational training or traineeship will take place.

2.4.6. Funding for exam fees and obtaining licenses

If an unemployed person has already acquired the skills to improve his qualifications, he may also be expected to cover the cost of obtaining evidence of their acquisition from public funds. The unemployed may be financed from the Labour Fund, up to the amount of the average wage, the costs of examinations enabling them to obtain certificates, diplomas, attestations, specific professional or vocational qualifications and the costs of obtaining the necessary licenses to perform the profession.

2.4.7. Scholarship to continue learning

Unemployed people without professional qualifications who, in the period of 12 months from the date of their registration at the powiat labour office, undertake further education at an upper secondary school for adults, who are public or non-public schools with the rights of a public school, or a higher education institution where they study in the form of extramural studies, may Apply for a scholarship of 100% of the unemployment benefit amount.
A scholarship for continuing education is paid for 12 months from the date of commencement of study, but it is possible to extend the duration of the scholarship for completion of studies in accordance with the curriculum. The decision is made by the county employment office. In the event of a break, no scholarship is available

2.5. European Union funds

Accession to the European Union enabled Poland to benefit from the European financial support among others from the Structural Funds, including from the European Social Fund.
Structural funds:

1. **European Social Fund** (European Structural Funds)

2. National Operating Programme for years 2014-2020 implemented 6 operational programmes including “Knowledge, Education and Development” (**POWER**)

Range: activities in the areas of employment, social inclusion, education, higher education, health and good governance. In addition, it is intended to cover actions aimed at supporting social innovation and transnational co-operation. Areas and initiatives for the employment of young people.

As a part of the qualification, thanks PO WER will be possible to implement:

- Activities in the organization of training,
- supplementation of competences or qualifications to take up employment in another sector,
- continuing education for young people diagnosed with the need to complete formal education, or the need to have adequate,
- comprehensive and individual job placement in the field of career choice in accordance with qualification and competencies supported by a person or aids in the planning of career development of a young person

Target group – public and non-public employment services, local government units and their organizational units, Volunteer Labour Corps, socio-economic partners, non-governmental organizations, institutions that will develop prevention programs (such as universities, clinical hospitals, Research institutes), labour market institutions, Polish Agency for Enterprise Development.

The recipients - young people, including the disabled, aged 15-29 without work, who do not participate in education or training, employers and their employees, public administration employees, psychological and pedagogical counselling centres, people covered by prophylactic programs.

The PO WER program includes 5 Priorities, "Axis": Axis I Young people on the labour market Axis II Effective public policies for the labour market, economy and education.

3. **Regional operational programs (RPO)** - implemented at the level of the voivodship for years 2014-2020. RPO are financed from European Regional Development Fund and European Social Found.

2.6. Adult education - statistics

According to data presented by European Commission (Educational and Training Monitor 2016) Poland has very low level of adult participation in lifelong learning and poor skills levels among adults (Table 2.6.1 and Figure 2.6.1.).

Table. 2.6.1. Indicators and Benchmarks

			Poland		EU average	
			2012	2015	2012	2015
ET 2020 benchmarks						
Early leavers from education and training (age 18-24)	Total		5.7%	5.3%	12.7%	11.0%
Tertiary educational attainment (age 30-34)	Total		39.1%	43.4%	36.0%	38.7%
Early childhood education and care (ECEC) (from age 4 to starting age of compulsory education)			78.4% [11]	87.1% [14]	93.2% [11]	94.3% [14]
Proportion of 15 year-olds with underachievement in:	Reading		10.6%	:	17.8%	:
	Maths		14.4%	:	22.1%	:
	Science		9.0%	:	16.6%	:
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		73.3%	77.4%	75.9%	76.9%
Adult participation in lifelong learning (age 25-64)	ISCED 0-8 (total)		4.5%	3.5%	9.2%	10.7%
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		5.4%	5.3% [14]	5.0%	4.9% [14,p]
	Expenditure on public and private institutions per student in € PPS	ISCED 1-2	€4.871	€5.094 [13]	:	: [13]
		ISCED 3-4	€4.453	€4.460 [13]	:	: [13]
		ISCED 5-8	€6.442	€6.580 [13]	:	: [13]
Early leavers from education and training (age 18-24)	Native-born		5.7%	5.3%	11.6%	10.1%
	Foreign-born		:	:	24.9%	19.0%
Tertiary educational attainment (age 30-34)	Native-born		39.1%	43.3%	36.7%	39.4%
	Foreign-born		:	63.2% [u]	33.8%	36.4%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		62.7%	68.5%	69.7%	70.8%
	ISCED 5-8		81.5%	85.1%	81.5%	81.9%
Learning mobility	Inbound graduates mobility (bachelor)		0.6% [13]	0.7% [14]	5.5% [13]	5.9% [14]
	Inbound graduates mobility (master)		1.3% [13]	1.5% [14]	13.6% [13]	13.9% [14]

Sources: Eurostat (see section 9 for more details); OECD (PISA).
Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source; b = break in time series, d = definition differs, p = provisional, u = low reliability, 11 = 2011, 13 = 2013, 14 =2014.
Further information can be found in the relevant section of Volume 1 (ec.europa.eu/education/monitor).

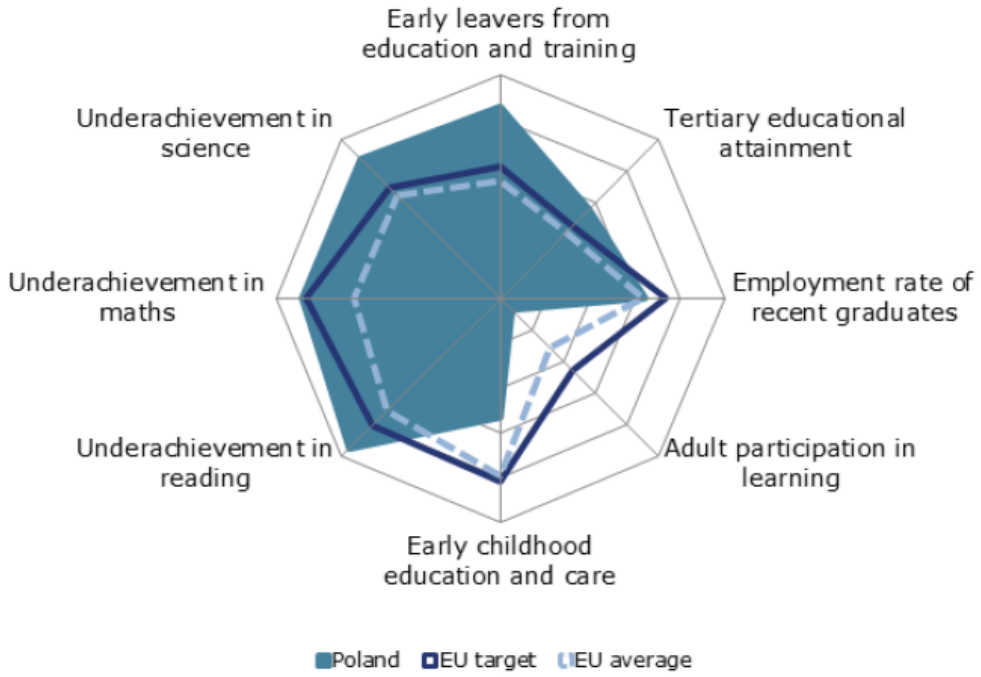


Fig. 2.6.1. Position in relation to highest (outer ring) and lowest performers (centre) (*Monitoring…2016)*

2.6.1. Investing in education and training

Government expenditures on education in Poland are close to the EU average (5.3% compared with the EU average of 5% in 2013). The proportion of spending allocated to education is above the EU average (12.5% compared with 10.3%).

New measures, co-financed by the European Social Fund (European Structural and Investment Founds (2014-2020 National Operating Programme) the "Knowledge, Education and Development" (Wiedza-Edukacja-Rozwój **PO WER**) and from the **16 regional** operational programmes to tackle the issue of low adult participation in lifelong learning.

From 2014 (according to the Act on the Promotion of Employment and Labour Market Institutions *(Ustawa o promocji zatrudnienia i instytucjach rynku pracy)* from 2013*)* companies have been able to co-finance training for their employees using the National Training Fund (Krajowy Fundusz Szkoleniowy).

Moreover, the recent VET (Vocational Education and Training) reform introduced the possibility of validating full qualifications acquired outside of the formal education system.

2.7. Institutions providing training for the unemployed and job seekers

2.7.1. Registry of training institutions

Register of Training Institutions (Rejestr Instytucji Szkoleniowych – RIS), operating under the Act of 20 April 2014 on the Promotion of Employment and Labour Market Institutions. It is the biggest directory of institutions which provide training for the unemployed and job seekers in Poland. Institutions interested to provide such training in cooperation with the public employment services (as a commissioned and publicly-funded activity) are required to be registered in the RIS database in the Regional Labour Office.

2.7.2. Higher education

Non-degree postgraduate programmes, as another form of continuing education, are provided by public and non-public higher education institutions (HEIs), research institutions and institutes of the Polish Academy of Sciences. The Law on Higher Education does not refer to continuing education, but in view of the so-called third mission of higher education, this type of programmes can be considered part of continuing education.

2.7.3. Students in non-degree postgraduate programmes

According to the Act of 27 July 2005, the Law on Higher Education, non-degree postgraduate programmes are a form of education provided by HEIs and intended for applicants who have completed at least a first-cycle programme. Students are awarded a (non-degree) postgraduate qualification upon completion of a programme which lasts no shorter than 2 semesters, corresponding to at least 60 ECTS.
In the academic year 2014/2015, there were 434 HEIs in Poland, including 302 with a non-public status (Central Statistical Office, GUS). Any HEI may provide non-degree postgraduate programmes in the academic areas corresponding to at least one field of study in which it offers degree programmes. HEIs can also provide non-degree postgraduate programmes in other areas upon the consent of the minister responsible for higher education and consultation with the General Council for Science and Higher Education (Rada Główna Nauki i Szkolnictwa Wyższego).
In 2015, 151 555 students, with female students representing 72%, were following non-degree postgraduate programmes.

References:
Nowicki J., Wiśniewski P., 2015 – Uczymy się przez całe życie. Przewodnik po kształceniu ustawicznym. Wpjewódzki Urząd Pracy w Warszawie. Central Statistical Office, 2014

3. Advanced trainings in environmental sector in Poland

In Poland trainings in the area of environmental, nature and climate protection are provide by higher education institutions, centres for further trainings and natural persons conducting business activity. All training institutions are registered in the RIS database (see Chapter 2.7).

In 2016, 13,520 training institutions registered in the RIS offered 139,331 training courses in 30 areas. In 2016 a total of 5 633,766 people participated in training courses in 2016. In the area of environmental protection 283 training institutions offered 933 courses. In 2016, training institutions included in the RIS offered 86,755 courses leading to an examination. Training courses financed by the European Social Fund were provided by 3,016 institutions.

As a part of the Output 1 research the RIS database was searched. In April 2017 offered 765 training courses related to the environment, nature and climate protection. 141 of them were financed by the European Structural Found. In table 4.1 presented number of courses divided into areas.

Table 4.1. Number of training course in the RIS database (April 2017)

	Accounting, banking, insurance, investment analysis	Management and administration	Technique and technical articles trade (incl. power engineering, electrics, mechanics, metallurgy)	Mining and processing industry	Architecture and construction	**Environmental protection**	Transport services	Others
Number	1	4	25	1	9	**717**	1	7
Percentage	0,13%	0,5%	3,2%	0,1 %	1,1 %	**94 %**	0,13 %	0,9 %

The most numerus was trainings in the area of environmental protection. Topics like Environmental Protection, Environmental Auditor, Energy Auditor, Waste Management and Ecology make up the majority. This shows the great success and interest in these topics. Demand for specialized environmental knowledge in Poland is growing due to the growing environmental awareness of the public society. Also knowing the basic of environmental law is an essential part of the education of the management staff. Without knowledge about environmental requirements and the trends prevailing in it, it's difficult to make rational business decisions. This includes, for example, courses such as Waste Management where legal requirement dictated by European Commission oblige to implement waste management in closed loop (according to statement "0 waste for Europe" from 2014). Similar situation is observed in the case of courses for energetic auditors. In recent years demand for specialist in renewable energies sector rise in Poland (PV installers, energy advisers etc.). The market responds corresponds to a large number of courses in this field. The courses corresponds to the current market demand.

Most of this trainings are short term courses (form several to dozens of hours) provided mostly by private training institutions. The average cost of participation varies from 100 to 600 Euro. In the case of unemployed people existing courses, trainings do not seem to increase their ability to qualify for green professions due to the short duration. It's hard to train in a

such system and to meet the expectations of modern economy (lack of knowledge about the technology, no knowledge on reading projects, or familiarizing with the new equipment, services etc. In other hand it should be noted that in the case of the unemployed, even the minimum experience in a given occupation gives them a better chance of finding a job than in case of academic dropouts.

4. Structural interviews - summary

Within Output 1 MEERI PAS conducted 5 structured interviews: 1 with NGO representative, 1 with Employer and 3 with representatives of Educational Institutions.

The employer represents energy sector and has experience in the heating market since 20 years. As the company profile is closely linked to geothermal energy, heating issues and water supply the knowledge of employees is very crucial. Especially knowledge related to the aspects of environment, nature, and climate. Since the beginning company invest in new low emission technologies and infrastructure. Thanks to that implements the EU policy to reduce greenhouse gas emission. Entrepreneur employs highly qualified and experienced engineering and technical staff, additionally, the company is forced to improve the knowledge related to the legal acts or environmental requirements because of the statute of operating plant. So it is important to increase the staff knowledge in fields of Energetic Law, ISO, Building Law and Water Law. All these requirements cause that the employees must have the sufficient knowledge and abilities to problem-solving. This is the main reason why company encourage and allows employees to participate in appropriate training.

In the case of recruiting the new employees, the employer pointed that work experience and references from workplaces are more important than degrees (required at least secondary school diploma). The strategy used by the company during recruiting personnel is based mainly on job advertisements, recommendations, and free applications.

According to the employer in Poland, it is a demand for additional qualifications and competencies for the personnel. Most of the existing academic programmes do not meet market requirements. Science is not following politics and because of that companies have to perform additional training for employees. Currently, according to the employer, higher education do not prepare students for a specific job, in this case – mining. As the most important employer pointed out the lack of internships and lack of textbooks in national language (many foreign publications).

Interviews conducted among representatives of educational institutions showed the state of furthering education in respondents institutions. Offers provided in this institutions contain generally:

- post-graduate studies – for people who want to improve their skills, knowledge, and qualifications,
- courses and training (including industrial training) which are ending with a recognizable certificate.

Offer is generally addressed to all groups, but additional requirements for participation in courses are specified in each bid. At least 10% in all offered topics are related to environmental, nature, and climate protection (e.g. Waste management, Environmental Management, Sustainable development, RES). The most popular by the participants and employers offers are short training or specific courses, especially if they are referring to the new regulations, standards that are required by employers or by Law (certificates). Employers additionally pay attention to whether the acquired skills can be passed on to other employees.

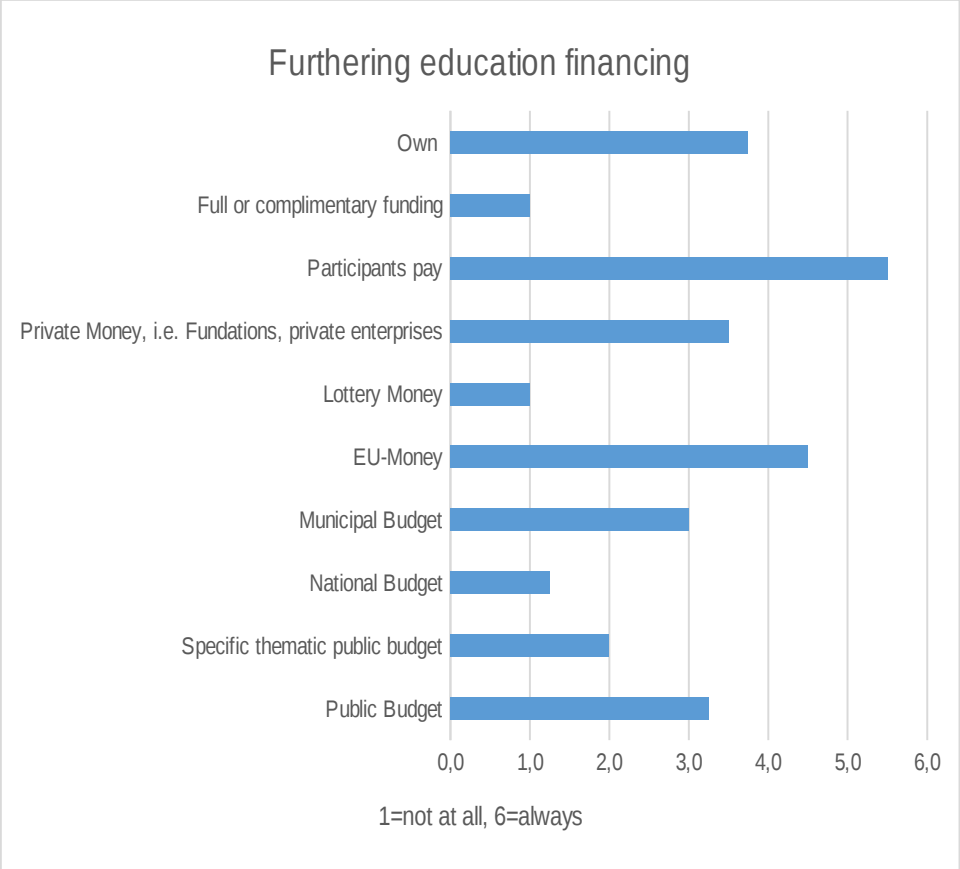


Figure 4.1. Further education financing in Poland

Figure 4.1 presents the ways of financing the furthering education in the respondent's institutions. Most are financed thanks to participants payment, by EU funds or other ways like for e.g. own funds. Some of the respondent's pointed also to such solutions like training vouchers (entrepreneur friendly tool for financing the training of employees. Vouchers has been designed for SMEs). During the process of qualifying the target group most important for institutions are formal degrees (especially technical degrees: master, engineer or bachelor), work experience confirmed by references from workplaces and knowledge update. All respondents indicated cross-sectional knowledge and abilities in addition to specific knowledge as a very important. Opinions on cross-sectional knowledge and abilities have been presented in Figure 4.2. Respondents showed that expectations of a rising number of open job position within "green", "sustainable" and "cross-sectional knowledge" in Poland are

very high. According to them the biggest impact on rising job position have political reasons, the minor extent has economic and ecological reasons.

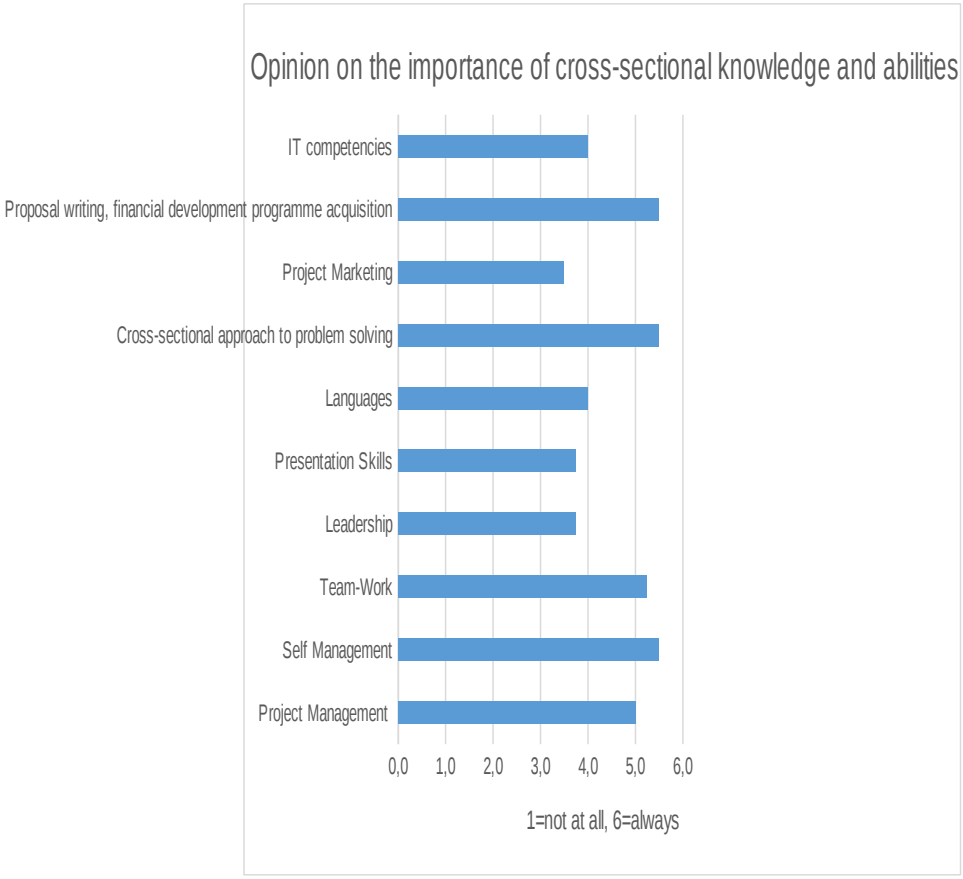


Figure 4.2. Opinion on the importance of cross-sectional knowledge and abilities in Poland

Currently, offers of further education in respondent institutions are varied, but most of them are ending with an official certificate e.g. Certified Auditor of Internal Environment Management System according to ISO 14001, Certificate EMAS, Energetic Auditor, Assistant Certification Environmental Management System issued by PCBC S.A., Internal Auditor Energy Management System ISO 50001. In addition, all post-graduate studies have to an end by exam. The duration of the furthering courses is varied, post-graduate studies are longer than one semester, courses or training usually takes 1-2 days. Only in one of the educational institutions internships are included in furthering courses (thanks to Programme POWER) but none of them are held abroad. The case of the interview with NGOs shows that it is very important to be a part of international networks because it gives the opportunity to take part in a course organized by those networks.

Each respondent also indicated that there is a great need for furthering education in the field of climate-, environmental- and nature protection. Goals that are very important for furthering education courses in respondents opinion are presented in Figure 4.3. According to one interlocutor, there is a major need to support education especially today, in an era of climate changes and environmental problems. That's why education should be introduced at lower

levels – for children. Cooperation of the lecturers with children should promote consumer awareness, engage in pro-social activities. Also, there should be as well collaboration with teachers and local governments. More conferences for public education and public awareness should be organized. Academics should go beyond the environmental science and government, straight to ordinary people.

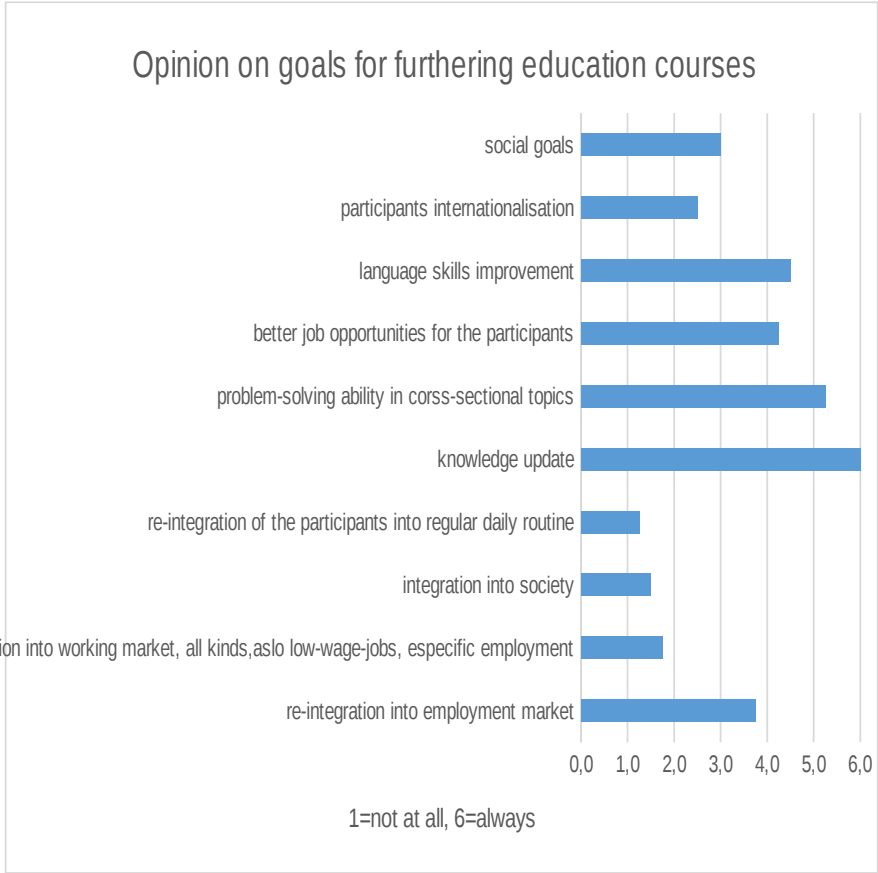


Figure 4.3. Opinion on goals for furthering education courses in Poland

Most common indicators used to measure the success of the furthering education courses are: participant satisfaction and following on from that rising number of course applications, formalized documents to describe competence improvement, access to the regular employment market. In the case of trainers qualifications the most important are work experience (even if compensating missing study or training degree), personality, and experience in a pedagogic field. According to that, there is a pressure on training the trainers as well (academic finance pedagogical training and courses e.g. Pedagogic study, Tutor certificate) to obtain the new training skills.

V. Green Jobs Offer and Education in Romania

Presented by Universitatea din Oradea, Romania

Current Version, August 2018
Developed and funded within the framework of the ERASMUS+-Project of the European Union: „European Educational Concept in Environmental- Nature- and Climate Protection to safeguard a cross border sustainable development - EUBILD UNAKLIM“

1. Green Jobs Offer in Romania

The top is made taking into consideration the market share, number of registered companies, posted announces in the last 60 days, number of registered CV on the database and the month traffic of the website.

The most important (negative) element is that there is no specific “green job” position mentioned on the top ranking.

Rank	Website	Covered area	Job Domains	Rating site
-	www.bestjobs.ro	Romania+abroad	Jobs in all domains	▼▼▼▼▼
-	www.ejobs.ro	Romania+abroad	Jobs in all domains	▼▼▼▼▼
-	www.myjob.ro	Romania+abroad	Jobs in all domains	▼▼▼▼
-	www.hipo.ro	Romania+abroad	Jobs in all domains	▼▼▼▼
-	www.mojob.ro	Romania+abroad	Jobs in all domains	▼▼▼▼
-	www.jobsinro.ro	Romania +abroad	Jobs in all domains	▼▼▼
-	www.joobs.ro	Romania+abroad	IT	▼▼▼
-	www.bankingjobs.ro	Romania	Banking	▼▼▼
-	www.sibiujobs.ro	Sibiu county+ abroad	Jobs in all domains	▼▼▼
-	www.tjobs.ro	Abroad	Jobs in all domains	▼▼▼
-	ofertelocuridemunca.ro	Romania+abroad	Jobs in all domains	▼▼▼
-	www.job-studenti.ro	Romania+abroad	Jobs in all domains	▼▼▼
-	www.work-travel.ro	Romania+abroad	Jobs in all domains	▼▼▼

-	www.jobfest.ro	Romania+abroad	Jobs in all domains	▼▼▼
-	www.jobresthotel.com	Romania+abroad	Hotel, Restaurants	▼▼▼
-	www.jobsRomania.ro	Romania+abroad	Jobs in all domains	▼▼▼
-	www.itjobs.ro	Romania	IT	▼▼▼
-	www.jobs4all.ro	Romania	IT	▼▼▼
-	www.jobinmarketing.ro	Romania	Marketing	▼▼▼
-	www.finjob.ro	Romania	banking	▼▼
-	www.adjobs.ro	Romania	Media, PR Publicity, Marketing	▼▼
-	www.bizoojobs.ro	Romania+abroad	Jobs in all domains	▼▼
-	www.jobbank.ro	Romania+abroad	Jobs in all domains	▼▼
-	www.jobbing.ro	Romania+abroad	Jobs in all domains	▼▼
-	Romania.jobs.com	Romania+abroad	Jobs in all domains	▼▼
-	contracte-munca.ro	Japon	Dancers	▼▼
-	www.cvonline.ro	Czech Republic, Estonia, Latvia, Lithuania, Slovakia	Jobs in all domains	▼▼
-	www.initalia.ro	Italy	Medical	▼▼
-	www.cvjobs.ro	Romania+abroad	Jobs in all domains	▼▼
-	www.jobavantaj.ro	Romania	Jobs in all domains	▼▼
-	www.jobmania.ro	Romania	Jobs in all domains	▼▼
-	www.munca.ro	Romania+abroad	Jobs in all domains	▼▼
-	www.jobsbacau.ro	Bacau county	Jobs in all domains	▼▼
-	www.studentcv.ro	Romania+abroad	Jobs in all domains	▼▼

-	www.superjoburi.ro	Romania+abroad	Jobs in all domains	▼▼
-	www.yourjobs.ro	Romania+abroad	Jobs in all domains	▼
-	www.job.ro	Romania+abroad	Jobs in all domains	▼
-	www.onlinejobs.ro	Romania+abroad	Jobs in all domains	▼
-	www.mini-jobs.ro	Romania	Jobs in all domains	▼
-	www.recrutam.ro	Romania	Jobs in all domains	▼
-	studentadventure.ro	U.S.A. + U.K.	Jobs in all domains	▼
-	www.summerjob.ro	Romania	Jobs in all domains	▼
-	www.angajat.ro	Romania+abroad	Jobs in all domains	▼
-	www.quickjobs.ro	Romania+abroad	Jobs in all domains	▼
-	www.anofm.ro	Romania+abroad	Jobs in all domains	▼▼▼
-	www.plusjobs.ro	Romania+abroad	Jobs in all domains	▼
-	www.yourjob.ro	Romania+abroad	Jobs in all domains	▼
-	www.italiajob.com	Italy	Jobs in all domains	▼
-	www.careerbuilder.ro	Romania	Jobs in all domains	▼
-	www.bursamuncii.ro	Romania	Jobs in all domains	▼
-	www.recrutareonline.ro	Romania+abroad	Jobs in all domains	▼
-	www.interjobs.ro	Abroad	Jobs in all domains	▼▼▼
-	www.locuridemunca.ro	Romania+abroad	Jobs in all domains	▼▼▼
-	www.1001-locuridemunca.ro	Romania	Jobs in all domains	▼
-	www.mondojob.ro	Brasov, Iasi counties	Jobs in all domains	▼▼
-	www.angajatorul.com	Romania	Jobs in all domains	▼▼

-	www.abc-help.ro	Bucharest	Jobs in all domains	▼▼
-	www.hr-recruitment.ro	Romania+abroad	Jobs in all domains	▼
-	MuncaInStrainatate	Abroad	Jobs in all domains	▼▼
-	www.performhr.ro	Romania+abroad	Jobs in all domains	▼▼
-	www.joboscop.ro	Romania+abroad	Jobs in all domains	▼
	LEGEND: ▼▼▼▼▼ – LIDER – more than 1 000 000 registered CV, over 1 000 000 Euro business value (cifra de afaceri) ▼▼▼▼ – COMPETITOR – growing reach, constant internet traffic, specialized services ▼▼▼ – NICHE – Strong on certain domains, specific services ▼▼ – MEDIUM – small business value (cifra de afaceri), medium number of registrered companies ▼ – SMALL – site of recruiting agency, limited number of anjnounces, not up-to-date website			

(source, http://hr.businesslive.ro/top-50-site-uri-de-job-uri-din-romania/)

The search was made using two levels of search: the first one was the search of national database and the second level was the search of the offer for each county.

At county level (there are 42 counties in Romania) the job offer is structured in two main directions. The first direction is represented by job offers posted at the website of County Agency of Labour Force Occupation, which are state companies, the main activity is collecting offers from different companies (state or private). The second direction is represented by job offers from private media (online, media a.s.o.) which also provide job offers from different economy sectors.

Fig. 1 The web portal of National Agency of Labour Force Occupation

According To National Statistical Institute and Eurostat "*the number of population occupied within the sector of environmental goods and services",* calculated on the basis of "*total number of full time job employes directly involved in environmental goods, services and technologies*" was 117 345 persons (in 2015). The sectorial distribution of these employes was the following:

Sector	Number of employes
Water capturing, treatment and distribution	36.424
Waste collection, treatment and recycling	26.311
Engine, machine and tools production	7849
Thermic and electric energy production and distribution (including natural gas distribution)	6321
Public administration and defense	5680

Source of data, National Statistical Institute, Eurostat, 2015

According to European Occupation Observatory the ecological sectors, including green jobs, could represent 25% of the overall jobs in Romania. The most number of green jobs could be in agriculture and energy production (4.7%) which in absolute values could be 376.000 employed persons.

http://locuridemuncaverzi.ro/articole/stare-actuala/studiu-la-nivel-national-cu-privire-la-situatia-actuala-in-ceea-ce-priveste-locurile-de-munca-verzi-in-romania

The database search for both national and county levels shows a following distribution of "green job" offer.

Sector/Domain	Job Type	Nr.
Construction and architecture	Revitalization specialist (1), Environmental management and management specialist (2), Investment manager (1), Power Specialist (2), Infrastructure maintenance specialist (1), Construction site manager (1), sanitary works Engineer(1)	**9**
Education and communication	Ecology teacher 5 Environment related Project managers 2	**3**
Energy	Energy auditor (10), Technical specialist (4), Technical Analyst (3), Energy Efficiency Expert (4), Energy Customer Advisor (5), Investment Manager (4), RES Commercial adviser (4), RES Specialist (4), Process Technician (2), Product Manager (2), Key project Management Specialist (1) Construction engineer (1) Environmental Engineer	**43**
Soil & ground	Environmental Specialist (2), Inspector (1), Laboratory analysts (1)	**4**
Waste management	Environment analyst 7, Recycling engineer (1), Environmental Specialist (3),	**17**

	Sales Representative (2), Environmental advocate (1) Specialist in Waste Management (3) Composting manager (1)	
Spatial planning	Environmental Specialist (3), Laboratory Specialist (1), Spatial development specialist (2)	**6**
Air and climate	Environmental Monitoring Specialist (2), Environmental Inspector (2), Manager of Projects in the Climate and Energy section (1), Laboratory specialist (1)	**6**
Industry and engineering	Electrical Installation Designer / Electrician (2) Specialist in the laboratory (5), Laboratory analyst (3), Process Engineer (5), Production Manager (6), Employee for Health and Safety (3), Environmental Protection and Chemicals (4)	**26**
Agriculture	Inspector (3), Soil lecturer (1)	**4**
Risk (Inspector for the environment)	Environmental Specialist (2), Specialist in Nuclear Safety Department (1), Laboratory analyst (1)	**4**
Natural environment, biodiversity	Specialist (5), Laboratory Assistant (2), Inspector (2)	**9**
Water	Environmental Specialist (5), Project Manager (4), Sales Representative (4), Business management (3)	**16**
Transport	Key Project Management Specialist (1)	**1**
Business management	Specialist in Sales Support (6), Regional manager (2), Technical sales advisor (4),	**23**

	Product Manager (5), Employee for Health and Safety (1), Specialist in Renewable Energy (3), Photovoltaic consultant (2),	
Environmental management	Environmental Specialist (14), Environmental Inspector (8), Laboratory specialist (6), Laboratory analysts (6),	**44**
	TOTAL	**215**

Currently among all green job offers the most numerous were in the environmental management (21%) energy sector (20%), in industry and engineering sector (12%) and business management (11%). At present, the greatest demand on the market is on: environmental specialists (14 offers) and energy auditors (10 offers).

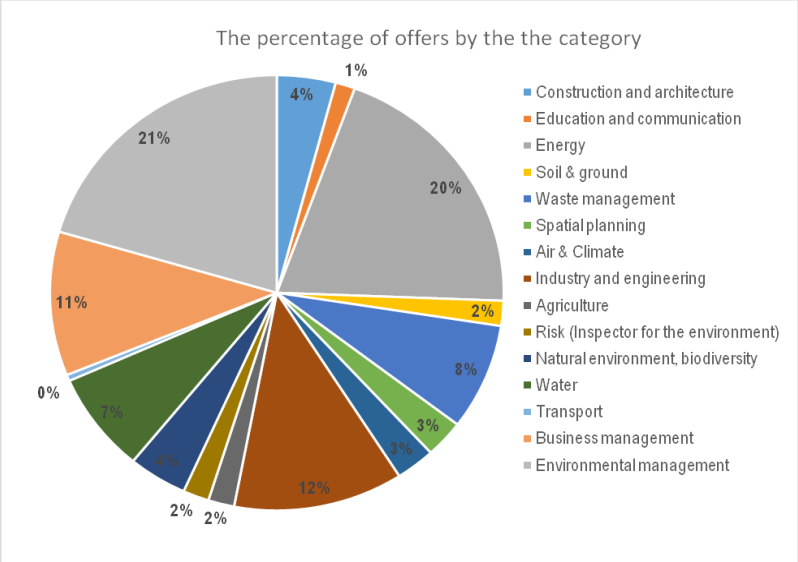


Fig. 1. The percentage of offers by the category

Challenges of the topic

Starting from the current situation, the classification made by National Occupation Classifications tried to made a revision of the occupations according to International Standards of Occupations (ISCO 08). This revision was made using a "cross check" with following items:

- Using key-words such as "green", "environment", "ecologic", "wastes", "water treatment"
- Description of the occupations

- Comparison with the occupational standards which are already in use

There are also occupations which are not directly related to the word “green” but are indirectly related to the environment or management of the resources. For ex. teachers who teaches topics or modules such as “environment protection” or “sustainable use of the resources” could also be included, in some cases, in the category of green jobs.

Its very difficult, according to the present state of organization of job offer, to evaluate correctly the green job offer. The most difficult part is to accept or not some positions to be “green” just because the domain could be considered being directly related to environment (energy, hydroelectricity, solar energy a.s.o.) but the offer is with no direct connection with the environmental element.

2. Education offer

2.1. Introduction

Education is an essential tool for achieving sustainable development and solving environmental problems. Environmental education is a process that recognizes the value and clarifies many concepts in order to develop skills and attitudes necessary to understand and appreciate the relationships between man, culture and the environment. Environmental education includes decision-making practice and the formulation of a code of conduct on environmental quality (Bălăceanu 2013).

In the education system, education is dominated by a mechanical paradigm. If you attach importance to education for sustainability content, education attaches importance to sustainable values and skills acquired, promoting learning for change. In most schools in Romania, the main difficulty is the transition from education to the multidisciplinary cross-disciplinary education for sustainability or sustainable education (Szitar 2014). Therefore, the main problem to be solved is to integrate all these components into school curricula, overcoming the barriers that may arise at different levels (individual, social, institutional). Environmental education is an ongoing process. Despite its objectives, the means of implementing it are still unsatisfactory, as the impact of education is not sustainable.

2.2. Stages of the education system

The organization framework of the present Romanian education system is consisted of different stages.

- 2.1 Early education (0—6 years)
- 2.2 Primary education (ISCED 1)
- 2.3 Secondary lower education (ISCED 2) or secondary education
- 2.4 The secondary superior education (ISCED 3)
- 2.5 The non-university tertiary education (ISCED 4)
- 2.6 The higher education (ISCED 5-8)
- **2.7 Adult education**

2.3. Legal frame of teaching system

The Law of National Education 1/2011 provides the general and integrating regulatory framework for lifelong learning in Romania.

Lifelong Learning means all learning activities carried out by every person throughout life in formal, non-formal and informal contexts for the purpose of acquiring or developing competences from a multiple perspective: personal, civic, social or occupational. Lifelong learning includes early childhood education and care, school education, higher education, adult education and continuous training. The main goals of lifelong learning are concerned with the full development of a person and the sustainable development of society. Lifelong learning is focused on the acquisition and development of key competences and of competences specific to an area of activity or to a qualification.

In accordance with the specific legislation on adult training, adults are defined as people at an age allowing them to get involved in work relations and can participate in training programmes under the law. Adults have equal rights of access to training, without discrimination based on criteria related to age, gender, race and ethnic origin, political and religious membership. The Law on equal opportunities for women and men (Law 202/2002) underlines the equal right for both genders to participate in training programmes, as well as to benefit from professional counselling and guidance. The access of adults, employees or people looking for a job (defined in compliance with Law 76/2002) to training is a right guaranteed by the Code of Labour (Law 53/2003).

2.4. Adult education and training

The state carries out its responsibilities in the area of lifelong learning through the Ministry of National Education and Scientific Research, the Parliament, the Government, the Ministry of Labour, Family, Social Protection and the Elderly, the Ministry of Culture and National Patrimony, the Ministry of Health, as well as the Ministry of Administration and the Interior.

The Law 167/2013 that changes and completes the Government Decision 129/2000 on adult training states that adult training ending with a certificate of qualification or a certificate of completion with national recognition and/or a certificate of professional competence is an activity of general interest and a part of the national education and training system.

The responsabilities of organizing the lifelong and adult learning is the responsibility of the following national institutions:

- Ministry of National Education and Scientific Research
- The Ministry of Labour, Family, Social Protection and the Elderly
- The Ministry of Culture
- The National Qualifications Authority
- The Community Centres for Lifelong Learning

2.4.1 Developments and Current Policy Priorities

Elaboration and adoption of the National Qualification Framework – Government Decision no. 918/2013 and Government Decision no. 567/ 2015

Elaboration and adoption of the National Strategy for Lifelong Learning – Government Decision - 418/ June 2015

2.4.2 Main providers

According to the Law of Education no.1/2011, formal education is provided by the following institutions or organisations:

- education and training centres in ministries or local public authorities,

- public and private providers of education and training certified / accredited under the law,
- governmental or non-governmental organizations that offer programs authorized under law,
- employers who offer their own training programs employees.

Non-formal adult learning may be provided by the following organisations: *workplace, cultural institutions such as museums, theatres, cultural centres, libraries, documentation centres, cinemas, cultural centres, professional and cultural associations, trade unions, NGOs*.

The Community Centres for Lifelong Learning should provide both formal and non-formal training programmes, as well as to encourage and organise activities that facilitate informal learning.

2.4.3 Main type of provisions

Funding lifelong learning (including adult learning) is achieved through public and private funds based on the public-private partnership, through funding and co-financing from employers, non-governmental organizations through grants from European programmes, through lifelong learning accounts and through the contribution of the beneficiaries.

Regarding *lifelong learning accounts*, according to the art. 356 of the Law no.1/2011, Law of National Education, the state supports the right to lifelong learning education by according a sum equivalent of 500 Euro to every Romanian child, when she/ he is born. The sum is given with educational scope for the benefit of the holder from the state budget, through the budget of the Ministry of Labor, Family and Social Protection. These benefits are not yet applicable in 2016.

Through the *National Plan of Lifelong Learning*, the National Agency for Labor Employment includes in its free lifelong learning programmes:

- unemployed persons (the most part of the trainees)
- persons in detention
- persons from other categories:
    - persons who return to work after the parental leave
    - persons who return to work after recovery, after disability retirement

- persons from rural areas

- persons who benefit of free services of evaluation of the competencies acquired in other forms then those formal
- persons who benefit of apprenticeship.

The persons who do not benefit of free services are included at courses organized by the Regional Centers of Lifelong Learning.

Adults who participate in education and training programmes that are not funded from other sources (employers' funds, the unemployment insurance budget, sponsorship, donations and other external sources) must pay for the cost of the programme. The costs are determined by the education and training providers so as to cover expenses incurred by the implementation of the programmes.

Publicly subsidised provision is focusing on the following target groups:

- young people and adults who have not completed compulsory education;
- young people who have left education before obtaining a professional qualification and are not enrolled in any form of education or training;
- graduates of non-professional education or those who have graduated high school or higher education qualifications in redundant fields or irrelevant for the labour market;
- adults with special educational needs;
- young people and adults who return after a period of work abroad;
- young people and adults residents in economically and socially disadvantaged communities;
- employees over 40 with low education, residents in urban and rural areas, low skilled or unskilled.

2.4.4 Validation of Non-formal and Informal Learning

Adults with professional competences acquired in other ways than the formal ones (non-formal and informal) can be assessed in the competence assessment centres authorised by the National Authority for Qualifications.

The procedure for the assessment and the certification of professional competences acquired in other ways than the formal ones, approved by Order of the Minister of Education and Research and of the Minister of Labour, Social Solidarity and Family 4543/468/2004, with its subsequent changes and completions, contains both the description of the authorisation

process for the assessment centres, and the process for the assessment and certification of professional competences.

The validation process is highly focused on qualifications, mostly VET qualifications. The validation process has the following characteristics:

- It should be voluntary;
- It should be carried out in accordance with established occupational standards; the evidence of professional competences should be gathered through the application of different methods of evaluation applied in various contexts and on different occasions;
- The assessment should be independent of formal professional education and training, meaning that it can take place outside a formal education or training programme
- The assessment of each unit of competence should conclude with a result for the candidate - "*competent*" or "*not yet competent"*.

Validation of informal and non-formal learning has been addressed at policy level by a set of new legal and institutional frameworks generated by the new National Law of Education no. 1/2011. The Law on National Education adopted in 2011 emphasises the role of validation of informal and non-formal learning in the context of a broader lifelong learning perspective, based on a learning outcomes approach. The law is promoting a general approach to validation and there are no targeted measures for a specific sector, with the exception of validation of the learning outcomes acquired by teaching staff in non-formal and informal contexts. The Ministry of National Education and Scientific Research has approved the methodology for validation, as well as the methodology to convert these learning outcomes into equivalent credits for continuous professional development of teachers.

In December 2013, Romania adopted the National Qualifications Framework (NQF) by the Government Decision no. 918/2013. The NQF has 8 levels of qualifications that can be acquired through the formal education and training system in Romania and by recognition of learning outcomes acquired through non-formal and informal learning. At the moment, the methodology allows the validation only for level 4 or lower to obtain a qualification through the validation of non-formal and informal learning. Validation is still linked with occupational standards and is not yet operational with regards to formal education.

2.4.5 Funding

Adult vocational training programmes are financed from the following sources:

- The employers' own funds
- The unemployment insurance budget
- Grant funds from European programmes (Operational Programme Human Capital 2014 - 2020)
- Sponsorship, donations, external sources
- Fees paid by individuals participating in training programs.

Commercial companies, national companies, co-operative enterprises, state-owned monopolies and other institutions may spend money for the vocational training of their employees, which represents deducted expenses from the profit taxes or from the income taxes.

The institutions that have incomes that are not coming from the state budget may spend funds for the vocational training of their employees out of these incomes. The institutions financed from the state budget or by the local budgets may spend funds for the vocational training of their employees out of budget sources or out of other sources, according with their own approved budgets.

Fees paid by learners

Adults who participate in education and training programmes that are not funded from other sources (employers' funds, the unemployment insurance budget, sponsorship, donations and other external sources) must pay for the cost of the programme. The costs are determined by the education and training providers so as to cover expenses incurred by the implementation of the programmes.

Financial support for Adult Learners

For the period when the employees participate in training programs financed by their employers, the employees receive their wages as stated in the individual contract for the normal working program. The employers have to support the travel expenses for the participation in a training program, if that program takes place in another locality than the one where the employee works. The employees that participate in training programs for at least 3 months when requested by the employers will sign codicils to their individual work contracts, stipulating rights and obligations after graduation.

Adult training programmes are provided free of charge for the following categories of people:

- People looking for a job
- People who have not found a job after graduating from an educational institution or after completing their military service
- People who obtained the statute of refugee or other form of international protection
- Foreigners or stateless people who worked in Romania or who obtained any income in Romania, under the law
- People who have not found a job after repatriation or detention
- People in detention who have at most 9 months until the final day of their punishment.

Training programmes are provided free of charge at an employee's request, with the employer's agreement, or at the employer's request, for people who return to work after:

- legal maternity leave,
- military service and,
- in case of recovery of work ability after retirement for invalidity.

The rights to training of people looking for a job are established in the Law 76/2002 on the system of unemployment insurance and stimulation of employment, with its subsequent changes and completions. Some of these rights are the following:

- To benefit of all the theoretical and practical training all through the duration of the programme;
- To benefit of specific supplies and learning aids as well as textbooks;
- To benefit of all necessary protection equipment during the programme;
- To benefit of free of charge transportation from their homes to the training provider on local public transportation or, as the case may be, to benefit of all the facilities provided by the law if the training provider is in another locality. In case that the distance of the travel is more than 50 km, the people concerned are entitled, during the training period, to benefit from accommodation and a sum of money to cover meals at the extent provided by the regulations in force for employees of public institutions;
- To benefit from medical consultation, medical analyses and necessary tests for attending the training programme.

In order to prevent unemployment through the improvement and diversification of the employees' professional competences, employers are guaranteed by the law specific financial incentives for organising vocational training of their employees. Financial incentives are also granted to employers that apply active measures to reduce unemployment and facilitate the vocational training of their employees.

2.5. The Online free courses

In the last 2-3 years the number of sites which provides free online courses virtually explodes.

The question which arises from this evolution tendency is if these courses are or are not more practical than the public teaching system with the help of MOOC (MOOC = massive open online course), mainly because of the flexibility of this alternative system. The most popular these sites, available on Romania are listed below.

Tab. 1 List of sites available on Romanian portals which offers free environmental related courses

⇒ Udemy.org	⇒ Self Growth
⇒ Coursera	⇒ Academy Cube
⇒ Khan Academy	⇒ Open SAP
⇒ Duolingo	⇒ RSA
⇒ LiveMocha	⇒ The Higher Education Academy Resources Center
⇒ Stanford University Ecorner	⇒ EdX.org
⇒ Udacity–	⇒ Ureddit
⇒ MIT (Massachusetts Institute of Technology Video)	⇒ Iversity
⇒ W3Schools.com	⇒ 99percent
⇒ CodeAcademy.com	⇒ Jorum
⇒ Code.org	⇒ Berkeley University
⇒ Open Learn University	⇒ Draw Space
⇒ Teaching Tree	⇒ Money 101

⇒ Ted Ed ⇒ TED Talks ⇒ Entrepreneur Startup Guides ⇒ CodeAvengers ⇒ Watch Mojo ⇒ Open Yale Courses ⇒ Learni.st ⇒ BBC Learning ⇒ Mozilla Developer Network ⇒ HTML5 Rocks ⇒ Academic Earth	⇒ Alison ⇒ Memrise ⇒ Sophia ⇒ NovoEd ⇒ European Schoolnet Academy ⇒ Open 2 Study ⇒ Complexity Explorer ⇒ Future Learn ⇒ France Universite Numerique

2.6. Romanian Institute for Adult Education – IREA

IREA is a pedagogic research institute in the field of adult and continuing education, aiming to provide scientific and methodological support for all adult education institutions in Romania and to establish the link between the academics and practitioners in adult learning area. The overall research aim is to improve the quality of the education for adults, and to identify ways to enhance their ongoing participation in learning, and also for strengthening the lifelong learning dimension both at individual and institutional level.

The main research directions within IREA are:

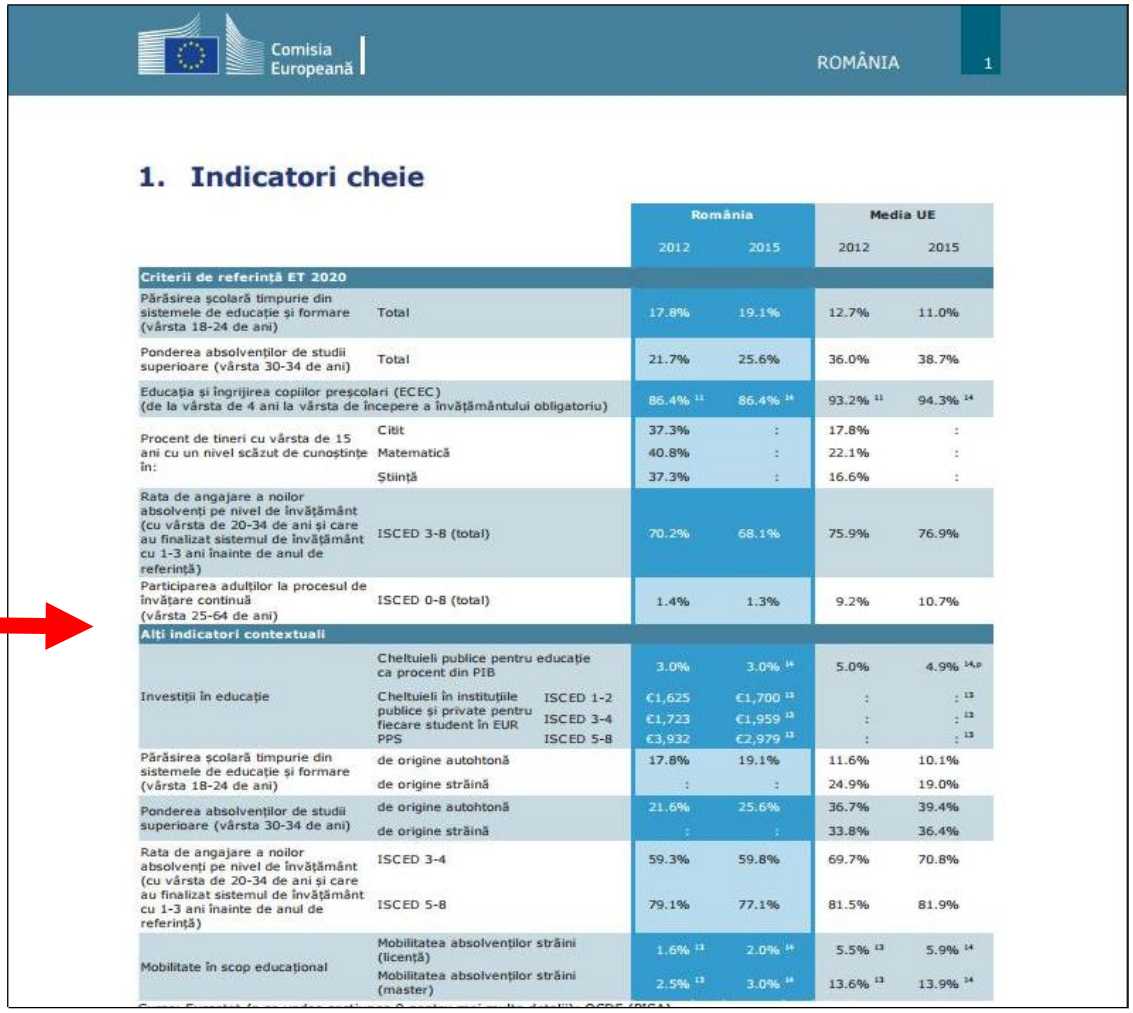
- adult basic education;
- workplace learning and key competencies;
- professionalisation of adult educators
- social inclusion and active citizenship through education.
- impact of new media on adult learning
- inter-generational learning and active aging;
- developing the concept for different support services offered to adult learners – e.g. counselling in adult education;
- innovative didactics and delivery

IREA was or is involved in European projects with focus on the adult basic skills such as “Learn in Green”: New approach to develop key competences through environment proposes integrated approaches which refer to sustainable development, with concern for the development of ecological behaviour and especially for key competencies for social and professional integration of low-skilled and low-qualified adults.

2.7. National registry of adult and long-life learning programs

is sub-ordonated to the Ministry of Education and comprises a total number of 665 officially recognized educational supplier which are allowed to activate in the field of education. These entities can be universities (both state and private), county school inspectorates, associations, NGO-s.

The majority of adult education and training in the EU-28 is non-formal education and training, in other words, outside of formal institutions of schools, colleges and universities. This is not surprising given that the age criterion for the AES is persons of working age (25–64 years-old), when most people have already completed their formal studies.



Comisia Europeană

ROMÂNIA 1

1. Indicatori cheie

			România 2012	România 2015	Media UE 2012	Media UE 2015
Criterii de referință ET 2020						
Părăsirea școlară timpurie din sistemele de educație și formare (vârsta 18-24 de ani)	Total		17.8%	19.1%	12.7%	11.0%
Ponderea absolvenților de studii superioare (vârsta 30-34 de ani)	Total		21.7%	25.6%	36.0%	38.7%
Educația și îngrijirea copiilor preșcolari (ECEC) (de la vârsta de 4 ani la vârsta de începere a învățământului obligatoriu)			86.4% [11]	86.4% [14]	93.2% [11]	94.3% [14]
Procent de tineri cu vârsta de 15 ani cu un nivel scăzut de cunoștințe în:	Citit		37.3%	:	17.8%	:
	Matematică		40.8%	:	22.1%	:
	Știință		37.3%	:	16.6%	:
Rata de angajare a noilor absolvenți pe nivel de învățământ (cu vârsta de 20-34 de ani și care au finalizat sistemul de învățământ cu 1-3 ani înainte de anul de referință)	ISCED 3-8 (total)		70.2%	68.1%	75.9%	76.9%
Participarea adulților la procesul de învățare continuă (vârsta 25-64 de ani)	ISCED 0-8 (total)		1.4%	1.3%	9.2%	10.7%
Alți indicatori contextuali						
Investiții în educație	Cheltuieli publice pentru educație ca procent din PIB		3.0%	3.0% [14]	5.0%	4.9% [14,p]
	Cheltuieli în instituțiile publice și private pentru fiecare student în EUR PPS	ISCED 1-2	€1,625	€1,700 [13]	:	: [13]
		ISCED 3-4	€1,723	€1,959 [13]	:	: [13]
		ISCED 5-8	€3,932	€2,979 [13]	:	: [13]
Părăsirea școlară timpurie din sistemele de educație și formare (vârsta 18-24 de ani)	de origine autohtonă		17.8%	19.1%	11.6%	10.1%
	de origine străină		:	:	24.9%	19.0%
Ponderea absolvenților de studii superioare (vârsta 30-34 de ani)	de origine autohtonă		21.6%	25.6%	36.7%	39.4%
	de origine străină		:	:	33.8%	36.4%
Rata de angajare a noilor absolvenți pe nivel de învățământ (cu vârsta de 20-34 de ani și care au finalizat sistemul de învățământ cu 1-3 ani înainte de anul de referință)	ISCED 3-4		59.3%	59.8%	69.7%	70.8%
	ISCED 5-8		79.1%	77.1%	81.5%	81.9%
Mobilitate în scop educațional	Mobilitatea absolvenților străini (licență)		1.6% [13]	2.0% [14]	5.5% [13]	5.9% [14]
	Mobilitatea absolvenților străini (master)		2.5% [13]	3.0% [14]	13.6% [13]	13.9% [14]

In 2011, more than one third (36.8 %) of the EU-28's adult working-age population participated in non-formal education and training, a share that was almost six times as high as the share of those who participated in formal education or training (6.2 %).

At national level just 1.6% of adults (between 25-64 years) were involved in an adult or long-life learning programme, compared to the European average which is 8.9% in 2011. Despite the huge gap, the Romanian tendency is a positive one, between 2007-2013 the average increased from 1.3% to 1.8%. The main goal up to 2020 is to increase the percentage of adults involved in different types of post-education forms to 10%.

A comparative analysis with other European states reveals that the rate of increase in Romania is one of the lowest in E.U., well under the minimum required by European Commission.

The **low participation rate** in such programmes can be explained by the existence of some malfunctions among employers, employees, education suppliers and AL and LLL

beneficiaries. These malfunctions makes these adult programmes unfeasible and unattractive, when employers, employees, education suppliers acts separately, independently, without interactions among them.

The education suppliers offers programmes and competences which does not reflects the need of the employers. Is is also true that the employers does not request from the education suppliers the type of education suitable for the economy.

2.8. The Romanian Higher Education system

Although the analysis of the MSc and BSc type of education **is not part of the project**, the reason why the following table was inserted into the report is given by the fact that the present state of Romanian legal base allows the Romanian universities to tune their educational offer (including further education, adult and long life learning) into the curricula according to the demand.

Within all the listed universities are organized **DEPARTMENTS OF TRAINING AND FURTHER EDUCATION.** Taking into account that many of the offered places within the universities are not subsidized, the interest of the universities is to tune the educational offer to market demand. One of the main activity of these departments is to organize further education programmes, which are open to all university graduate adults, and, having the environmental-related specializations the shift to such educational programmes is much easier (see Annex 1)

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10. https://www.edu.ro/sites/default/files/_fi%C8%99iere/Minister/2016/strategii/Strategie%20LLL%20(1).pdf
11. http://ec.europa.eu/eurostat/statistics-explained/index.php/Adult_learning_statistics_-_characteristics_of_education_and_training#Database

Annex 1.

Tab. 2 The list of environmental-related specializations within Romanian state universities

Specialization	Source (database)	Type of the institution Private/ University/ /educational institution Adult education Center
Landscape management	https://www.adservio.ro/ admitere/facultatea-de-horticultura-27	University of Agricultural Sciences and Husbandry "Ion Ionescu de la Brad", Iași, Facultay of Horticulture
Environmental Engineering	https://www.adservio.ro/ admitere/facultatea-de-horticultura-2	University of Agricultural Sciences and Husbandry "Ion Ionescu de la Brad", Iași, Facultay of Horticulture
Mountain Science	https://www.adservio.ro/admitere/facultatea-de-agricultura-	University of Agricultural Sciences and Husbandry "Ion Ionescu de la Brad", Iași, Facultay of Agriculture
Consumer and Environment protection	https://www.adservio.ro/admitere/facultatea-de-agricultura	University of Agricultural Sciences and Husbandry "Ion Ionescu de la Brad", Iași, Facultay of Agriculture
Engineering of sustainable rural development	https://www.adservio.ro/ admitere/facultatea-de-inginerie-331	"Vasile Alecsandri" University Bacau, Faculty of Engineering
Engineering and Environmental protection in industry		"Vasile Alecsandri" University Bacau, Faculty of Engineering
Chemical engineering/Engineering of anorganic substances and environmental protection	https://www.adservio.ro/admitere/facultatea-de-inginerie-chimica-si-protectia-mediului-33	"Gheorghe Asachi" Technical University, Iasi, Faculty of Chemical Engineering and Environmental Protection
Engineering and environmental 9protection in industry	https://www.adservio.ro/admitere/facultatea-de-inginerie-chimica-si-protectia-mediului-33	"Gheorghe Asachi" Technical University, Iasi, Faculty of Chemical Engineering and Environmental Protection
Engineering of nonpolluting procedures	http://www.ch.tuiasi.ro/042master.html	"Gheorghe Asachi" Technical University, Iasi, Faculty of Chemical Engineering and Environmental Protection
Management of the environment	http://www.ch.tuiasi.ro/042master.html	"Gheorghe Asachi" Technical University, Iasi, Faculty of Chemical Engineering and Environmental Protection
Environmental management and sustainable energy	http://www.ch.tuiasi.ro/042master.html	"Gheorghe Asachi" Technical University, Iasi, Faculty of Chemical Engineering and Environmental Protection
Environmental Engineering and environmental protection in agriculture	https://www.adservio.ro/admitere/facultatea-de-hidrotehnica-geodezie-si-ingineria-mediului-32	"Gheorghe Asachi" Technical University, Iasi, Faculty of Hydrotechnic, Geodesy and Environmental Engineering
Ecology and environmental protection	https://www.adservio.ro/admitere/facultatea-de-stiinte-364 http://www.ub.ro/stiinte	"Vasile Alecsandri" University, Faculty of Sciences, Bacau
Urban engineering and regional	http://civile.utcb.ro/	Technical University of Civil Engineering Bucharest,

development		Faculty of Civil, Industrial and Agricultural buildings
1 Sanitary Engineering and environmental protection	http://hidrotehnica.utcb.ro/isanitara.htm	Technical University of Civil Engineering Bucharest Faculty de Hydrotechnic
Urban Planning and Territorial Development	https://www.uauim.ro/en/departments/ut/	"Ion Mincu" University of Architecture and Urbanism, Bucharest
Environmental Science, Ecology Ecology	http://www.unibuc.ro/facultati/biologie/ http://www.bio.unibuc.ro/index.php?option=com_content&view=article&id=99&Itemid=86	University of Bucharest, Faculty of Biology
Environmental Science. Chemistry of the Environment	http://www.unibuc.ro/facultati/chimie/	University of Bucharest, Faculty of Chemistry
Science of the Environment	http://www.unibuc.ro/depts/geografie/meteorologie_si_hidrologie/index.php	University of Bucharest, Faculty of Geography
Environmental engineering Evaluation, monitoring and audit of the environment	http://193.231.35.9/7upload/oferta_educationala_ingineria_mediului_zi.pdf	"1 Decembrie 1918" University, Alba Iulia
Consumer and environment protection	http://uav.ro/ro/facultati/inginerie-alimentara-turism-si-protectia-mediului/protectia-consumatorului-si-a-mediului	"Aurel Vlaicu" University, Arad
Engineering and Environmental protection in industry (35/5)	https://www.utcluj.ro/admitere/licenta/ingineria-materialelor-si-a-mediului/	Technical University Cluj Napoca, Faculty of Materials Engineering and Environment
Science of the environment	https://www.utcluj.ro/admitere/licenta/cunbm-stiinte/	Technical University Cluj Napoca, Faculty of Science
Engineering of renewable energy systems	http://www.unitbv.ro/Programedestudii/Programedestudiidelicenta.aspx	"Transilvania" University Brasov, Faculty of Industrial engineering
Transport security and interactions with environment	http://www.unitbv.ro/Portals/0/Programe%20de%20studii/Master/IM_master_SRTIM_RO.pdf	"Transilvania" University Brasov, Faculty of Industrial engineering
Product design for sustainable development and environmental protection	http://www.unitbv.ro/Portals/0/Programe%20de%20studii/Master/DPM_master_DPDD_RO.pdf	"Transilvania" University Brasov, Faculty of Industrial engineering
ECO agricultural and food biotechnologies	http://www.unitbv.ro/Programedestudii/Programedestudiidemaster.aspx	"Transilvania" University Brasov, Faculty of Industrial engineering
Energy efficiency in built environment	http://www.unitbv.ro/Programedestudii/Programedestudiidemaster.aspx	"Transilvania" University Brasov, Faculty of Industrial engineering
Engineering of waste use	http://www.unitbv.ro/Portals/0/Programe%20de%20studii/Licenta/DPM_licenta_IVD_RO.pdf	"Transilvania" University Brasov, Faculty of Environmental engineering
Engineering and Environmental protection in industry	http://www.unitbv.ro/Portals/0/Programe%20de%20studii/Licenta/DPM_licenta_IVD_RO.pdf	"Transilvania" University Brasov, Faculty of Environmental engineering
Motors and environment	http://www.unitbv.ro/Portals/0/Programe%20de%20studii/Master%20IFR/IM_master_AM_FR_RO.pdf	"Transilvania" University Brasov, Faculty of Engineering Sciences
Environmental engineering	http://agricultura.usamvcluj.ro/index.php/programe-de-studiu/licenta	University of Agricultural Sciences and Veterinary Medicine, Faculty of Agriculture
Organic agriculture Management of natural agro-touristic resources Agriculture, climat changes and food safety	http://agricultura.usamvcluj.ro/index.php/programe-de-studiu/master	University of Agricultural Sciences and Veterinary Medicine, Faculty of Agriculture
Engineering of anorganic substances	http://www.ubbcluj.ro/ro/programe_academice/licenta/	"Babes Bolyai" University, Cluj Napoca, Faculty of

and environmental protection	#chimie_si_inginerie_chimica	Chemistry and Chemical Engineering
Chemical control of environment quality	http://www.ubbcluj.ro/ro/programe_academice/masterat/#chimie_si_inginerie_chimica	"Babes Bolyai" University, Cluj Napoca, Faculty of Chemistry and Chemical Engineering
Engineering of material and environment protection	http://www.ubbcluj.ro/ro/programe_academice/masterat/#chimie_si_inginerie_chimica	"Babes Bolyai" University, Cluj Napoca, Faculty of Chemistry and Chemical Engineering
Ecology and environmental protection	http://www.ubbcluj.ro/ro/programe_academice/licenta/#biologie_si_geologie	"Babes Bolyai" University, Cluj Napoca, Faculty of Biology and Geology
Industrial biotechnologies	http://www.ubbcluj.ro/ro/programe_academice/licenta/#biologie_si_geologie	"Babes Bolyai" University, Cluj Napoca, Faculty of Biology and Geology
Cultural ecology	http://www.ubbcluj.ro/ro/programe_academice/masterat/#biologie_si_geologie	"Babes Bolyai" University, Cluj Napoca, Faculty of Biology and Geology
Use and protection of biological resources	http://www.ubbcluj.ro/ro/programe_academice/masterat/#biologie_si_geologie	"Babes Bolyai" University, Cluj Napoca, Faculty of Biology and Geology
Environmental geography	http://www.ubbcluj.ro/ro/programe_academice/licenta/#geografie	"Babes Bolyai" University, Cluj Napoca, Faculty of Geography
Hydrology, Meteorology	http://www.ubbcluj.ro/ro/programe_academice/licenta/#geografie	"Babes Bolyai" University, Cluj Napoca, Faculty of Geography
Ecotourism and sustainable development	http://www.ubbcluj.ro/ro/programe_academice/masterat/#geografie	"Babes Bolyai" University, Cluj Napoca, Faculty of Geography
Assessment of resources and sustainable territorial development	http://www.ubbcluj.ro/ro/programe_academice/masterat/#geografie	"Babes Bolyai" University, Cluj Napoca, Faculty of Geography
Resources and risks within hydro-atmosphere environment	http://www.ubbcluj.ro/ro/programe_academice/masterat/#geografie	"Babes Bolyai" University, Cluj Napoca, Faculty of Geography
Environmental engineering	http://www.ubbcluj.ro/ro/programe_academice/licenta/#stiinta_si_ingineria_mediului	"Babes Bolyai" University, Cluj Napoca, Faculty of Science and Environmental Engineering
Engineering of biotechnical and ecological systems	http://www.ubbcluj.ro/ro/programe_academice/licenta/#stiinta_si_ingineria_mediului	"Babes Bolyai" University, Cluj Napoca, Faculty of Science and Environmental Engineering
Geography of the environment	http://www.ubbcluj.ro/ro/programe_academice/licenta/#stiinta_si_ingineria_mediului	"Babes Bolyai" University, Cluj Napoca, Faculty of Science and Environmental Engineering
Science of the environment	http://www.ubbcluj.ro/ro/programe_academice/licenta/#stiinta_si_ingineria_mediului	"Babes Bolyai" University, Cluj Napoca, Faculty of Science and Environmental Engineering
Quality of the environment and energy resources	http://www.ubbcluj.ro/ro/programe_academice/masterat/#stiinta_si_ingineria_mediului	"Babes Bolyai" University, Cluj Napoca, Faculty of Science and Environmental Engineering
Risk assessment and security of the environment	http://www.ubbcluj.ro/ro/programe_academice/masterat/#stiinta_si_ingineria_mediului	"Babes Bolyai" University, Cluj Napoca, Faculty of Science and Environmental Engineering
Assessment and management of the environment	http://www.ubbcluj.ro/ro/programe_academice/masterat/#stiinta_si_ingineria_mediului	"Babes Bolyai" University, Cluj Napoca, Faculty of Science and Environmental Engineering
Assessment and environment protection	http://www.ubbcluj.ro/ro/programe_academice/masterat/#stiinta_si_ingineria_mediului	"Babes Bolyai" University, Cluj Napoca, Faculty of Science and Environmental Engineering
Climatic changes and extreme risk phenomena	http://www.ubbcluj.ro/ro/programe_academice/masterat/#stiinta_si_ingineria_mediului	"Babes Bolyai" University, Cluj Napoca, Faculty of Science and Environmental Engineering
Sustainable development and management of the environment	http://www.ubbcluj.ro/ro/programe_academice/masterat/#stiinta_si_ingineria_mediului	"Babes Bolyai" University, Cluj Napoca, Faculty of Science and Environmental Engineering
Engineering of waste use	http://www.ubbcluj.ro/ro/programe_academice/masterat/#stiinta_si_ingineria_mediului	"Babes Bolyai" University, Cluj Napoca, Faculty of Science and Environmental Engineering
Sustainable regional development	http://www.ubbcluj.ro/ro/programe_academice/masterat/#stiinte_economice_si_gestiunea_afacerilor	"Babes Bolyai" University, Cluj Napoca, Faculty of Science and Environmental Engineering
Economy of the environment	http://www.ubbcluj.ro/ro/programe_academice/masterat/#stiinte_economice_si_gestiunea_afacerilor	"Babes Bolyai" University, Cluj Napoca, Faculty of Economics and Business Administration
Economy of natural resources	http://www.ubbcluj.ro/ro/programe_academice/masterat/#stiinte_economice_si_gestiunea_afacerilor	"Babes Bolyai" University, Cluj Napoca, Faculty of Economics and Business Administration
European strategy for sustainable development	http://www.ubbcluj.ro/ro/programe_academice/masterat/#stiinte_economice_si_gestiunea_afacerilor	"Babes Bolyai" University, Cluj Napoca, Faculty of Economics and Business Administration
Chemistry and management of food	http://fsai.univ-ovidius.ro/programe-de-studii/master	"Ovidius" University Constanta, Faculty of Applied

quality in relation with the environment		Sciences and Engineering
Engineering of systems with renewable energy sources	http://fsai.univ-ovidius.ro/programe-de-studii/master	"Ovidius" University Constanta, Faculty of Applied Sciences and Engineering
Ecology and environmental protection	http://snsa.univ-ovidius.ro/programe-de-studii/licenta	"Ovidius" University Constanta, Faculty of Nature and Agricultural Sciences
Science of the environment	http://snsa.univ-ovidius.ro/programe-de-studii/licenta	"Ovidius" University Constanta, Faculty of Nature and Agricultural Sciences
Conservation of biodiversity	http://snsa.univ-ovidius.ro/programe-de-studii/master	"Ovidius" University Constanta, Faculty of Nature and Agricultural Sciences
Analysis and assessment of environmental impact	http://snsa.univ-ovidius.ro/programe-de-studii/master	"Ovidius" University Constanta, Faculty of Nature and Agricultural Sciences
Sustainable development of costal zones	http://snsa.univ-ovidius.ro/programe-de-studii/master	"Ovidius" University Constanta, Faculty of Nature and Agricultural Sciences
Mountain science	http://www.agro-craiova.ro/scolarizare/licenta/oferta-educationala/	University of Craiova, Faculty of Agriculture
Environmental protection in agriculture	http://www.agro-craiova.ro/scolarizare/master/oferta-educationala-master/	University of Craiova, Faculty of Agriculture
Environmental engineering	http://horticultura.ucv.ro/horticultura/licen%C8%9B%C4%83	University of Craiova, Faculty of Horticulture
Ecological management of natural resources	http://horticultura.ucv.ro/horticultura/master	University of Craiova, Faculty of Horticulture
Biodiversity and conservation of ecosystems	http://horticultura.ucv.ro/horticultura/master	University of Craiova, Faculty of Horticulture
Chemistry of the environment	http://chimie.ucv.ro/admitere/licenta.htm	University of Craiova, Faculty of Science
Physics of the environment	http://cis01.central.ucv.ro/physics/ro/licenta.html	University of Craiova, Faculty of Science
Engineering and environmental protection in industry	http://ie.ucv.ro/index.php/educatie/programe-de-studii/licenta-programe-de-studii-educatie/ingineria-mediului/ipmi-mediu-licenta-programe-educatie	University of Craiova, Faculty of Electrical Engineering
Applied electrical engineering in the management and protection of the environment	http://ie.ucv.ro/index.php/educatie/programe-de-studii/master-programe-de-studii-educatie	University of Craiova, Faculty of Electrical Engineering
Engineering and environmental protection in industry	http://www.ugal.ro/studii/studii-universitare-licenta	"Dunarea de Jos" University, Galati, Faculty of Engineering
Engineering of biotechnical and ecological systems	http://www.ugal.ro/studii/studii-universitare-licenta	"Dunarea de Jos" University, Galati, Faculty of Engineering and Agronomy
Ecology and environment protection	http://www.ugal.ro/studii/studii-universitare-licenta	"Dunarea de Jos" University, Galati, Faculty of Sciences and Food Engineering
Science of environment	http://www.ugal.ro/studii/studii-universitare-licenta	"Dunarea de Jos" University, Galati, Faculty of Sciences and Environment
Heat systems and equipments and environmental protection	http://www.ugal.ro/studii/studii-universitare-masterat	"Dunarea de Jos" University, Galati, Faculty of Engineering
Quality of the environment and sustainable development	http://www.ugal.ro/studii/studii-universitare-masterat	"Dunarea de Jos" University, Galati, Faculty of Engineering
Energy efficient use and renewable sources	http://www.ugal.ro/studii/studii-universitare-masterat	"Dunarea de Jos" University, Galati, Faculty of Computers, Electrical Engineering and Electronics
Engineering and environmental protection	http://www.ugal.ro/studii/studii-universitare-masterat	"Dunarea de Jos" University, Galati, Faculty of Engineering and Agronomy
Biotechnology of natural resources	http://www.ugal.ro/studii/studii-universitare-masterat	"Dunarea de Jos" University, Galati, Faculty of Sciences and Food Engineering
Control and assessment of	http://www.ugal.ro/studii/studii-universitare-masterat	"Dunarea de Jos" University, Galati, Faculty of

environmental quality		Sciences and Food Engineering
Monitoring and management of the environment	http://www.ugal.ro/studii/studii-universitare-masterat	"Dunarea de Jos" University, Galati, Faculty of Sciences and Environment
Science – integrative approach of natural sciences	http://www.ugal.ro/studii/studii-universitare-masterat	"Dunarea de Jos" University, Galati, Faculty of Sciences and Environment
Assessment of physical, chemical and biodiversity of the environment	http://www.ugal.ro/studii/studii-universitare-masterat	"Dunarea de Jos" University, Galati, Faculty of Sciences and Environment
Ecology and environmental protection	http://www.uaic.ro/studii/studii-universitare-de-licenta/	"Al. I. Cuza" University, Iasi, Faculty of Biology
Meteorology, Hydrology	http://www.uaic.ro/studii/studii-universitare-de-licenta/	"Al. I. Cuza" University, Iasi, Faculty of Geography and Geology
Geography of environment	http://www.uaic.ro/studii/studii-universitare-de-licenta/	"Al. I. Cuza" University, Iasi, Faculty of Geography and Geology
Conservation of biodiversity	http://www.uaic.ro/studii/studii-universitare-de-masterat/	"Al. I. Cuza" University, Iasi, Faculty of Biology
Environmental counseling	http://www.uaic.ro/studii/studii-universitare-de-masterat/	"Al. I. Cuza" University, Iasi, Faculty of Biology
Chemistry of the environment	http://www.uaic.ro/studii/studii-universitare-de-masterat/	"Al. I. Cuza" University, Iasi, Faculty of Chemistry
Physics and environmental protection	http://www.uaic.ro/studii/studii-universitare-de-masterat/	"Al. I. Cuza" University, Iasi, Faculty of Physics
Present environment and sustainable development	http://www.uaic.ro/studii/studii-universitare-de-masterat/	"Al. I. Cuza" University, Iasi, Faculty of Geography and Geology
Geochemistry of the environment	http://www.uaic.ro/studii/studii-universitare-de-masterat/	"Al. I. Cuza" University, Iasi, Faculty of Geography and Geology
Sanitary engineering and environmental protection	http://www.arhiconoradea.ro/specializari.htm	University of Oradea, Faculty of Constructions, Cadastre and Architecture
Management, assessment, conservation and environmental protection	http://geografie-uoradea.ro/geografie_turism_si_sport/Oferta.htm	University of Oradea, Faculty of Geography, Tourism and Sport
Engineering of renewable energy systems	http://www.energetica-oradea.ro/licenta	University of Oradea, Faculty of Energy Engineering and Industrial Management
Renewable energies	http://www.energetica-oradea.ro/master	University of Oradea, Faculty of Energy Engineering and Industrial Management
Engineering of biotechnical and ecological systems	http://protmed.uoradea.ro/facultate/programe_studiu_planuri_invatamant.html	University of Oradea, Faculty of Environmental Protection
Sustainable use of forest resources	http://protmed.uoradea.ro/facultate/programe_studiu_planuri_invatamant.html	University of Oradea, Faculty of Environmental Protection
Management of disasters and crisis in agriculture, forestry and food industry	http://protmed.uoradea.ro/facultate/programe_studiu_planuri_invatamant.html	University of Oradea, Faculty of Environmental Protection
Environmental engineering and work safety	http://protmed.uoradea.ro/facultate/programe_studiu_planuri_invatamant.html	University of Oradea, Faculty of Environmental Protection
Biodiversity and ecosystems monitoring	ttp://www.facultatea-stiinte-oradea.ro/master	University of Oradea, Faculty of Sciences
Engineering and environmental protection in industry	http://www.upet.ro/licenta.php	University of Petrosani, Faculty of Mining
Engineering of waste use	http://www.upet.ro/licenta.php	University of Petrosani, Faculty of Mining
Impact assessment upon environment and ecological reconstruction	http://www.upet.ro/master.php	University of Petrosani, Faculty of Mining
Control and monitoring of environmental quality	http://www.upet.ro/master.php	University of Petrosani, Faculty of Mining
Sustainable exploitation of mineral resources	http://www.upet.ro/master.php	University of Petrosani, Faculty of Mining
Environmental engineering	https://www.upit.ro/en/licenta	University of Pitesti, Faculty of Sciences, Sport and Informatics
Ecology and environmental protection	https://www.upit.ro/en/licenta	University of Pitesti, Faculty of Sciences, Sport and Informatics
Technologies for sustainable	https://www.upit.ro/en/master	University of Pitesti, Faculty of Sciences, Sport and

development		Informatics
Monitoring and environmental protection	https://www.upit.ro/en/master	University of Pitesti, Faculty of Sciences, Sport and Informatics
Conservation and nature protection	https://www.upit.ro/en/master	University of Pitesti, Faculty of Sciences, Sport and Informatics
Interdisciplinary applications in natural sciences	https://www.upit.ro/en/master	University of Pitesti, Faculty of Sciences, Sport and Informatics
Engineering and environmental protection in industry	http://www.upg-ploiesti.ro/fisiere/2917/Oferta_educationala_licenta_2015-2016.pdf	Petroleum-Gas University Ploiesti, Faculty of Oil Technology and Petroleum Chemistry
Advanced technologies in environmental protection engineering	http://www.upg-ploiesti.ro/fisiere/2828/Oferta_educationala_Master_2015-2016.pdf	Petroleum-Gas University Ploiesti, Faculty of Oil Technology and Petroleum Chemistry
Quality control of products and environmental factors	http://www.upg-ploiesti.ro/fisiere/2828/Oferta_educationala_Master_2015-2016.pdf	Petroleum-Gas University Ploiesti, Faculty of Oil Technology and Petroleum Chemistry
Environmental engineering and environmental protection in industry	http://www.ulbsibiu.ro/ro/admitere/facultati.php	"Lucian Blaga" University Sibiu, Faculty of Engineering
Ecology and environmental protection	http://www.ulbsibiu.ro/ro/admitere/facultati.php	"Lucian Blaga" University Sibiu, Faculty of Sciences
Environmental engineering	http://www.ulbsibiu.ro/ro/admitere/facultati.php	"Lucian Blaga" University Sibiu, Faculty of Agricultural Sciences, Food Industry and Environmental Protection
Consumer and environment protection	http://www.admitere.usv.ro/?page_id=818	'Stefan cel Mare" University, Suceava, Faculty of Food Engineering
Geography of environment	http://www.admitere.usv.ro/?page_id=818	'Stefan cel Mare" University, Suceava Faculty of History and Geography
Ecology and environment protection	http://www.admitere.usv.ro/?page_id=818	'Stefan cel Mare" University, Suceava Faculty of Forestry
Management of environment and food security	http://www.admitere.usv.ro/?page_id=828	'Stefan cel Mare" University, Suceava Faculty of Food Engineering
Conservation of biodiversity	http://www.admitere.usv.ro/?page_id=828	'Stefan cel Mare" University, Suceava Faculty of Forestry
Physical and chemical methods of life and environment quality control	https://www.valahia.ro/ro/facultati/29-facultatea-de-stiinte-si-arte	"Valahia" University, Targoviste, Faculty of Sciences and Arts
Engineering and Environmental protection in agriculture	https://www.valahia.ro/ro/facultati/32-facultatea-de-ingineria-mediului-si-stiinta-alimentelor	"Valahia" University, Targoviste, Faculty of Environmental Engineering and Food Science
Systems of control and assessment of environment quality	https://www.valahia.ro/ro/facultati/32-facultatea-de-ingineria-mediului-si-stiinta-alimentelor	"Valahia" University, Targoviste, Faculty of Environmental Engineering and Food Science
Engineering and environmental protection in industry		"Constantin Brancusi" University, Targu Jiu, Faculty of Engineering and Sustainable development
Engineering and environmental protection in industry	http://www.usab-tm.ro/USAMVBT_Ingineria-si-protectia-mediului-in-agricultura_ro_1444.html	Banat's University of Agricultural Sciences and Veterinary Medicine of Timişoara, Faculty of Agriculture
Ecological agriculture	http://www.usab-tm.ro/USAMVBT_Ingineria-si-protectia-mediului-in-agricultura_ro_1444.html	Banat's University of Agricultural Sciences and Veterinary Medicine of Timişoara, Faculty of Agriculture
The assessment of environment and natural resources	http://www.usab-tm.ro/USAMVBT_Ingineria-si-protectia-mediului-in-agricultura_ro_1444.html	Banat's University of Agricultural Sciences and Veterinary Medicine of Timişoara, Faculty of Agriculture
Science of environment	https://www.cbg.uvt.ro/educatie/programe-licenta/	West University Timisoara, Faculty of Chemistry, Biology, Geography
Engineering of anorganic substances and environment protection	http://www.upt.ro/Informatii_programe-de-studii-de-licenta-2016-2017_772_ro.html	Politechnical University, Timisoara, Faculty of Industrial Chemistry and Environmental Engineering

Engineering and environmental protection in industry	http://www.upt.ro/Informatii_programe-de-studii-de-licenta-2016-2017_772_ro.html	Politechnical University, Timisoara, Faculty of Industrial Chemistry and Environmental Engineering
Engineering and environmental management in industry	http://www.upt.ro/Informatii_programe-de-studii-universitare-de-master-2016-2017_793_ro.html	Politechnical University, Timisoara, Faculty of Industrial Chemistry and Environmental Engineering

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