E-green Jobs:

current situation and training needs

VISTULA UNIVERSITY

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2. Introduction

This report summarizes the results of the research undertaken by the E-Green Jobs project's partners. Vistula University with other partners from Hungary, Italy, Portugal and Poland came together to investigate the demand for educational offer and training needs in selected EU countries. The reports aims to promote skill development and employment growth related to the green economy in the EU. The initiative seeks to enhance dialogue and strengthen collaborations between and among project partners, fill knowledge gaps, and support training strategies to achieve the sustainability of jobs and enterprises. The research was conducted in four participating countries (Hungary, Italy, Poland Portugal) in winter 2013/2014. The project is has been conducted by the following partners:

- TECHIN Sp. z o.o. - an international consulting company, project coordinator;
- DIDA Network srl - a training company from Italy;
- Netpositive Számítástechnikai Szolgáltató és Kereskedelmi Kft - a private research center from Hungary;
- Podlasie Nature Station "Narew" - a non-governmental organisation from Poland;
- Vistula University - a non-public University from Warsaw, Poland;
- Portuguese Energy Agency - a non-profit energy organisation from Portugal;
- AISFOR srl - a training company from Italy.

The respondents were experts on energy market in the participating countries (n=146). The report is of exploratory nature and the findings may not be treated as representative to the current situation. Its purpose is to provide some guidance for policy-makers and for further research in the field. In order to conduct the study the following scientific methods were applies:

1) A thorough literature review on green jobs (see: References),
2) A questionnaire (see: annex at the end of this document) was developed after a serious of consultations with experts. All project partners were

encouraged to contribute to the development of the final version of the questionnaire. The final version of the questionnaire was approved by all project's partners and should be considered as a product of collective effort.

3) A survey among the respondents from the four participating countries. The project partners were instructed about which respondents have to be recruited (*selective sampling* method). Each partner was obliged to approach and collect information only from experts familiar with the green economy situation in their own country.
4) Statistical analysis of empirical data.

3. How we define green jobs?

UENP identifies the following types of green jobs:[1]

a) Environmental specific services comprise environmental protection and resource management specific to services produced by economic units for sale or own use. Examples of environmental specific services are waste and wastewater management and treatment services, and energy and water saving activities.
b) Environmental sole-purpose products are goods (durable or non-durable goods) or services whose use directly serves an environmental protection or resource management purpose and of which the sole purpose is environmental protection or resource management. Examples of these products include catalytic converters, septic tanks (including maintenance services), and the installation of renewable energy production technologies (e.g. installation of solar panels).

[1] *Green Jobs: Towards decent work in a sustainable, low-carbon world,* UNEP/ILO/IOE/ITUC, September 2008, p. 42.

c) Adapted goods are goods that have been specifically modified to be more environmentally friendly" or "cleaner" and whose use is therefore beneficial for environmental protection or resource management.

d) Environmental technologies are technical processes, installations and equipment (goods), and methods or knowledge (services) whose technical nature or purpose is environmental protection or resource management. Environmental technologies can be classified as either: (a) End-of-pipe (pollution treatment) technologies or (b) integrated (pollution prevention) technologies.

"Green jobs are defined as work in agricultural, manufacturing, research and development (R&D), administrative, and service activities that contribute substantially to preserving or restoring environmental quality. Specifically, but not exclusively, this includes jobs that help to protect ecosystems and biodiversity; reduce energy, materials, and water consumption through high-efficiency strategies; de-carbonize the economy; and minimize or altogether avoid generation of all forms of waste and pollution."[2] The US Bureau of Labor Statistics (BLS) distinguishes between two types of green jobs:[3] (a) Jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources (outputs) and (b) Jobs in which workers' duties involve making their establishment's production processes more environmentally friendly or use fewer natural resources (processes). The use of these two overlapping elements to define green jobs implies two different approaches to statistical measurement: an **output** approach and a **process** approach.

Green jobs can be defined as "occupations that are affected by green economic activity" in one of the following ways: (1) existing occupations that require a substantial set of additional skills (regardless of demand), (2) existing occupations that are in greater demand, or (3) entirely new and emerging occupations.[4] Green

[2] Green Jobs: Towards decent work in a sustainable, low-carbon world, UNEP/ILO/IOE/ITUC, September 2008.
[3] US Bureau of Labor Statistics (BLS).
[4] *Introduction to New York City Green Jobs, Labor Market Information Service,* New York, May 2011, p.4.

economy activities generate new occupations with special skill set which was not offered, at least until recently by the formal education system.

4. Where can the green jobs be found?

Green jobs should not be limited in definition to those jobs which are related to manufacturing of green technologies, e.g. solar panels. Their definition is much broader. A micro enterprise running a successful efficient internet portal serving the needs of travelers and enabling them car pooling can be considered as equally 'green' as a job in a recycling plant. The definition of a green job is very flexible and depends on a consensus among those who deal with those issues. If an advertising agency receives a contract to develop a PR campaign promoting the use of public transportation are the employees of this agency holding 'green jobs'? Some green jobs are green because of the functioning of establishments (e.g. energy efficiency, recycling) when the type of green job being analyzed is related to the outputs of establishments (e.g. production of organic food).

A job can be formal or informal and can refer to work in employment or in other forms of work, such as volunteer work, trainee work, or production of goods and services for own consumption. Most statistics on green jobs will relate to employment, which refers to activities carried out by persons to produce goods or services mainly to generate income[5].

According to the definition by The System of Environmental Economic Accounting Central Framework, adopted by the UN Statistical Commission all products that are produced, designed, and manufactured for the purposes of environmental protection and resource management are within scope of The Environmental Goods and Services Sector (EGSS). The types of environmental goods and services in scope of the EGSS are environmental specific services, environmental sole purpose products, adapted goods, and environmental technologies:

[5] Valentina Stoevska, David Hunter, *Proposals for the statistical definition and measurement of green jobs*, International Labour Office Geneva 2012, p. 23.

a) Environmental specific services comprise environmental protection and resource management specific services produced by economic units for sale or own use. Examples of environmental specific services are waste and wastewater management and treatment services, and energy and water saving activities.

b) Environmental sole-purpose products are goods (durable or non-durable goods) or services whose use directly serves an environmental protection or resource management purpose and that have no use except for environmental protection or resource management. Examples of these products include catalytic converters, septic tanks (including maintenance services), and the installation of renewable energy production technologies (e.g. installation of solar panels).

c) Adapted goods are goods that have been specifically modified to be more environmentally "friendly" or "cleaner" and whose use is therefore beneficial for environmental protection or resource management.

d) Environmental technologies are technical processes, installations and equipment (goods), and methods or knowledge (services) whose technical nature or purpose is environmental protection or resource management. Environmental technologies can be classified as either:

- End-of-pipe (pollution treatment) technologies,
- Integrated (pollution prevention) technologies.

Table 1 below shows a list of *Pro-Environmental Measures in Major Segments of the Economy.* The table gives an indication of a graduation from more limited to more transformative approaches for major parts of the human economy and society.

Table 1. Pro-Environmental Measures in Major Segments of the Economy.

Energy Supply	
	Integrated gasification/ carbon sequestration
	Co-generation (combined heat and power)
	Renewables (wind, solar, biofuels, geothermal, small-scale hydro); fuel cells
Transport	
	More fuel-efficient vehicles
	Hybrid-electric, electric, and fuel-cell vehicles
	Car sharing
	Public transit
	Non-motorized transport (biking, walking), and changes in land-use policies and settlement patterns (reducing distance and dependence on motorized transport)
Manufacturing	
	Pollution control (scrubbers and other tailpipe technologies)
	Energy and materials efficiency
	Clean production techniques (toxics avoidance)
	Cradle-to-cradle (closed-loop systems)
Buildings	
	Lighting, energy-efficient appliances and office equipment
	Solar heating/cooling, solar panels
	Retrofitting
	Green buildings (energy-efficient windows, insulation, building materials, HVAC)
	Passive-solar houses, zero-emissions buildings
Materials Management	
	Recycling
	Extended producer responsibility/ product take-back and remanufacturing
	De-materialization
	Durability and repairability of products
Retail	
	Promotion of efficient products/ eco-labels
	Store locations closer to residential areas
	Minimization of shipping distances (from origin of products to store location)
	New service economy (selling services, not products)
Agriculture	
	Soil conservation
	Water efficiency
	Organic growing methods
	Reducing farm-to-market distance
Forestry	
	Reforestation and afforestation projects
	Agroforestry
	Sustainable forestry management and certification schemes
	Halting deforestation

Source: *Green Jobs: Towards decent work in a sustainable, low-carbon world,* UNEP/ILO/IOE/ITUC, September 2008, p. 42.

"Employment in environmental activities comprises an employment in activities that lead to the production of environmental goods and services for consumption by other economic units or for consumption by the establishment in which the activity is performed. Environmental goods and services are the products of environmental activities as defined in the most recently updated version of the System of Environmental – Economic Accounting (SEEA). In addition to activities in the production of environmental goods and services, this includes activities that improve the establishment's processes in order to reduce or eliminate pressures on the environment or to make more efficient use of natural resource"[6].

5. Survey results

The current state of the education system and the labour market in participating countries varies. Italian education system achieved the highest score whereas the Hungarian system was ranked as low as 1.71. According to the respondents the demand for green jobs exceeds the supply of trained professionals. The country where the voice of employers is most valued is Poland (2.12) compared with 1.54 in Hungary. Respondents in all countries strongly agree with the opinion that it is the state who should be responsible for the education for the green economy (table 2). All respondents strongly agree that the state should do more to promote training programmes in the field of green economy. The voice of the employers' offering green jobs is considered in the reform of the education system in our country is not well appreciated in any of the countries with highest results reported in Poland and Portugal. Compared with the previous questions, the respondents display much stronger agreement with the statement that "The state should do more to promote training programmes in the field of green economy". All responses vary between 3.61 (Poland) and 3.77 (Italy), which means that there is a

[6] Valentina Stoevska and David Hunter, *Proposals for the statistical definition and measurement of green jobs*, International Labour Office Geneva 2012, p. 24-25.

widely recognized anticipation from the governments to become more involved in the development of green economies in their countries.

Table 2. Education system and the labour market for the green jobs.

	Poland	Italy	Portugal	Hungary	Total
	1 = strongly disagree; 4 = strongly agree				
Education system in my country is generally well-prepared to provide education for the green economy	2.22	**2.33**	2.10	**1.71**	2.16
Our vocational training system of education needs to be improved in order to meet the requirements of the labour market for green jobs	3.59	3.71	3.52	4.00	3.68
The demand for green jobs in my country is higher than the supply of trained professionals	2.98	2.39	2.89	3.00	2.77
The employers in our country are facing difficulties with finding well trained specialists for green jobs	3.22	2.84	2.61	3.00	2.97
Employers are cooperating with schools in the in order to increase the quality of training for the green economy	2.13	1.59	2.25	1.62	1.90
The voice of the employers' offering green jobs is considered in the reform of the education system in our country	2.12	1.88	2.00	1.54	1.95
Education for the green economy should be primarily the responsibility of the employers (limited or marginal role of the government)	1.82	2.28	1.52	1.33	1.87
Education for the green economy should be primarily the responsibility of the employers and the government working in close collaboration (shared responsibilities between the two)	3.69	3.67	3.79	4.00	3.75
The state should do more to promote training programmes In the field of green economy	3.61	3.77	3.62	3.62	3.67

Source: own elaboration.

Figure 1 shows the average results for all countries combined. The highest results are attributed to the statements postulating the improvement and stronger intervention fro governments. This opinion corresponds well with the low rating of the statement "Education for the green economy should be primarily the responsibility of the employers (limited or marginal role of the government)". Similarly, the respondents strongly agree with the statement that the vocational training systems of education in their countries need to be improved in order to meet the requirements of the labour market for green jobs

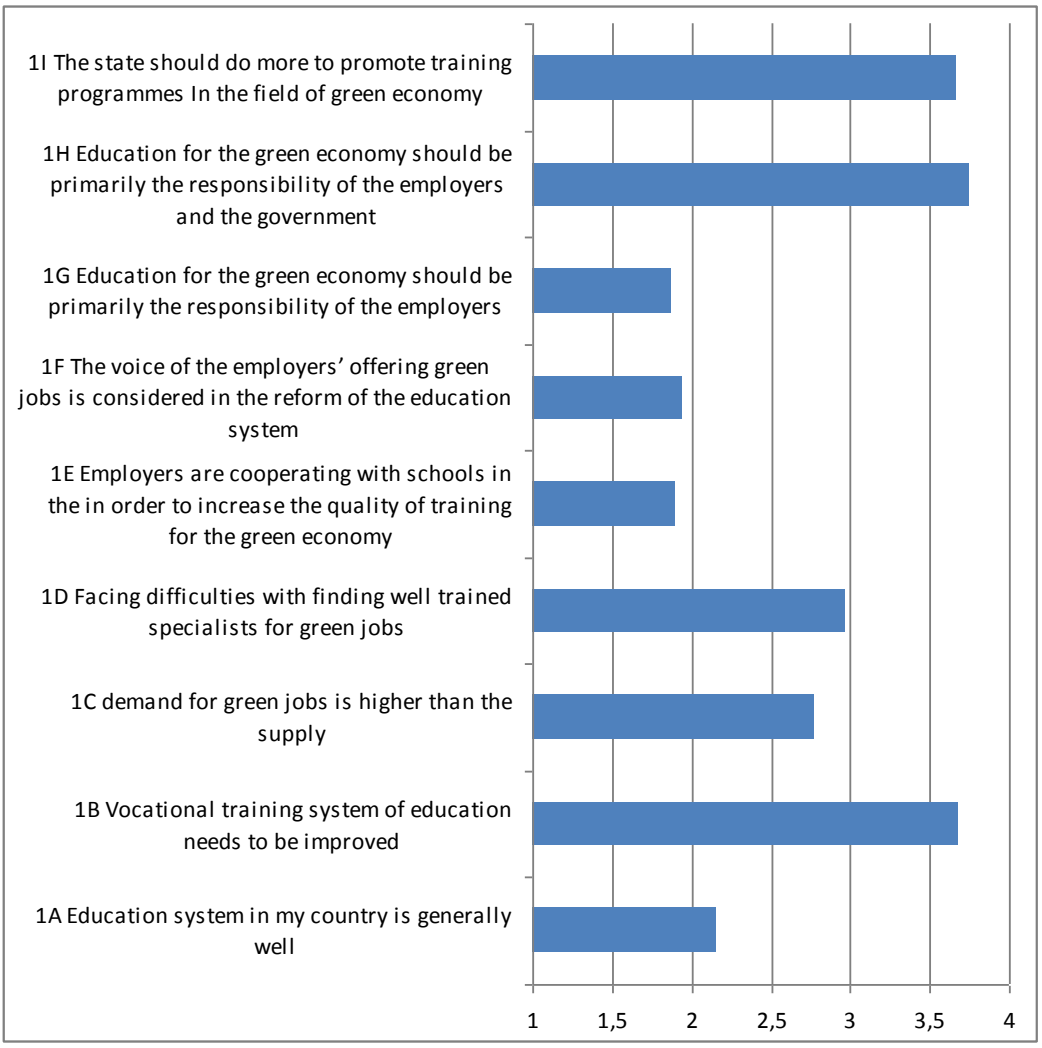

Figure 1. Education system and the labour market for the green jobs. Source: own elaboration.

Currently the share of green jobs in the European Union is relatively small, estimated at only 3.25% (Colijn, 2014). This share varies depending on the region of the European Union. There are large differences between countries: Denmark, Switzerland and Norway have a fairly large number of jobs with a sustainable component to them, while countries from Central and Eastern Europe are generally lagging behind, with very few green jobs being demanded at all (Colijn, 2014). According to Kammen, Kapadia and Fripp (2004), the use of renewable energy has a positive impact on employment. According to survey results the demand for green jobs varies depending on the country. Table 3 shows the list of TOP FOUR jobs in each country.

Table 3. Anticipated demand for e-green jobs.

Country	Top 4 – increased demand
Hungary	Other Renewable energy resources Installer of green energy devices Recycling
Italy	Other Installer of green energy devices Renewable energy management experts Renewable energy resources
Poland	Installer of green energy devices All-green construction Other Renewable energy resources
Portugal	Other Renewable energy resources Energy efficiency related jobs Agriculture

Source: own elaboration.

Most respondents were not familiar with the curricula of primary and secondary education in their countries. Portuguese respondents who were the least acquainted with the curricula– only 14% of them declared familiarity with the curricula (Table 4). The results shown in Table 4 reveal the fact that green energy experts are generally lacking knowledge on the supply-side of the educational market in their countries. On one hand, they are making claims about the need for the increased intervention from the government, but on the other are not familiar with the key element of their governments' public policies i.e.: the curricula of the education system. The lack of familiarity with the curricula of the education systems among experts reveals a need for a more efficient knowledge management in education systems in the surveyed countries. Only on the condition that the decision makers responsible for the development of green economy are able to grasp a holistic picture of the situation, can real progress be achieved. Early intervention in the education systems is more cost-efficient. It is more reasonable to adjust curricula at early stages of the education process than to implement strategies at LLL-level, which are aimed at rectify the situation.

Table 4. Familiarity of the respondents with the curricula of primary and secondary schools.

Are you familiar with the curricula of primary and secondary schools in your country?	Percentage				
	Poland	Italy	Portugal	Hungary	Total
No	86.00%	66.67%	87.50%	80.95%	78.79%
Yes	14.00%	33.33%	12.50%	19.05%	21.21%
Total	37.88%	34.09%	12.12%	15.91%	100.00%

Source: own elaboration.

Question 4 was an open-end question and related to the new skills need to be developed, and the consequences for education and training systems in order adapt to the development of new areas of growth and new technologies. Most responses indicated the demand for "other" or "energy efficiency related" jobs. There was not a consensus around one single skill. The respondents did not differentiate between 'skills' and 'jobs' which is reflected in the structure of the responses (Figure 2). For example no one mentioned such skills as ' *sensibility to the environmental issues'*; '*eco-friendly personality*"; "*ability to assess the environmental impact of technology*" etc. Further research may be helpful regarding the 'soft skills' needed for 'the e-green job market'. All-green construction and energy efficient jobs are on top of the list. There is no awareness among the respondents regarding the issue of 'e-green skills'. The fact that the respondents did not differentiate between the notions of 'skills' and 'jobs' underpins the argument that the public understanding of green economy is very limited. Such concepts as EQF and NQF are understood by a handful of professionals. All and all those "new" things – about skills and competences. It confirms that our project is innovative in this aspect.

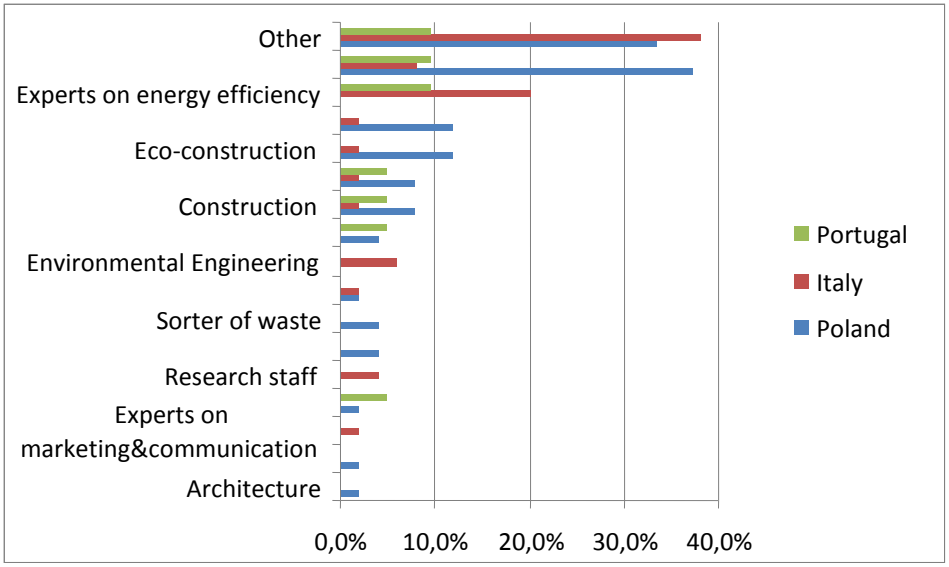

Figure 2. e-green *skills* are confused with *e-green-jobs*.
Source: own elaboration.

The next question was an open-end question asking about new skills[7] which need to be developed with the support of the education system. Table 5 shows some selected skills, which may be of special interest to the parties responsible for development of educational offerings. **A total of 101 suggestions were submitted (44 from Poland, 43 from Italy, 17 from Portugal and 2 from Hungary).** Some of the suggestions were too broad, abstract or not peculiar to green energy thematic area and not focused around one dominating theme. Those suggestions which contained the most meaningful ideas are presented in Table 5. Many respondents provided more than one suggestion – those have not been broken down into separate categories. Many respondents have provided answers, which did not fit into the definition of skills. A large number of answers provided by the respondents (especially from Italy and Hungary) were simply suggestions (e.g.: "*There is a strong*

[7] According to the Cambridge Dictionary **skill** is a ability to do an activity or job well, especially because you have practiced it. According to the Colins Dictionary, skill is a special ability in a task, sport, etc, especially the ability acquired by training, something, especially a trade or technique, requiring special training or manual proficiency. A skill is a talent or ability that comes from training or practice. People who have acquired a particular skill display proficiency, facility, or dexterity.

need to disseminate the real costs of a green economy and of the financial opportunities to develop the green economy") or specifications of jobs (e.g.: "Planners *and environmental engineers*"). The apparent inability to answer such a question in a correct manner is by itself indicative of the current level of awareness among the experts. Therefore, the results shown in Table 5 describe the inconsistency and lack of rigor among the respondents

Table 5. Familiarity of the respondents with the curricula of primary

Suggested skills	PL	IT	PT	H
How to properly select the equipment and devices, including work ethics	1	0	0	0
Transportation of bio mass, how to prepare an energy efficiency audit	1	0	0	0
„Green thinking" skills – creativity in developing environment-friendly solutions without compromising the performance	1	0	0	0
Feasibility studies for green energy sector	1	0	0	0
Vocational training advisory services, green job market expertise	1	0	0	0
In Italy there is the need for a more specific and sound training on technical and engineering topics to face a market characterized by strong technological innovation.	0	1	0	0
Competencies on energy efficiency in buildings, integrated management of complex systems	0	1	0	0
In the last decades many new technologies (and new jobs) have been implemented in the green economy sector, however, the training schemes offered not always are able to keep up with the labour market's needs	0	1	0	0
The figure of the "energy manager" needs to be better trained with skills to carry out a good energy diagnosis of the buildings and to suggest the efficient energy saving measures	0	1	0	0
More qualified teachers at all levels of education in the field of green energy	0	1	0	0
Skills and know-how on how to use resources, materials and technologies	0	1	0	0
There is the need for a better training on ecological issues, cooperation on the land management, and new techniques for the waste management	0	1	0	0
Energy managers are compulsory for the management of public buildings (offices, schools, etc.); energy managers for energy management in SMEs	0	1	0	0
There is the need for more skilled people on design, certification and management software	0	1	0	0
Use of wood and recyclable materials	0	1	0	0
Economic and financial appraisal of green technologies and green innovations; project management for "green re-definition" of product/service; management of green technologies transfer to SMSs	0	1	0	0
Primary school students should study environment from the point of view of history, health and so on, a new way to be a "green consumers"	0	1	0	0
Material science and management; sustainable design	0	1	0	0
Green economy is strongly connected with the concept of sustainable development. The concept should be reflected in the primary and secondary education curricula	0	1	0	0
Professional technical and soft skills profiles: operational marketing, communications and external relations, project manager.	0	1	0	0

Table 5. Cont.

Traditional engineering/economic skills to insert the new green skills. Business plan for real projects	0	1	0	0
New skills on innovation and new technologies. Education systems should deal with the concepts of energy conservation and sustainability.	0	1	0	0
Conceive the production, entrepreneurship and finance social behavior impact with eco-systems. The training should be geared to soft skills and interdisciplinary.	0	1	0	0
Training for the reduction of domestic consumption.	0	1	0	0
It is necessary to launch a permanent awareness campaign on the effects caused by energy production systems and possible solutions. specialized skills.	0	1	0	0
Education and training systems should review their own itinerary and provide training which meets the requirements of the labor market and develops skills related to the green economy.	0	1	0	0
Designers, consultants and installers of photovoltaic systems. more activities in research, training and development.	0	1	0	0
Environmental engineers/specialist degree courses, appropriate master's and professional training courses.	0	1	0	0
Expert in energy management and energy certifiers.	0	1	0	0
Engineers for the environment. improve and increase training and research in the field of green economy	0	1	0	0
Research skills on green energy	2	1	1	0
Increased research. designers photovoltaic / wind power	0	1	0	0
To keep the system for energy certification of buildings airtight during the next ten years to consolidate acquired knowledge and to get practical evidence of intended goals.	0	0	1	0
Skills in simulation and design of buildings and the surrounding environment.	0	0	2	0
Alternative financial schemes	0	0	1	0
Critical and creative spirit, independent and innovative thinking and mental flexibility that permit to adapt to new realities.	0	0	1	0
Ability to integrate knowledge know-how - connect to production processes	0	0	1	0
Design, installation, operation renewable systems (solar thermal, photovoltaic, wind, biomass, geothermal) design, installation, operation technical management and energy management systems	2	1	1	0
Technical courses on renewable energy and for equipment installers	0	0	1	0
should be given greater importance in the areas of management of resources and technologies available to increase efficiency, particularly in the area of waste management	0	0	1	0
More specific training courses and investment in research, partnerships between schools, companies and environmental associations	0	0	1	0
A balanced economy in which all actors valorize what is green, not the price.	0	0	1	0
Training of biomass installers and training to improve the skills of biofuels (methane), installers with expertise in the areas of co-generation	0	0	1	0
Better communication with the business sector. need to go to the field and carry out an extensive survey of the needs of entrepreneurs. most active commercial diplomacy to realize the needs of other c	0	0	1	0
Increase of knowledge of the operation of facilities and systems in order to master the concepts associated with energy efficiency. it is not given due priority to the topic.	0	0	1	0
There is a gap in the Hungarian labour market between high qualified professional and low skilled workers. More technicians are needed.	0	0	0	1

Source: own elaboration.

Table 6 shows the skill gaps and bottlenecks, which may hinder the development of the green energy sector. It was an open end-question where respondents could share their observations and worries about the possible skill deficits. A total of 81 skills were named and identified by respondents. Table 6 shows only those skills which are peculiar to the green labour market. Answers such as: "creative thinking, interdisciplinary solutions" were not taken under consideration.

Table 6. Deficits in skills, bottlenecks and gaps in the labour market.

	PL	IT	PT	HU
General knowledge on the basic green technologies available on the market	2	2	0	0
Experienced welders with TIG skills	1	0	0	0
Ability to assess the environmental impact of technologies, no guidelines for for TOE assessment, CO_2 emissions etc.	1	0	0	0
Green marketing campaigns, eco-building, design and construction of green buildings	1	0	0	0
Ability to utilise traditional Technologies in modern applications	1	0	0	0
Utilisation of waste, communication skills with local communities regarding environmental issues, application of ITC in green waste management	1	0	0	0
Cooperation and mediation skills for multi-party projects, including PPPs	1	3	0	0
Environment-friendly consumer behaviour, including the education of the youth	4	0	0	0
Feasibility studies for green projects	3	0	0	0
The suppliers equip the installers only with the knowledge on how to install their own products. As a results there are skill gaps because there is no flexibility (the producers of technologies try to 'lock-in' the buyers to their technologies by limiting the access to knowledge on their competitors' offerings). What is good for the individual supplier is not so good for the market and for the consumer	1	0	0	0
In general in all the new jobs – including the energy manager	0	1	0	0
Gap in basic skills (math, physics, etc.)	2	1	0	0
The skills bottlenecks are mainly institutional, due to the lack of institutional guidance and support in all the activities related to the training and labour market of the green economy.	0	1	0	0
The main bottlenecks are at the moment in the low qualified operators who are not updated on the new technologies and have a limited experience and knowledge – the market is not seeking for operators	0	2	0	0
Age of all the training staff (at all levels). The government should re-design the school curricula which are the same in the last decades.	0	1	0	0
In the awareness building eg information in all the agricultural sectors In the bureaucratic and legislative burdens in all the agricultural sectors	0	1	0	0

Table 6. Cont.

Waste management and bee-culture	0	1	0	0
For engineers there many obstacles in the green sector as training on green issues is considered less important as traditional topics; there is no green policy at national level; there are few professionals	0	1	0	0
On the market there are too many technicians and consultants working on their own without a proper training and background in the green sector and have clear knowledge and skill gaps.	0	1	0	0
There are all the skills we need for the green jobs, the problem is the uncritical consumption	0	1	0	0
Environmental expertise, energy, sustainable development processes	0	1	0	0
There are different gaps that could be filled creating connection between SMEs and schools and universities. The gap between academia and job market is the main reason of the current unemployment rate.	0	1	0	0
Have difficulty finding human resources with motivation, flexibility, entrepreneurial spirit and attention to problem solving	0	1	0	0
Training system often stay too much theoretic	0	1	0	0
There is not a separation of powers between the professionals	0	1	0	0
Encourage the study of science subjects. Updating and improving the general skills and more attention to the training of trainers	0	1	0	0
Deficiencies in the "housing / building" in retrofit and new construction. We must develop new skills for this sector	0	1	0	0
Lack of training and awareness for the reduction of consumption and conservation of natural resources	0	1	0	0
Lack of practical application. Lack of access to credit and resistance of the policy that underestimates the potential of the green economy because it is linked to a more traditional view of the economy	0	1	0	0
How to obtain funding for green projects	1	6	0	0
Obstacles: lack of market demand, difficulty of access to credit, lack of funding, lack of information and communication	0	1	0	0
Political class without strategic vision	0	0	1	0
I think it is the lack of state investment in scientific research that could develop knowledge in these areas.	0	0	1	0
Low level of literacy in the Portuguese society in general, the knowledge society is not well developed in Portugal.	0	0	1	0
It is too complex a question for a questionnaire. Involves not only independent training programs, as the entire education system and therefore the national Law of the Education System	0	0	1	0
Interpretation of consumer needs (market research) to support decision making in the areas of greatest potential	0	0	1	0
Recognition of courses as continuing education program for maintenance of academic credentials	0	0	1	0

Source: own elaboration.

Without a large scale quantitative research it is very difficult to estimate the actual demand for special categories of occupations. Especially when the respondents are not recruited strictly from among employers. Nevertheless, a very

rough estimate of the needs for hires in the green economy was made in this research study. The research results are most meaningful if we consider the actual names of occupations mentioned by the respondents. It may be assumed that those occupations which have been explicitly mentioned are those for which the demand will be the highest. Table 7 shows the names of occupations and estimated demand for them. The estimated numbers presented in Table 7 are not accurate enough to use it as data for policy planning. But the relative number of jobs is indicative of the strength of predicted growth. Some of the most popular jobs are Solar systems installers (PL); Energy auditors; Environmental Engineering(IT)' Production and processing of BIO Mass (PL) and Energy certifiers(IT).

Table 7. Demand for e-green jobs.

Name of occupation	Estimated demand (New job openings)
Environmental Engineering(IT)	1000000
Solar systems installers (PL)	100000
Energy auditors	100000
Production and processing of BIO Mass (PL)	100000
Energy certifiers(IT)	100000
Green buildings designers	50000
Design of green technologies, especially solar systems(PL)	200
New construction Technologies (PL)	500
Eco-tourism manager(PL)	30000
Energy manager(PL)	6260
Electrical installers (IT)	35000
Researcher(It)	1000
Designers(It)	900
Consultant(It)	500
Environmental engineers	1000
Expert on energy certification of buildings(IT)	1500
Eco auditing (PL)	160
Manufacturing jobs in for the production of solar systems (PL)	1000
Thermal	25000
Green Progect manager	10000

Source: own elaboration.

The results from table 7 can be compared with a similar study conducted in the USA in 2009 (Table 8). Where the most popular jobs were energy auditors, energy engineers. Surprisingly, none of the respondents in the survey indicated the importance of the financial markets skills for the green economy (e.g. Carbon Credit Traders).

Table 8. Examples of New and Emerging Green Jobs.

Energy Auditors	Conduct energy audits of buildings, building systems and process systems. May also conduct investment grade audits of buildings or systems.
Energy Engineers	Design, develop, and evaluate energy-related projects and programs to reduce energy costs or improve energy efficiency during the designing, building, or remodeling stages of construction. May specialize in electrical systems; heating, ventilation, and air-conditioning (HVAC) systems; green buildings; lighting; air quality; or energy procurement.
Testing Adjusting and Balancing TAB Technicians	Test, adjust, and balance HVAC systems so they perform as designed.
Weatherization Installers and Technicians	Perform a variety of activities to weatherize homes and make them more energy efficient. Duties include repairing windows, insulating ducts, and performing heating, ventilating, and air-conditioning (HVAC) work. May perform energy audits and advise clients on energy conservation measures.
Carbon Credit Traders	Represent companies in the sale and purchase of carbon emissions permits.

Source: Corbett, P., 2009, *Green Workforce Development in New York City*,White Paper prepared for the New York City Workforce Investment Board [in:] *Introduction to New York City Green Jobs, Labor Market Information Service,* New York, May 2011, p.4.

Tables 9-12 show the results by each of the participating countries regarding the anticipated demand for specific training courses. The most popular types of training programmers in Hungary are: Financing of the Green Economy, water treatment plants and „New agriculture" and other related to agriculture. The least popular are: All-green construction, Solar Energy (thermal) and Solar Energy (photovoltaics). The popularity of training offers can be explained by a number of

factors such as no supply (due to lack of professional trained), no demand. Further more sleek demand for certain types of training can be explained either but low awareness of the need to train, no accessibility of certain courses or simply, the fact that the labor force is acquainted with the specific topic and does not need training.

Table 9. Results from Hungary.

Item no.	Type of training programme	Yes/No	To my knowledge such training programmes are already offered in my country	[If NOT] I envisage the need to include this training programme in the educational offers in my country
1.	Financing of the Green Economy	No	100%	0%
		Yes	0%	100%
2.	Water treatment plants	No	0%	-
		Yes	100%	-
3.	„New agriculture" and other related to agriculture	No	29%	0%
		Yes	71%	100%
4.	Ecological impact of the global industrial agriculture	No	81%	0%
		Yes	19%	100%
5.	Biofuels	No	0%	-
		Yes	100%	-
6.	Forestry	No	0%	-
		Yes	100%	-
7.	Environmental Policy and 'green' business practices"	No	86%	0%
		Yes	14%	100%
8.	Heat production, ventilation, gas supply, heating	No	0%	-
		Yes	100%	-
9.	Wind energy	No	0%	-
		Yes	100%	-
10.	All-green construction	No	0%	-
		Yes	100%	-
11.	Solar Energy (thermal)	No	0%	-
		Yes	100%	-
12.	Solar Energy (photovoltaics))	No	0%	-
		Yes	100%	-

Source: own elaboration.

The most popular types of training programmers in Italy are: Financing of the Green Economy, Water treatment plants and „New agriculture" and other related to agriculture. The least popular are: All-green construction, Solar Energy (thermal) and Solar Energy (photovoltaics) (Table 10). Comparing the thematic areas indicated as

the most important for inclusion in training programmes in Poland and Italy, one can find that three of them are the same. Experts from both countries agreed that among the most important are building envelope, the "new agriculture" and other agriculture-related areas, and financing a green jobs agenda, although the higher percentage of indications was in Poland.

Table 10. Results from Italy.

Item no.	Type of training programme	Yes/No	To my knowledge such training programmes are already offered in my country	[If NOT] I envisage the need to include this training programme in the educational offers in my country
1.	Financing of the Green Economy	No	76 %	17 %
		Yes	24 %	83 %
2.	Water treatment plants	No	74 %	17 %
		Yes	26 %	83 %
3.	„New agriculture" and other related to agriculture	No	64 %	16 %
		Yes	36 %	84 %
4.	Ecological impact of the global industrial agriculture	No	63 %	28 %
		Yes	37 %	72 %
5.	Biofuels	No	63 %	31 %
		Yes	37 %	69 %
6.	Forestry	No	59 %	44 %
		Yes	41 %	56 %
7.	Environmental Policy and 'green' business practices"	No	56 %	24 %
		Yes	44 %	76 %
8.	Heat production, ventilation, gas supply, heating	No	39 %	13 %
		Yes	61 %	87 %
9.	Wind energy	No	32 %	27 %
		Yes	68 %	73 %
10.	All-green construction	No	30 %	19 %
		Yes	70 %	81 %
11.	Solar Energy (thermal)	No	24 %	28 %
		Yes	76 %	72 %
12.	Solar Energy (photovoltaics)	No	17 %	28 %
		Yes	83 %	72 %

Source: own elaboration.

The most popular types of training programmers in Poland and, at the same time in Portugal are: Environmental Policy and 'green' business practices", Ecological impact of the global industrial agriculture and „New agriculture" and other related to

agriculture (Table 11 and Table 12). The least popular are: Solar Energy (photovoltaics), Wind energy and Forestry (Table 11). The only one thematic area that appeared among the most important for inclusion in training programmes in Poland, Italy and Portugal was building envelope. There are no other ones common to Italy and Portugal. Comparing Portugal and Poland we can find another two areas that are considered the most important: public transport and green policies and business practices.

Table 11. Results from Poland.

Item no.	Type of training programme	Yes/No	To my knowledge such training programmes are already offered in my country	[If NOT] I envisage the need to include this training programme in the educational offers in my country
1.	Environmental Policy and 'green' business practices"	No	84 %	3 %
		Yes	16 %	97 %
2.	Ecological impact of the global industrial agriculture	No	83 %	11 %
		Yes	17 %	89 %
3.	„New agriculture" and other related to agriculture	No	79 %	0 %
		Yes	21 %	100 %
4.	Financing of the Green Economy	No	76 %	3 %
		Yes	24 %	97 %
5.	Biofuels	No	67 %	11 %
		Yes	33 %	89 %
6.	Solar Energy (thermal)	No	59 %	4 %
		Yes	41 %	96 %
7.	Solar Energy (photovoltaics)	No	55 %	8 %
		Yes	45 %	92 %
8.	Wind energy	No	52 %	15 %
		Yes	48 %	85 %
9.	Forestry	No	38 %	14 %
		Yes	62 %	86 %

Source: own elaboration.

The least popular training programmes in Portugal are: Water treatment plants, All-green construction, Heat production, ventilation, gas supply, heating (Table 12).

Table 12. Results from Portugal.

Item no.	Type of training programme	Yes/No	To my knowledge such training programmes are already offered in my country	[If NOT] I envisage the need to include this training programme in the educational offers in my country
1.	Environmental Policy and 'green' business practices"	No	64%	10%
		Yes	36%	90%
2.	Ecological impact of the global industrial agriculture	No	60%	22%
		Yes	40%	78%
		Yes	91%	57%
3.	„New agriculture" and other related to agriculture	No	9%	43%
4.	Financing of Green Economy	No	67%	17%
		Yes	33%	83%
5.	Biofuels	No	57%	7%
		Yes	43%	93%
6.	Solar Energy (thermal)	No	38%	11%
		Yes	62%	89%
7.	Solar Energy (photovoltaics)	No	13%	13%
		Yes	87%	87%
8.	Wind energy	No	29%	25%
		Yes	71%	75%
9.	Forestry	No	64%	18%
		Yes	36%	82%
10.	Water treatment plants	No	50%	18%
		Yes	50%	82%
11.	All-green construction	No	43%	0%
		Yes	57%	100%
12.	Heat production, ventilation, gas supply, heating	No	31%	20%
		Yes	69%	80%

Source: own elaboration.

The following question asked about possible other thematic areas for training in the field of green technologies which were not offered in the home countries of the respondents and which should be offered on the market. Eighty respondents (or 55%) responded that there were no such thematic areas; 46 said 'yes' (32%) and 17 questionnaires had no response to this question. Table 13 shows the breakdown of answer according by country.

Table 13. Unmet demand for training by country (no. of responses).

„Are there any other thematic areas for training in the field of green technologies which are not offered in your country and, in your opinion should be offered on the market? Y/N	PL	IT	PT	HU	Total
No	37	19	5	19	80
Yes	12	21	11	2	46

Source: own elaboration.

Those respondents who provided positive answer to the question were requested to provide the topics of such training courses. Below is the list of selected topics. Each topic was mentioned only once:

- Agrotourism,
- Soil protection, organic farming,
- Micro bio gas plants, micro wind turbines,
- Water power plants,
- Marketing of environmental ideas,
- Best practices in green buildings construction,
- How to convert industrial districts with high impacts (and undergoing a strong crisis) into green districts,
- Valorization and management of the environment (including also hydrogeological safeguarding),
- Training on energy and environmental sustainability
- Multifunctional agriculture,
- Heat pumps, biomass,
- Experts should have a better knowledge and be more skilled on thermal pumps and biomass technologies,
- The Energy efficiency and RES technologies have seen a big development in the last decade(s) which has not been proportionally followed by training courses and qualification of experts,
- Green transport, traffic control,

- Hydroponic (crop out of soil areas polluted) growing algae for biogas culture of production of wood,
- Passive house design,
- Economic and financial appraisal of green technologies and green innovations; project management for "green re-definition" of product/service; management of green technologies transfer to SMEs,
- Life cycle assessment, construction of sustainable materials, retrofit of the historic urban, integrated work,
- Project management, fund-raising, internationalization programs,
- Development of the industry automation for saving energy,
- Green general management, networking, organization, psychology of markets, environmental sciences for the industry,
- Awareness of users, especially young people (in schools) and the elderly (in homes),
- Recycling,
- Sustainable transport certifiers,
- Construction, tourism, waste management and homeland security,
- Energy certification,
- Energy management of buildings,
- Management of communities,
- Energy efficiency mainly targeted to building envelope, HVAC systems, lighting and solar thermal and photovoltaic. In the lighting field which represents 20% of energy consumption of a building,
- Electric vehicles, tariff management, smart grids, energy storage, smart cities.
- Plumber, water supply, energy equipment installers,
- Recycling, energy savings technologies, water and materials, agriculture, forestry, fishing, manufacturing industry, transport, production of goods and green services,
- Hydrogen batteries,

- Techniques for energy monitoring and energy audits, technicians for heating installations, and for systems for the recovery and reuse of rainwater in buildings,
- Green jobs related competencies in the Agriculture: energy efficiency during the activities,
- Where unemployment is high, in rural areas, more information is needed on sustainable agriculture.

Table 14 shows the mean results regarding selected thematic areas for training programmes offered by the *e-Green Jobs consortium*. Each statement could be rated on a scale 1=strongly disagree to 4=strongly agree. The table shows mean results for each statement by country.

Table 14. Opinions on green job market by country.

Thematic areas	Poland	Italy	Portugal	Hungary	Total
There is no need to invest in any particular training programmes related to green jobs in my country	1.73	1.27	1.24	2.00	1.54
More research studies on the needs of employers in the field of green economy is needed in my country	3.62	3.40	3.48	3.00	3.43
The development of training programmes should be strongly supported by public funds/government programmes	3.51	3.54	3.38	4.00	3.57
The development of training programmes should be primarily sponsored by the private sector	1.89	2.35	2.48	1.19	2.04
The training companies are well prepared for the demands of the labour market in terms of green job education	2.33	2.20	2.19	2.00	2.23
Lack of sufficient training programmes is hindering the development of the green economy in my country	3.35	3.13	2.95	3.00	3.18
I know of environmental regulations in my country that have negative job consequences (by raising costs, reducing demand, or rendering a factory or company uncompetitive)	3.36	2.24	2.62	4.00	2.86
Green jobs will be created through the development of new technologies and the emergence of new industries (wind turbines, solar photovoltaics, fuel cells, biofuels, etc.).	3.51	3.27	2.90	3.38	3.32
Green policies and business practices can create new jobs or preserve existing ones	3.49	3.65	3.60	3.38	3.54

Table 14. continued.

Construction and installation jobs (for instance, of a wind turbine) are usually of a temporary nature. Thus there is no need to offer special training programmes directed to those segments of the job market	1.98	1.60	2.00	1.81	1.82
Manufacturing and maintenance jobs, on the other hand, are in principle of a longer-lasting nature. Therefore they deserve special training programmes directed to those segments of the job market	3.34	3.34	3.33	2.00	3.13
The state should do more to promote training programmes In the field of green economy	3.73	3.64	3.44	4.00	3.70

Source: own elaboration.

Figures 3-6 show the specific results for Hungary, Italy, Poland and Portugal. Respondents from Poland are most convinced that there is no need to invest in any particular training programmes related to green jobs in their country. They are also supporting the need to invest more into research on the green economy. The respondents from Hungary are most convinced that the development of training programmes should be strongly supported by public funds/government programmes. None of the countries considers the private sector as the key sponsor of the training programmes (average 2.04 for all countries) but Italian and Portuguese respondents are slightly more in favour of this idea. The training companies are generally unprepared for the demands of the labour market in terms of green job education in all surveyed countries. More important than the unpreparedness of the training companies is the lack of sufficient training programmes which is an important obstacle to the development of the green economy. It is considered the most important obstacle in Poland and relatively least important in Portugal. Judging by the state of knowledge of the respondents, Poland has the least conducive business climate for job growth (3.36). Surprisingly, the opinion that the green policies and business practices can create new jobs or preserve existing ones is not strongly supported (3.45 average for all countries). Perhaps it is an indication of lack of faith in the fundamentals of the green economy. Another explanation for such a relatively

low result in this category is that the respondents do not have expertise in macroeconomics. On the other hand, the respondents do not strongly support the opinion that the construction and installation jobs (for instance, of a wind turbine) are usually of a temporary nature, and, as a consequence, that there is no need to offer special training programmes directed to those segments of the job market. The averages for all countries are almost equal. There an evident bias among respondents toward industrial green jobs (as opposed to service sector green jobs) with the exception of Hungary (2.00). There is a consensus among respondents that the state should do more to promote training programmes in the field of green economy. The highest support for this opinion can be found among Portuguese and Hungarian respondents.

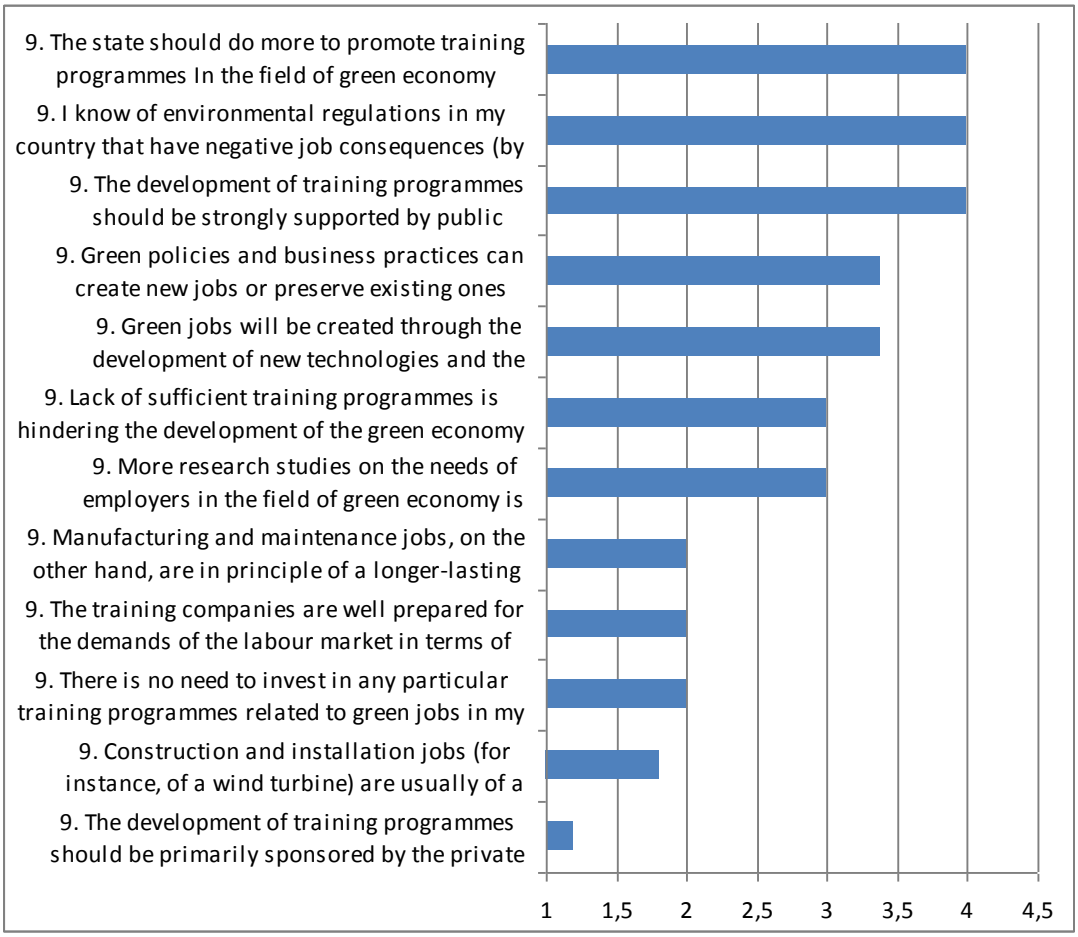

Figure 3. Opinions on the green jobs market – Hungary.
Source: own elaboration.

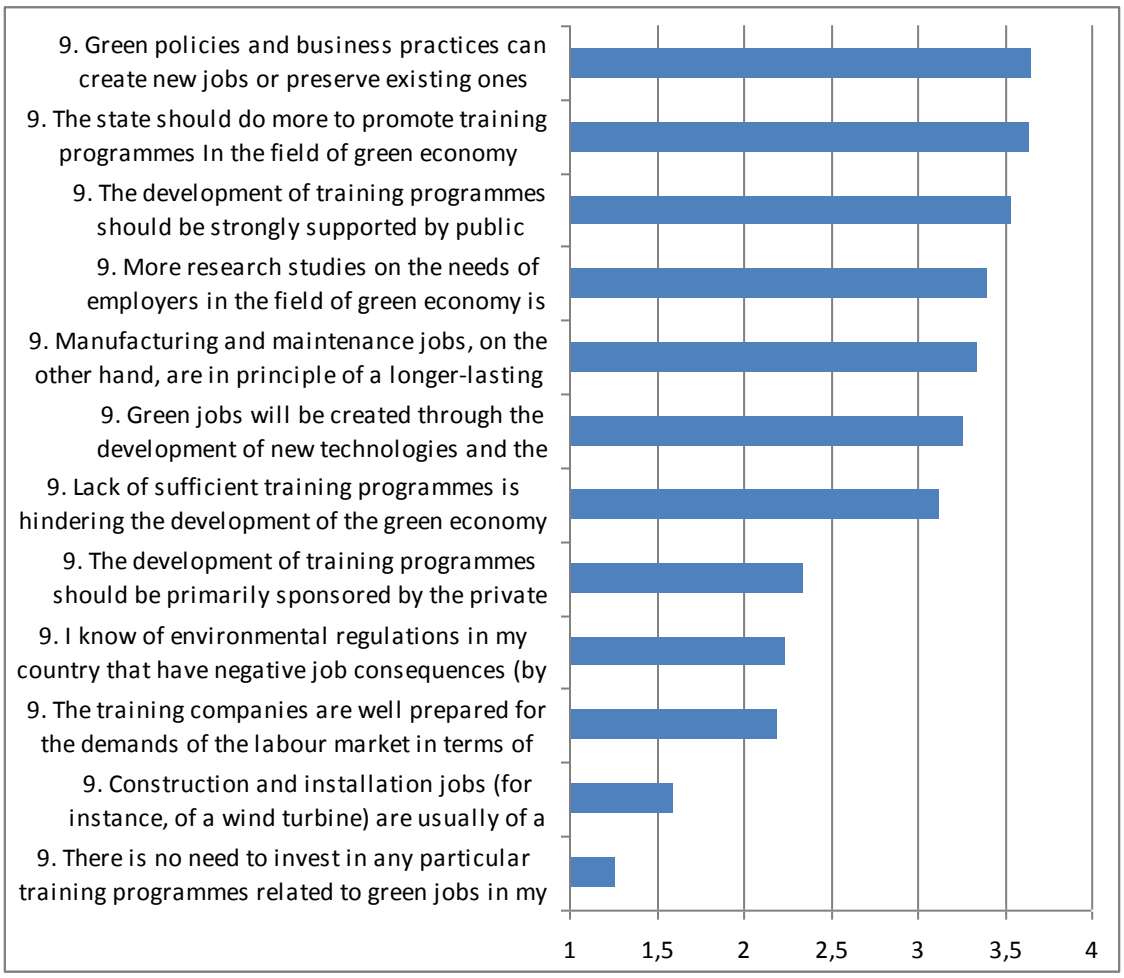

Figure 4. Opinions on the green jobs market – Italy.
Source: own elaboration.

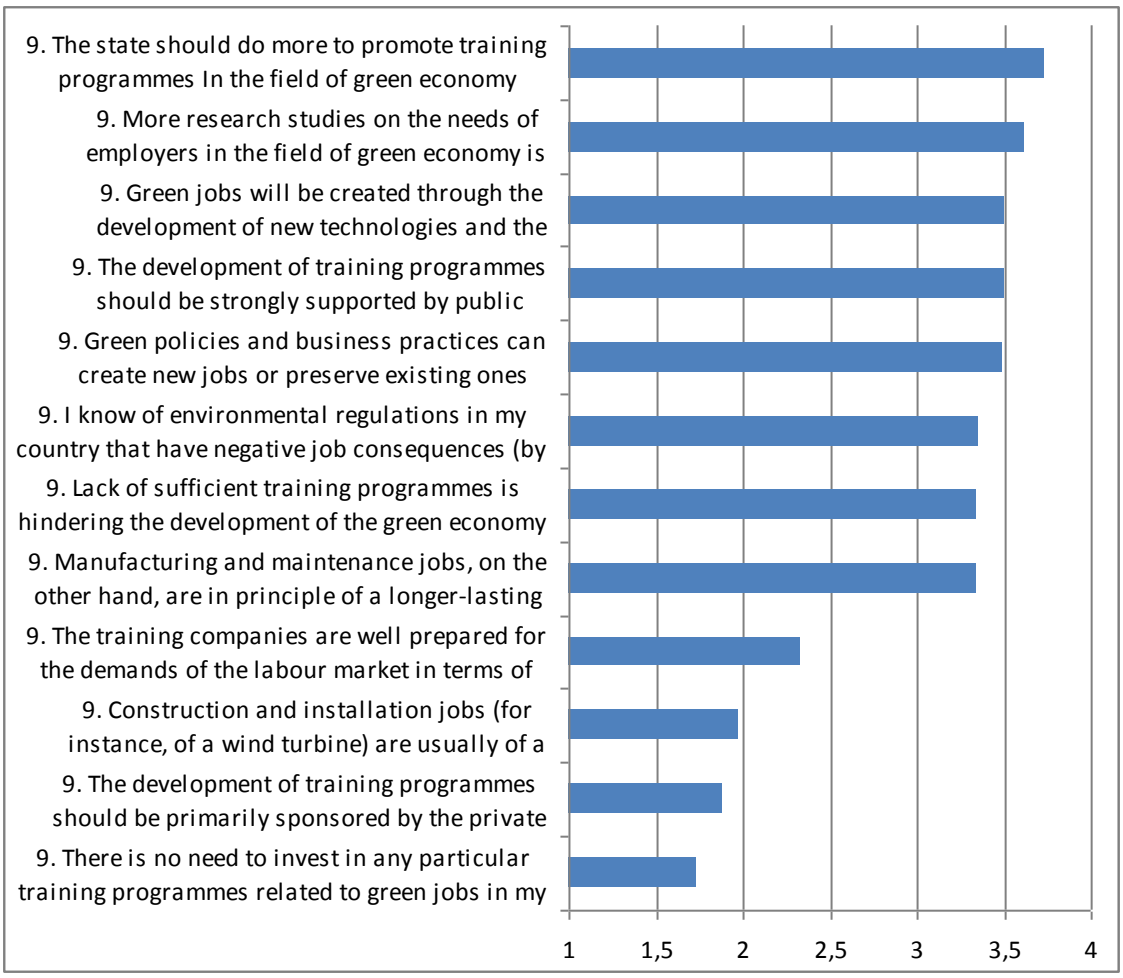

Figure 5. Opinions on the green jobs market – Poland.
Source: own elaboration.

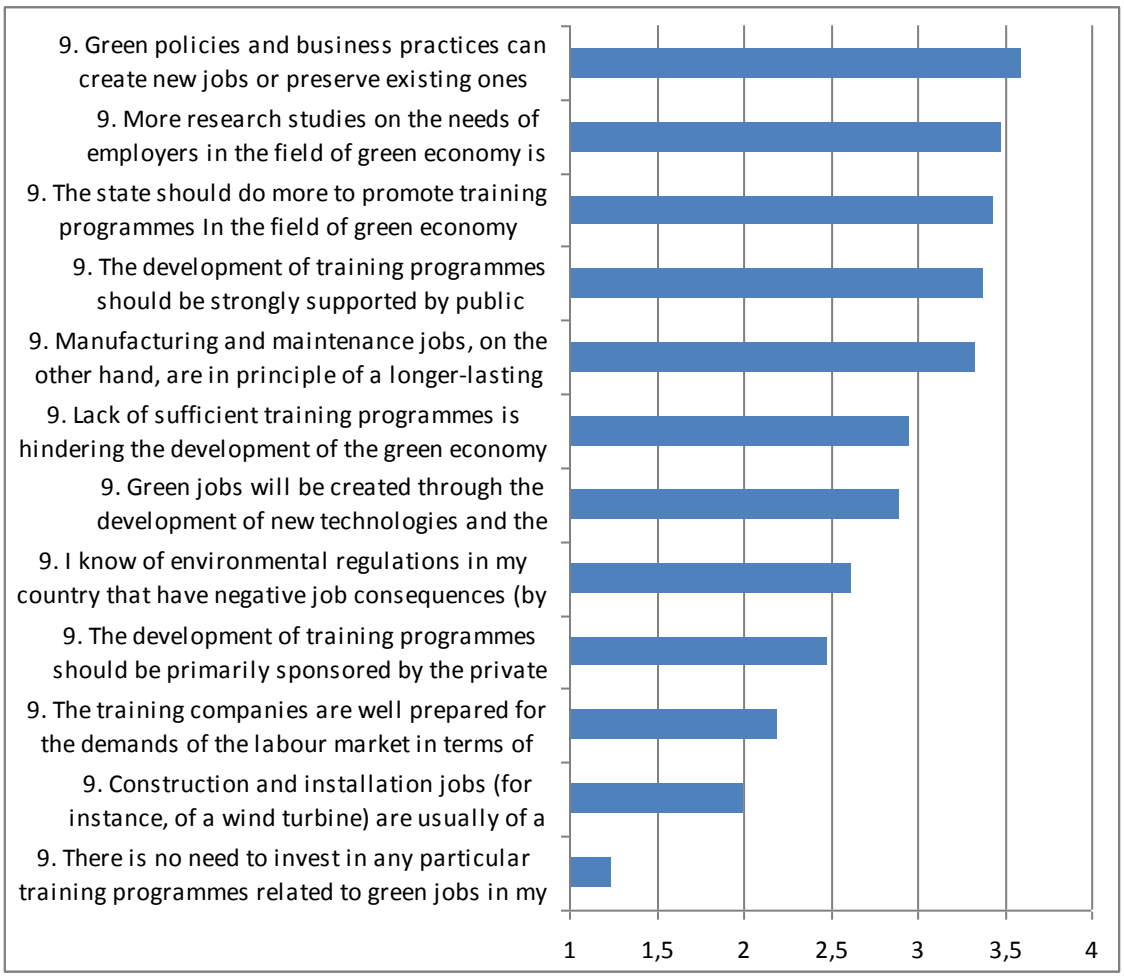

Figure 6. Opinions on the green jobs market – Portugal. Source: own elaboration.

The next question was intended to glean information from respondents regarding the initiatives and special programmes which aim at supporting the development of green jobs in their home countries. It also asked about the role of training for green jobs in those programmes. Some concrete answers were provided by respondents from 3 countries. Below are selected answers:

(Hungary)

- New Hungarian Development Plan
- KEOP

(Italy)

- Training programmes for the design and building of “green” buidlings (NZEB). - 4 different training levels, from awareness
- The training programmes implemented are on an individual basis organized by private companies – each with its own functioning characteristics – There is a general lack of coordination of the courses,
- National and Regional funding programmes,
- Rural development programme CAP – Common Agricultural policy Continuous training in agriculture Professional Apprenticeship Meeting Technical Information Agency Regional Agricultural Development,
- Training projects funded by Regional or national funds to train newly graduates on the green issues and enable them to enter the labour market
- Energy and environment regional training centre. Regional centers for the diffusion of ETT technologies. Research renewable energy,
- Green job are private and only aimed at a commercial rent,

- Sustainable development award for three new categories of companies green: eco-design, agricultural activities and activities of high ecological quality, start-up for the green economy. Structural Fun,
- Experimental social housing construction programs, which involve public institutions, private operators, inhabitants,
- Tuscany Region has implemented some programs for the green jobs development,
- New account heat. Energy bill. Green certificate system.

(Poland)

- „INNOWACYJNA GOSPODARKA",
- Training courses for farmers,
- Construction of houses made of straw and clay – functioning very well. Such houses are to complement eco tourism offerings,
- POKL,
- Green Evo.

The respondents were asked about possible target groups of employees in their countries who, in their opinion, should be offered training opportunities in the field of green economy and green jobs. Table 15 shows the breakdown of responses by country in percentage points (the total number of responses to this question was 146).

Table 15. Are there groups of employees who should be offered training opportunities in the field of green economy (by country, % of responses).

	PL	IT	PT	H	Total
No	38.30%	55.00%	43.75%	85.71%	52.42%
Yes	61.70%	45.00%	56.25%	14.29%	47.58%
Total	37.90%	32.26%	12.90%	16.94%	100.00%

Source: own elaboration.

The last question in the questionnaire related to the knowledge of the respondents on the companies in their home countries, which in the last 5 years have entered the sphere of green economy. Table 16 shows the breakdown of responses by country in percentage points (the total number of responses to this question was 143).

Table 16. Are there companies which in the last 5 years have entered the sphere of green economy in the native country of the respondent? (by country, % of responses).

	PL	IT	PT	H	Total
No	76,00%	75,00%	64,29%	100,00%	78,40%
Yes	24,00%	25,00%	35,71%	0,00%	21,60%
Total	40,00%	32,00%	11,20%	16,80%	100,00%

Source: own elaboration.

6. Summary

Concepts of the green economy and green jobs are relatively new concepts. United Nations Conference on Sustainable Development (Rio+20) considers green economy as one of the important tools available for achieving sustainable development. There is a growing demand for both statistical data and for conceptual guidelines on the measurement of green jobs. Policy-makers need to gain a better understanding of the impact of "greening the economy" on the labour market. Effective policy measures and tools have to be formulated in order to respond to this shift to a greener economy.

The empirical results were collected within the framework of the eGreen Jobs project (LdV). The baseline of bridging the employment, environment and industrial perspectives is represented by the valorisation of a systematic and organic communication process among key actors of the labour market demand and supply. OECD warns against overly-optimistic calculations of job growth as a result of climate change regulation, and of the methods being used to make these predictions, and

provides the example of the French Government's forecast which predicted the creation of 600 000 jobs as a result of the 15 programmes included in its environmental protection strategy known as the *Grenelle de l'Environnement* (Présidence de la République, 2009). [8] Babiker and Eckaus' study (2006) shows that the imposition of emission restrictions leads to a net reduction in job growth in the US. There is also the danger of the 'double accounting' of green jobs. The creation of new jobs may be attributed to the growth of a green economy by means of a lax definition of such jobs. Theoretically, any new industrial plant built according to the strict EU regulations in Europe may be considered 'green' if compared with the environmental standards of the 20th century. **Table 17 presents the most popular jobs by country. The training programmes should focus on supplying educational content related to this demand.**

Table 17. Educational content related to anticipated demand on the labour market.

Country	Recommended courses
Hungary	Renewable energy resources Installer of green energy devices Recycling experts
Italy	Installer of green energy devices Renewable energy management experts Renewable energy resources Energy certifiers(IT) Environmental Engineering
Poland	Installer of green energy devices (incl. solar systems installers) All-green construction Eco-tourism managers Renewable energy resources Production and processing of BIO Mass
Portugal	Renewable energy resources Energy efficiency related jobs Agriculture

Source: own elaboration.

[8] OECD/Martinez-Fernandez. C, Hinojosa C, Miranda G., "Green jobs and skills: the local labour market implications of addressing climate change", 8 February 2010, working document, CFE/LEED, OECD, www.oecd.org/dataoecd/54/43/44683169.pdf?conte ntId=44683170

Due to low level of awareness and weak public understanding of green economy issues a set of courses dedicated to primary and secondary education teachers would be useful. Such courses should teach the participants:

- How to talk and popularize the green economy
- Basic concepts and terms related to green economy
- Develop social skills such as ' *sensibility to the environmental issues'*; '*eco-friendly personality*"; "*ability to assess the environmental impact of technology*" etc.

The prospects of the green economy and the job opportunities for school graduates.

It is recommended that the educational offer in Hungary is extended with the following courses:

- Financing of the Green Economy,
- Water treatment plants,
- „New agriculture" and other related to agriculture,
- Ecological impact of the global industrial agriculture,
- Environmental Policy and 'green' business practices.

It is recommended that the educational offer in Italy is extended with the following courses:

- Financing of the Green Economy,
- Water treatment plants,
- „New agriculture" and other related to agriculture,
- Ecological impact of the global industrial agriculture,
- Biofuels,
- Forestry.

It is recommended that the educational offer in Poland is extended with the following courses:

- Environmental Policy and 'green' business practices",

- Ecological impact of the global industrial agriculture,
- „New agriculture" and other related to agriculture,
- Financing of the Green Economy,
- Biofuels,
- Solar Energy (thermal),
- Solar Energy (photovoltaics),
- Wind energy,
- Forestry.

It is recommended that the educational offer in Portugal is extended with the following courses:

- Environmental Policy and 'green' business practices",
- Ecological impact of the global industrial agriculture,
- „New agriculture" and other related to agriculture,
- Financing of Green Economy,
- Biofuels,
- Solar Energy (thermal),
- Solar Energy (photovoltaics),
- Wind energy,
- Forestry,
- Water treatment plants,
- All-green construction,
- Heat production, ventilation, gas supply, heating.

7. List of Tables

8. List of Figures

9. References:

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Annex:

Training Needs Analysis Questionnaire

e-Green Jobs in Europe

Prepared by Vistula University, Warsaw, Poland

This questionnaire is a part of a 2-year Transfer of Innovation project (funded by Lifelong Learning Program – Leonardo da Vinci), aimed at skills and competences improvement of workers employed in green sector with e-learning technology use (acronym: E-GREEN JOBS). Time frame of the project is 24 months (from 01/10/2013 till 30/09/2015).

We advise that, if possible, the questionnaire is conducted in a face-to-face manner so that the respondents can be guided and assisted by a member of our research team.
The main aim of the E-GREEN JOBS project is to improve skills and competences of Polish workers, experts, professionals, freelances involved in green sectors, with e-learning technology use. Additionally, the project will follow the green jobs situation also in other EU countries, namely Italy, Portugal and Hungary. All data gathered during this survey is confidential.

You may want to get acquainted with some definitions related to green jobs. Below a concise introduction to the issues investigated in the following questionnaire is provided.

By participating in this survey you can make your own and your institution's contribution to making Europe a more competitive economy and greener place to live. Your valuable input will help us contribute to the growth of the EU economy and help thousands of Europeans to find better job prospects in the green sectors.

We appreciate your time and effort to provide your valuable feedback!

Please answer the questions sharing with us your expertise and opinions.

1. What is your opinion on the current state of the education system and the labour market in your country? Please share your opinions with us:

	Strongly disagree	Rather disagree	Rather agree	Strongly agree	Don't know/undecided
Education system in my country is generally well-prepared to provide education for the green economy					
Our vocational training system of education needs to be improved in order to meet the requirements of the labour market for green jobs					
The demand for green jobs in my country is higher than the supply of trained professionals					
The employers in my country are facing difficulties with finding well trained specialists for green jobs					
Employers are cooperating with schools in order to increase the quality of training for the green economy					
The voice of the employers' offering green jobs is considered in the reform of the education system in my country					
Education for the green economy should be primarily the responsibility of the employers (limited or marginal role of the government)					
Education for the green economy should be primarily the responsibility of the employers and the government working in close collaboration (shared responsibilities between the two)					
The state should do more to promote training programmes in the field of green economy					

2. In your opinion, for which occupations will there be *increasing demand*, and for which occupations related to the green economy will *demand decrease* in your country? Can you name any specific occupations which are defined as 'green jobs' for which you predict an increase in demand on the job market?

Name of occupation	Increase/decrease?	(Possible) reason/explanation
	I/D	
	I/D	
	I/D	
	I/D	

3. Are you familiar with the curricula of primary and secondary schools in your country?

Y/N

If YES, can you name any instances of 'green economy' initiatives in the teaching programmes of primary and secondary schools in your country?

Type of initiative	How is green economy represented/exposed in the primary and secondary education system in your country?
Primary schools	
Secondary schools	

4. What new skills need to be developed, and what are the consequences for education and training systems in order to adapt to the development of new areas of growth and new technologies?

[open end]

5. Are there skills bottlenecks, and if so, in which sectors and occupations? What are the skills gaps?

[open end]

6. Looking at the labour market in your country, please estimate how many people need to be trained in what skills in the transition to a green economy?

Skill specification	Estimated number of employees

7. Below is a list of selected thematic areas for training programmes offered by the *e-Green Jobs consortium*. Please provide your opinion on each of them:

	To my knowledge this topic is already included in the training programmes in my country	[If NO] I recognize the need to include the topic in the training programmes in my country
Sewage treatment plants	Y/N	Y/N
Solar Photovoltaics	Y/N	Y/N
The "New Agriculture" and other related to agiculture	Y/N	Y/N
HVAC (Heating Ventilation and Air Conditioning) Systems	Y/N	Y/N
Building Envelope (including insulation and windows installers)	Y/N	Y/N
Wind Power	Y/N	Y/N
Solar Thermal	Y/N	Y/N
Biofuels	Y/N	Y/N
Industry (Steel, Aluminum, Cement, Pulp, Paper)	Y/N	Y/N

8. Below is a list of OTHER selected thematic areas for training programmes. Please provide your opinion on each of them:

	To my knowledge this topic is already included in the training programmes in my country	[If NO] I recognize the need to include the topic in the training programmes in my country
Aviation	Y/N	Y/N
Road Mobility	Y/N	Y/N
Urban Mobility	Y/N	Y/N
Public Transport	Y/N	Y/N
Rail	Y/N	Y/N
The Environmental Footprint of Global-Industrial Agriculture	Y/N	Y/N
Forestry	Y/N	Y/N
Financing a Green Jobs Agenda	Y/N	Y/N
Green Policies and Business Practices	Y/N	Y/N

9. Are there any other thematic areas for training in the field of green technologies which are not offered in your country, and in your opinion, should be offered on the market?

Y/N

If YES, what are they?

[open end question]

10. Your general views on the training needs in the field of green economy:

	Strongly disagree	Rather disagree	Rather agree	Strongly agrre	Don't know/undecided
There is no need to invest in any particular training programmes related to green jobs in my country					
More research studies on the needs of employers in the field of green economy is needed in my country					
The development of training programmes should be strongly supported by public funds/government programmes					
The development of training programmes should be primarily sponsored by the private sector					
The training companies are well prepared for the demands of the labour market in terms of green job education					
Lack of sufficient training programmes is hindering the development of the green economy in my country					
I know of environmental regulations in my country that have negative job consequences (by raising costs, reducing demand, or rendering a factory or company uncompetitive)					
Green jobs will be created through the development of new technologies and the emergence of new industries (wind turbines, solar photovoltaics, fuel cells, biofuels, etc.)					
Green policies and business practices can create new jobs or preserve existing ones					
Construction and installation jobs (for instance, of a wind turbine) are usually of a temporary nature. Thus there is no need to offer special training programmes directed to those segments of the job market					
Manufacturing and maintenance jobs, on the other hand, are in principle of a longer-lasting nature. Therefore they deserve special training programmes directed to those segments of the job market					
The state should do more to promote training programmes in the field of green economy					

11. Are there any special programmes which aim at supporting the development of green jobs? How do they function? What is the role of training for green jobs in those programmes?

[open end]

12. Do you recognize any particular target groups of employees in your country which, in your opinion should be offered training opportunities in the field of green economy and green jobs?

Y/N

If yes, what are they?

Name of target group	Justification: why should they be offered training opportunities?

13. Countries that become leaders in green products, services, and technology development will want to press their advantage and capture export markets in addition to serving their own domestic markets. Are you acquainted with companies native to your country which in the last 5 years have entered the sphere of green economy?

Y/N

If so, please help us prepare a short description of such company (-ies) in order to establish some general trends and commonalities:

The purpose of this question is to build a database of "green" companies

	Company 1.	Company 2.	Company 3.
Name			
What is special in that company? How is becoming 'green'?			
Is it investing in training of its employees?			
What is the intensity of training (days/employee) etc?			
Other important facts from the point of view of green economy and green jobs.			

Demographics

Your current profession:

a) Employer, please specify: ……
b) Employee
c) Unemployed

Which of the below best describes your expertise? (You may pick more than one answer)

a) Expert on labour market
b) Expert on green economy
c) Expert on a green technology/-ies
d) I don't have professional expertise on any of the above

Country where you are working at the moment: ……
Is it your native country: Y/N

Age:

a) Below 25
b) 25-34
c) 35-45
d) 46-65
e) Above 65