European Commission

Fondazione Giacomo Brodolini

new skills for green jobs

# New Skills for Green Jobs.

# A case for a more gender inclusive labour market?

## Country Report

## Italy

## August 2012



idlavoro servizi impiego liguria
Agenzia Liguria Lavoro
Ente strumentale della Regione Liguria

REGIONE LAZIO
ASSESSORATO ALLE POLITICHE PER IL LAVORO E FORMAZIONE PROFESSIONALE, ISTRUZIONE E DIRITTO ALLO STUDIO

"This publication is supported by the European Union Programme for Employment and Social Solidarity – PROGRESS (2007-2013).
This programme is implemented by the European Commission. It was established to financially support the implementation of the objectives of the European Union in the employment, social affairs and equal opportunities area, and thereby, contribute to the achievement of the Europe 2020 Strategy goals in this fields.
The seven-year Programme targets all stakeholders who can help shape the development of appropriate and effective employment and social legislation and policies, across the EU-27, EFTA-EEA and EU candidate and pre-candidate countries.
For more information see: http://ec.europa.eu/progress

The information contained in this publication does not necessarily reflect the position or opinion of the European Commission".

# 1. Introduction

The present report has been prepared within the framework of the "New Skills for Green Jobs project", a transnational partnership co-funded by the PROGRESS Programme of the European Commission, by Fondazione Giacomo Brodolini in collaboration with the two regional level Italian partners in the project: Assessorato Lavoro e Formazione, Regione Lazio (par 3.2 and best practices n. 1, 2 and 3) and Agenzia Liguria Lavoro, Regione Liguria (par. 3.3, best practices n.4,5 and 6).

The report is aimed at providing a homogenous and standardised knowledge basis of the "state of the art" in each partner's territory with regards to the main policies related to the transition of a green economy and related training policies and measures – exemplified with a selection of good practices and its potential implications in a gender perspective. The report is structured as follows:

- State of the environment in Italy and progress towards the Europe 2020 targets (Chapter 2)
- National and regional policies towards the development of the green economy and related training policies and offer (Chapter 3 and 4)
- Gender analysis of the vocational and educational training strategies and policies relevant to the green economy (Chapter 5)
- Identification and collection of six regional good practices touching upon different environmental subjects and training modalities (Annex I)

The country report is based on both desk and field analysis. Field analysis has been carried out mostly at regional level and has culminated in the organisation of two local stakeholders' workshops which were held respectively in Rome (April 2012) and Genoa (March 2012). The workshops were aimed at collecting information on regional training needs and offer from local stakeholders as well as collecting and/or validating good practices in the field training for the green economy.

# 2. Context analysis

## 2.1. The state of the environment in Italy and progress towards Europe 2020 targets

The picture that emerges from the 2011 yearbook on the state of environment in Italy published by ISPRA (the operational agency of the ministry of environment) portrays a **fragile territory exposed to man-made and natural environmental risks** alike[1]. Italy is one of the most densely

[1] http://annuario.isprambiente.it/

populated countries in Europe and pressure from man-made activities on its natural resources is particularly high. One of the biggest environmental threats to which the Italian territory is exposed to is the increasing trend of soil consumption and the phenomenon of soil sealing which threatens more than 6% of the Italian territory. Also particularly alarming is the state of Italian coasts – Italy has one of the longest coastal perimeters in Europe - with two thirds of Italian territory (over 65%) found within 10km of the shore being used for human activities and moulded by invasive and irreversible human action - which places Italy among the countries with the highest risk of **coastal erosion**. The quality of **water resources** is negatively impacted upon by widespread pollution from fertilisers and plant care products as well as specific industrial dumping sites, plus shortcomings in the civic purification systems.

Italy is a "hot spot" of biodiversity and a major resource for the entire planet. This wealth of biodiversity, however, is seriously threatened, particularly as concerns vertebrate species (notably freshwater fishes, amphibians and reptiles) and plants. Again, the main threats to the natural heritage are tied to the impact of human activities and to the growing demand for natural resources and ecosystem services. Furthermore, the separate collection of municipal waste is still below the target foreseen by the law with an extremely diversified scenario, with the Northern regions having reached the targets and the Centre South still very far from achieving it.

The document prepared by the European Commission for the Assessment of the 2012 National Reform Programme and stability programme for Italy[2] shows that progress on the **climate targets under the Europe 2020 Strategy** is mixed: while advances towards the reduction of greenhouse gas emissions by 13% by 2020 are modest, the objective of an increase in the share of renewable energy sources in final energy consumption by 17% by 2020 is well on track. As regards the reduction of energy consumption by 27.9 Mtoe by 2020, this is likely to be achieved and to benefit from the new objective set in the Energy Efficiency Action Plan 2011 of 9.6 % of energy saving by 2016. In terms of total greenhouse gas emissions, Italy ranks 4th in the EU27.

## 2.2. Perspectives of the green economy in Italy

In Italy, probably more so than in other European countries, the development of a green economy represents an exceptional opportunity for restructuring and increasing the competitiveness of its manufacturing industries. A more sustainable and greener economy does not only represent a potential for growth for its most competitive industries – such as those working in the field of renewable energy or sustainable transport - but also for the thousands of SMEs spread across the country which constitute the backbone of the Italian productive system.

The *GreenItaly 2011*[3] report, issued by Unioncamere (the national association of the Chambers of Commerce) and Symbola Foundation, **provides an accurate picture of Italian firms' investments**

[2] http://ec.europa.eu/europe2020/pdf/nd/swd2012_italy_en.pdf

[3] www.unioncamere.gov.it/download/1257.html

**in the green economy and of their likely impact on employment**. According to the report, based on a large survey on a representative sample of firms (more than 100,000), **23.9% of Italian firms invested in green products and technologies** (ie energy saving and/or reduced environmental impact products and technologies) **in the 2008-2011 period**. This share ranges from 27% in industry to 25.7% in construction and 22.1% in services.

In the paragraphs below we provide a quick overview of the sectors which are bound to play a key role in the transition to a green economy in Italy.

- Energy produced from **renewable sources** is growing at a quick pace: in 2010 it covered 12% of national gross consumption and 22.4% of electrical consumption with an increase of almost 10% with respect to the previous year. Water has always been the main source of renewable energy production (66.4% in 2010) even if "new" renewable energy sources are catching up - such as wind (12% of total renewable energy produced), photovoltaic (2.5%) and bioenergy (12%), with photovoltaic showing by far the highest increase rate (+181,7% in 2010). It has to be noted that innovative architectural and engineering techniques play a significant role in Italy in fostering such growth with a high number of new enterprises and start-ups offering innovative solutions for positioning photovoltaic panels on industrial warehouses and old and new residential buildings.
- The **agricultural sector** as a whole plays an important role in shaping the transition towards a greener economy, with a high number of agricultural companies. Over the past three years Italian agricultural companies have been investing considerable resources on reducing consumption of energy (Excelsior survey – Unioncamere). They are also strongly committed to organic farming: on a global scale Italy ranks eighth by extension of land dedicated to organic farming; it is also the main European exporter of organic products (in terms of exports' value) and is the first in Europe for the number of enterprises that have chosen organic farming. These facts bear witness to the gradual and constant transition towards a more sustainable agricultural production experienced by our country. Furthermore the organic agricultural sector in Italy shows "innovative" features with respect to the rest of agro-enterprises (in terms for example of a higher number of female entrepreneurs and a better educational level of organic producers).
- The **manufacturing** sector is at the forefront of the development of the green economy in Italy. Italy's transition towards sustainability is characterised by the conversion of the traditional leading-edge sectors of Italian industry whose enterprises have started to re-orient their productive processes with an eye to sustainability, trying to "capture" the increasing environmental awareness of Italian and global consumers. This is particularly true for the **textile-clothing, wood-furnishing, paper, tan, chemical, ceramics and automotive industries**. Most of these sectors can boast green tech companies at the forefront of global competition, especially in the automotive sector (which is probably the one that shows the best prospects of growth over the next few years) or in the chemical

industry at large which ranks several global champions such as for example Novamont, a chemical company producing Mater-bi, a bio-plastics component made of renewable components (starches and vegetable oils) totally biodegradable and compostable.

- The **building industry** also plays a major role in the development of a green economy in Italy especially as concerns the renovation – in a sustainable perspective - of existing residential buildings. Energy efficiency is probably the field which will drive many investments and works in the sector of the next years, also thanks to a generous fiscal incentives system set up by the Government in these past years.

The *Greenitaly* report finds that green enterprises are more likely to export their products or services than other enterprises (34.8% against 18.6%) and to introduce product/service innovations (38.1% against 18.3%). Moreover, they are **more likely to hire new workers** (31.7% against 19.7% in 2011) with a higher incidence of **high-skilled** and **graduated workers**. The potential of greening seems particularly relevant in some sectors such as chemical, textile and clothing, leather, wood and wooden products, paper and mechanical products.

As regards the employment potential of green industries, according to the *Greenitaly Report*, around 227,000 people would be hired in green professions by Italian firms in 2011 (around 38% of total hiring, that is, around 600,000 workers), with an increase by about 1.5% over 2010. Of these, more than one third (97,000) are green workers in a strict sense, e.g. those **directly involved** in the fields of renewable energies, installation of "green" plants, sustainable building and energy efficiency, cultivation and production of biofuels, sustainable mobility, water and waste management, environmental conservation and sustainable development (80 strictly "green" professions have been identified in the report).

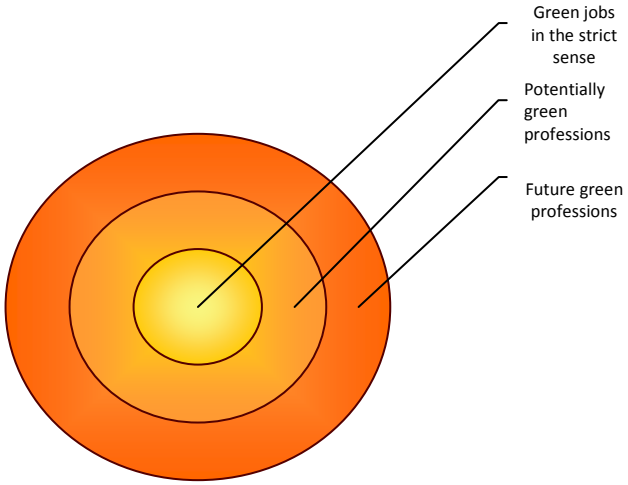
**Construction** is the sector showing the highest percentage of green workers among newly hired people (72.8%, of which 40.6% green workers in a strict sense, mainly with a specialisation in energy-related fields). **Industry** follows, with a percentage of green workers amounting to 55% of total hiring (25% are green workers in strict sense). At the other opposite, the share of green workers among newly hired in services is only 23.1% (7.2% are green workers in strict sense).

**Difficulties in finding adequate competences is reported for 30.3% of green hiring** in strict sense, compared to 28.1% of green hiring in wide sense (traditional professions with a green content) and 24.2% of non-green hiring. This points at the need of adequate training strategies to provide candidates with the skills required by the market.

Interestingly, 49% of total green hiring and 65% of green hiring in strict sense refer to **qualified craftsmen**. Nonetheless, 20% of green jobs in the strict sense fall in the category of **professionals**. More than 88% of total green workers and 82% of green workers in a strict sense would be hired for "greening" activities, that is, in the context of industrial restructuring towards more environmentally sustainable processes.

*Box 1. Defining and classifying "green professions": the Greenitaly approach*

The methodological approach adopted by the Greenitaly report is based on the identification of different typologies of green jobs and related skills, each with an increasing degree of pervasiveness according to a system of concentric circles as shown in the figure below.




The report thus distinguishes between those professions that are fully aligned with the green economy (in the "strict sense") from those that - currently or in the future - are "potentially" green, provided that competences associated with these professions increasingly incorporate skills that closely linked to green skills (if necessary, through ad hoc training initiatives).

For the identification of green professions in the strict sense (which according to the report amount to 80) the report used different analysis and studies[4] at the International level that identify at first new green industrial sectors and and on the basis of this emerging green professions. Potentially green professions have been selected instead from the national catalogue professions according to two main macro-sectors of employment, namely:

- development of new green products/technologies or services whose usage increases the sustainability of productive processes and social behaviours. These profiles can be employed either in research structures or directly by those businesses who intend to become "green" or "greener"
- greening activities, ie those aimed at the restructuring of productive processes and consumption patterns in a sustainable perspective through the adoption of new green products/technologies/services. The professions are likely to be sought after by those businesses that are interested in increasing the sustainability of their productive processes and in offering goods and services with a reduced environmental impact.

[4] See for example *Understanding the Green Economy in California. A community college perspective*, June, 2009

# 3. Overview of policies towards the development of the green economy

## 3.1. National perspective

At the central level, environmental policy is the responsibility of the Ministry of Environment. Over these past 15 years Italian Regions' responsibilities and legislative power has increased leading to the development of extensive environmental legislation at the regional level.

Today, policies supporting the green economy are closely related with the central government's efforts towards the attainment of the objectives of the **Kyoto protocol** and the **Europe 2020** targets. Among the recently adopted measures particularly relevant is the establishment, in March 2012, of the **Kyoto revolving Fund** aimed at the implementation of projects for the reduction of green house gases through public and private investments by providing loans to support investment in renewable energy and other sectors. The Fund also foresees specific instruments to **promote highly qualified employment** in these sectors, especially for younger workers through different instruments such as fiscal rebates or concessional loans for companies planning to hire new employees.

In recent years Italy has witnessed the liberalization and development of the national energy market, and the introduction of **several measures aimed at improving energy efficiency** in buildings, **requirements for safety and emissions reduction** paid by operators of power from fossil fuels, the **incentive policies for the renewal of obsolete machinery and appliances** with more efficient equipment. The **energy** sector has been the prime focus of Italy's push towards sustainability and the green economy both in terms of the promotion of the use of energy from **renewable resources** and of increasing **energy efficiency**.

Over the past years the government has financed a very popular programme providing incentives in the form fiscal rebates (up to 55%) for the installation of **energy-saving systems** and appliances in residential and industrial buildings. In 2011, the government transposed Directive 2009/28/EC on renewable energy. It also issued a an energy efficiency Action Plan, which discusses among others action taken and opportunities for the transport sector (which accounts for over one quarter of Italy's energy consumption.

**Renewable energy** has been boosted thanks primarily to government incentives to producers of energy from alternative sources (the so-called *Conto Energia* and *green certificates*). The **photovoltaic sector** has been the main beneficiary of these measures, with incentives supporting companies and individuals who decided to fit panels onto their properties. Additional measures include: regulations establishing the need to integrate renewable sources in buildings (new as well as those undergoing restoration) and supporting technological and industrial development related to sustainability.

In the field of **sustainable mobility** the Authority for Energy has launched a package of projects aimed at promoting the use of electric cars in Italian cities. An additional interesting legislative development concerns the publication on the Official Journal of a set of criteria guiding green

public procurement as foreseen in the Action Plan for environmental sustainability of Public Administration.

Finally, **quality certification regulations** plays an important role in fostering greater environmental awareness across the business sector. These include environmental certification systems, some of which are mandatory to start up a business in Italy (such as waste water management, energy efficiency, packaging), and some are voluntary (such as ecolabeling systems).

Parallel to the central administration, and as previously mentioned, Italian regional governments play an increasing role in the field of environmental conservation and promotion of a more efficient and effective production system. This – coupled with regions' wide discretionary powers in setting their vocational and educational training strategies - makes regions important actors in promoting the transition to a green economy. In the paragraphs that follow we provide a quick overview of the main instruments and regulatory tools which have been put in place to this end by the Lazio and Liguria regions.

## 3.2 The institutional and regulatory framework for the promotion of a green economy in the Lazio Region

In the following paragraphs we provide an overview of the main legislative and regulatory tools approved by Lazio Region which are relevant for the development of a green economy in the Region.

### *3.2.1 Environment and sustainable development*

- Regional Law 6/2008 bearing "Provisions on regional sustainable architecture and green building" aims to promote and encourage energetic and environmental sustainability in building public and private constructions. To this end, Lazio Region has put in place a system of evaluation and certification of energy and environmental sustainability of buildings.
- Regional Law 16/2011 on "Environmental Regulations and renewable sources" is aimed at promoting renewable energy production.
- Regional Council Decree (DGR) 311/2007 for the "Promotion of Green Public Procurement (GPP)" is intended to facilitate the introduction of an environmental perspective into public procurement. It is a tool implemented through the enactment of the so-called GPP guidelines (defined at the national level) and training/information courses for officers in charge of public procurement. An additional regional decree "Guidelines for the implementation of Green Public Procurement System in the Region" defines those sectors in which "green" purchase shall be respected, such as furniture, organic food canteens, electric vehicles, etc..

### 3.2.2 *Agriculture*

- Regional law 21/1998 "Standards for Organic Agriculture" is aimed at supporting farm incomes and to encourage organic farming. The law has led to the creation of Board for organic farming in charge of indicating criteria and guidelines for the conversion of farms and managing the regional register of organic farms.
- Regional Law of March 19, 2008 "Requirements for sustainable development and enhancement of the professional activities of fisheries and aquaculture", is aimed at sustainable development and enhancement of the professional activities of fisheries and aquaculture, training and qualification of the operators, the protection of aquatic ecosystems through regional support to scientific and economic research for the development of sustainable patterns of production and new technologies.
- In addition to the above the Rural Development Plan co-financed by the European Union and managed by the Lazio Region provides the overall strategy (for the period 2007-2013) for the strengthening of the agricultural sector, including provisions aimed at sustainability and environmental protection. The Plan included in particular a specific measure aimed at promoting training of agricultural employees and entrepreneurs with a focus on sustainable farming methods and organic agriculture.

### 3.2.3 *Urban Planning*

- Regional Law 6/2008, "Provisions on sustainable architecture and green building" aims to promote energy and encouraging environmental sustainability in the design and construction of buildings, promoting the adoption and diffusion of principles to improve the energy efficiency.

### 3.2.4 *Related training initiatives*

In the paragraphs that follow we provide some examples of related VET policies coordinated and/or financed by the Lazio region which might support the “greening” of the regional workforce.

- Over the past few years the Regione Lazio has signed several Memorandums of Understanding with different universities for the introduction of university-level courses on environmental issues such as "Energy and environmental sustainability", "Renewable and Energy Efficiency";
- Creation of an Energy Environment Training Centre of Lazio Region. It is a research project aimed to carry out training courses for technicians specialized in energy certification of buildings and production systems and in the application of renewable energy sources in a perspective of creating innovative professional profiles. The centre is supported by a wide partnership, including ENEA (National Agency for Energy, Technology and Sustainable Development) and three universities based in Lazio Region.

Two additional initiatives are worth mentioning even though they are not specifically related to environmental aspects: i) The Training Needs Research Project: it aims to set up a network of

stakeholders aiming at sharing information and helping in identifying regional professional training needs; ii) The Regional Permanent Observatory on Lifelong Learning[5], whose specific aim is to develop life-long learning systems and supporting the adaptability of workers. This will be achieved by analyzing and monitoring the demand for training of companies and workers; identifying and networking authorities that operate on life-long planning and financing interventions; wide spreading information.

In addition to the above activities which are specifically aimed at promoting education and vocational training, the Lazio Region carries out also several initiatives in the field of environmental education. The regional system of environmental education draws inspiration from the Charter of Principles proposed in 1997 by the Ministerial Committee on Education and Environment aimed at creating an effective and comprehensive national system for environmental education. Regional Law 74/1991 bearing provisions concerning environmental protection, entrusted to the Councillor for the Environment important tasks concerning raising awareness of citizenship with regard to environmental issues. A first input to the development of information activities and environmental education was given with the formation of the regional network of laboratories for environmental education, promoted by Lazio Region, in coordination with the provincial governments. The process of institutionalization of the network is strengthened by an agreement between the Ministry of the Environment, Lazio region and the five provincial governments which has led to the set up of the technical committee of the National program for information, training and environmental education (INFEA).

## 3.3 The institutional and regulatory framework for the promotion of a green economy in the Liguria Region through training and education activities

Over the past three years Liguria Region has implemented a diverse set of policy measures and initiatives aimed at promoting the transition to a regional green economy which could be classified into three main priorities of intervention:

- Developing human capital and research in green related sectors
- Company support
- Strengthening the governance system[6]

### *3.3.1 Developing human capital and research*

This is mainly pursued through the promotion of secondary and post-secondary education initiatives such as:

- **A wide spectrum of tertiary and post tertiary courses offered through the University of Genoa**, including 18 university courses, 5 Masters' Degrees and 8 PhD courses in

[5] The Observatory is still in its set up phase

[6] The different experiences have been developed on the base of three objectives indicated by Liguria's authorities and some of them have been presented on March 22nd, 2012 during the workshop "Training polices and skills development in Green Economy area in Liguria" organized in the framework of the project.

fields related to the development of a green economy, ranging from engineering, biology/marine sciences and other subjects.

- **Post secondary training offer through Colleges of Vocational Education** (Istituti Tecnici Superiori – ITS) (see infra 4.1). Of the four existing ITS on the regional territory one is focused on **energy efficiency**: the college prepares highly qualified technicians by providing them skills in design, organization, management construction and maintenance of the generation and distribution of energy plans as well as evaluation of their environmental impact. The first course started in October 2011 with 18 enrolments and a new edition started in January 2012 with 21 pupils. The course is organised in four modules and foresees that 1250 hours are dedicated to laboratory and classroom activities and 600 hours dedicated to apprenticeship within an enterprise working in the sector and supported by a tutor. A final exam leads to the attainment of a graduation diploma and provides university credits together with a certification of skills (also for students who have not complete the courses).

### *3.1.1. Company support*

Liguria Region is actively involved in the set up and launch of the **Erzelli Center for science and technology** a major venture for the Ligurian region and economy as a whole. The Centre is likely to promote innovative "green" ventures and has been designed so as to ensure the highest energetic and environmental sustainability standards (including an internal cogeneration plan). The Centre is located at the outskirts of the city of Genoa in an area characterized by social inclusion problems and strong environmental pressures: in this sense the creation of a centre of excellence in this area also represents and environmental redevelopment. The most important fact is represented of 220000 m2 dedicated to green spaces. Reliability project is realized through an  Another important fact is represented by a vertical connection between upstream and downstream (funicular). It is currently in act a reliability study which is not funded yet. The operation fund is directly supported by Region Liguria and University college of Genoa.

The "Green Port" project aims at improving the energy efficiency of the area of the Genoa harbour – one of the biggest in Europe. The project is promoted by the Genoa Port Authority, Muvita Science Center, ENEL Green Power (the Italian energy supplier), the Municipality of Genoa and Liguria Region. The project foresees the installation of 39 small (30m high) wind turbines for total power production of 199kW each. ENEL Green Power has already estimated the effective environmental impact reduction in relation to the Carbon Dioxide, Nitrogen Oxide, Sulfur Oxide and Fine Dust Dejection. Energy production will be able to satisfy necessities of over 6680 families.

### *3.1.2. Governance development and strengthening*

Connection initiatives between science and society with scientific disclosure support addressed to young people and population are expected (i.e. Annual Science Festival, Regional Center for

Research and innovation, CRRI for the support to regional structures In the activity management for Region objective achievement, in planning intervention on the territories for research, innovation, technology transfer and training areas. All these features in agreement with Regional three-years plan for development and support to the University, to the research and innovation).

Moreover support for consortium and association establishment, with appropriate characteristics to public funding races participation is expected (Muvita and Genoa Smart City association which has been established in order to fulfill Covenant of Major ratification but also aims to citizenship sensitization and CO2 emissions dejection.

# 4. Overview of training policies in the field of green jobs and skills

## 4.1. Main features of the national training and education system

In Italy, the Vocational and Educational Training (VET) system separates the initial VET (IVET) for young people entering the labour market, and continuous VET (CVET) for the adult already in the labour market (both employed and unemployed) with needs of updating or changing their competencies.

The IVET includes the technical and vocational pathways of the upper secondary schools, managed by the State, and the vocational training programmes managed by the Regions. The education system remains under exclusive competence of the State, responsible for setting the essential minimum levels of provision both for the educational and the VET systems. Regions are expected to reform and develop their VET systems on the basis of local labour market needs.

### *4.1.1. Initial Vocational and Educational Training*

IVET in Italy is organised in two different pathways and three main programmes. The technical and vocational education is the first pathway and the most important one. It is essentially school-based, lasts five years and leads to an upper secondary school diploma, allowing university admission and access to the labour market. The second pathway of IVET is particularly relevant for its potential contribution to specialised workers in areas which are relevant to the green economy. They provide vocational training for specific skills managed by the Regional authorities through **Colleges of Vocation Education**, providing post-secondary education, the so-called *Istituti Tecnici Superiori* (ITS), which are a form of tertiary non-academic education. This pathways passed a recent (2010 May) step of its long reform process. It includes courses and curricula leading to a certificate or a diploma recognized, at national and European level. ITS are based on a three-year planning cycle and focus on subjects identified by regional programming in accordance with labour market needs. They are created by consortia of local entities (universities, companies, etc.) and are articulated according to 6 main technological areas, including **energy efficiency** and **sustainable mobility**.

### *4.1.2. Continuous Vocational and Educational Training*

Broadly speaking the continuous vocational training in Italy is financed through three main mechanisms:

i) **National laws** on continuous vocational training (laws 236/1993 and 53/2000): The basic framework for public financed lifelong learning policies was established by Law 236 of 1993, which provided instruments to finance CVT and re-qualification programmes directed to different categories of workers. The main beneficiaries are workers entitled to specific unemployment benefits schemes and unemployed people involved in social works.

ii) **Inter-sectoral bilateral funds** (*Fondi Interprofessionali per la formazione continua*) established in 2001. These funds are promoted by the social partners (employers' associations and trade unions) through inter-confederal agreements, and may have sectoral coverage (14 inter-professional funds have been founded). Their aim is to finance training plans (at sectoral, territorial or firm level) presented by adherent companies, as well as individual plans for workers employed in those companies. In turn, companies are required to choose a fund for continuous training activities addressed to employees (and, in case, another one for those addressed to managers). **Such funds can play an important role for the training or retraining of workers in green skills**.

iii) The **European Social Fund**: traditionally finances training activities in different fields for both employed and unemployed, including people at risk of social exclusion. Following the so-called "anti-crisis" agreement of February 2009 between the central government and Regions part of the ESF funds – mostly managed by Regions – have been re-oriented towards unemployment benefits delivered "on derogation" to current legislation, ie to workers not eligible under the ordinary system or whose duration has been extended for specific categories most hit by the crisis. The agreement specifically envisaged that ESF funding should complement these unemployment benefits with training measures and active labour market policies. Some of the measures foreseen by the agreement have been specifically targeted at green sectors and women.

An additional important resource for the financing of training activities is represented by Law 144 of 1999 which allocated specific resources for continuous training (worth yearly EUR 103 million), which permanently added to the resources coming from social contributions. Moreover, Law 53 of 2000 allocated extra EUR 15 million per year to finance individual training projects.

The main actors of the continuing vocational training system are the Ministry of Labour and Social Policies, with the technical support of ISFOL(the National training Institute), together with Regions. Regions have the general responsibility of managing most training activities, financing spending by selecting the appropriate local-level targets and reporting to government. Social partners also play an important role in promoting training plans at company-level, to be financed by either regions or IBFs.

## 4.2. Training offer for the development of green skills and jobs

Strategic programming for "green" training activities in Italy is addressed through a wide and differentiated range of bodies, organisations and measures. The European Social Fund - which largely finance vocational training within Regions - plays an important role in financing such activities. Still, a significant share of environmental training is also supplied by Universities, both at undergraduate and at postgraduate levels.

ISFOL (the National Institute for Vocational Training) realises periodical reports on training supply in environmental subjects, which represent the most authoritative source on the diffusion and characteristics of training in the fields related to green jobs in Italy. These reports are based on data coming from the IFOLAMB (Informazione Formazione Orientamento Lavoro AMBientale) informative system, which is an observatory on training, education and jobs in a "green" framework[7].

The last of these reports has been carried out referring to the year 2010, and it **covers the universe of training courses with an environmental subject in Italy**. Defining exactly what is meant by "environmental training" is not an easy task. To this purpose, two levels of analysis have been identifed by ISFOL. On the one hand, **training topics** have been detailed by macro-areas and sub-areas. Six macro-areas have been identified:

- Ecological agriculture (e.g. organic and low impact agriculture, quality control, certification, and so on);
- Depollution, resources saving and control (e.g. waste management, renewable energies, energy saving, monitoring, quality control, certification, and so on);
- Environmental regulation;
- Conservation, safeguard, defence and valorisation of the environment and the territory (e.g. environmental tourism, cultural and environmental goods, soil defence, urban planning, and so on);
- Basic and applied research;
- Environmental information, education and training.

The second level of analysis regards the **typology of training**. Three segments of training supply have been considered:

- Vocational training courses, namely:
  - i) training courses included in Regional training plans (financed by European, regional, provincial funds);

[7] All material produced by the IFOLAMB Project and quoted in this report can be found at: http://www.ifolamb.isti.cnr.it/index.html

ii) training courses privately funded, but certified by Regions;

iii) public and private courses of various nature and available on the market.

- University: the survey has focused on university degrees held by state and private universities, with a specific environmental focus. In detail, the survey analysed:

  i) BA courses ("lauree triennali");

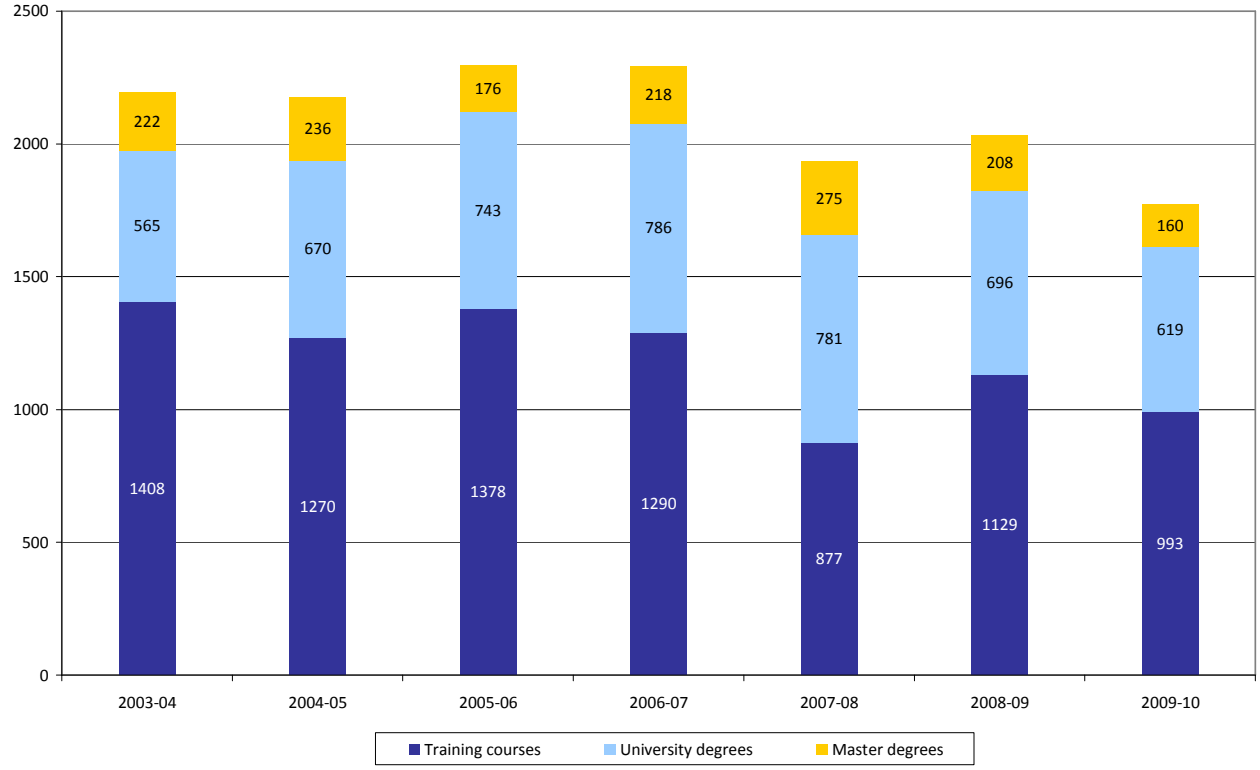
  ii) MA courses ("lauree specialistiche");

  iii) Specialisation courses.

- Master's degrees: all kind of masters have been considered here, including I or II level environmental masters held by state or private universities, masters held by other private institutions and high training courses funded by ESF.

As it appears from Figure 1, number of total courses has been decreasing in recent years, after a peak reached in 2005/06 (when a total of 2,297 courses were held), up to 1,772 in 2009/10. This seems due to a decrease in vocational training courses. On average, the percentage of vocational training courses on total courses is on the decrease (56% in 2009-2010 against 64.1% in 2003-2004), while university degrees are becoming more diffused, representing 34.9% of total environmental training supply in 2009-2010 (against 25.7% in 2003-2004). Master degrees amount to 9% of total training courses in 2009-2010, almost the same share registered in 2003-2004 (10.1%), although on the decrease after a peak in 2007-08 (which might indicate that a significant share of master courses activated through 2007-08 has not been confirmed in the following year). This decrease, as concerns university and master courses, probably depends on the process of rationalisation started by the government, which caused several cancellations and unifications of courses.

**Figure 1**




Source: ISFOL, IFOLAMB system

In general terms, beside an increasing differentiation of environmental training supply by typology of courses, themes and trainees, an overall increase of the level of training can be observed, with an increase in the number of courses providing medium-high skills and vocational qualifications. This follows an increasing demand for green jobs requiring higher educational levels and skills.

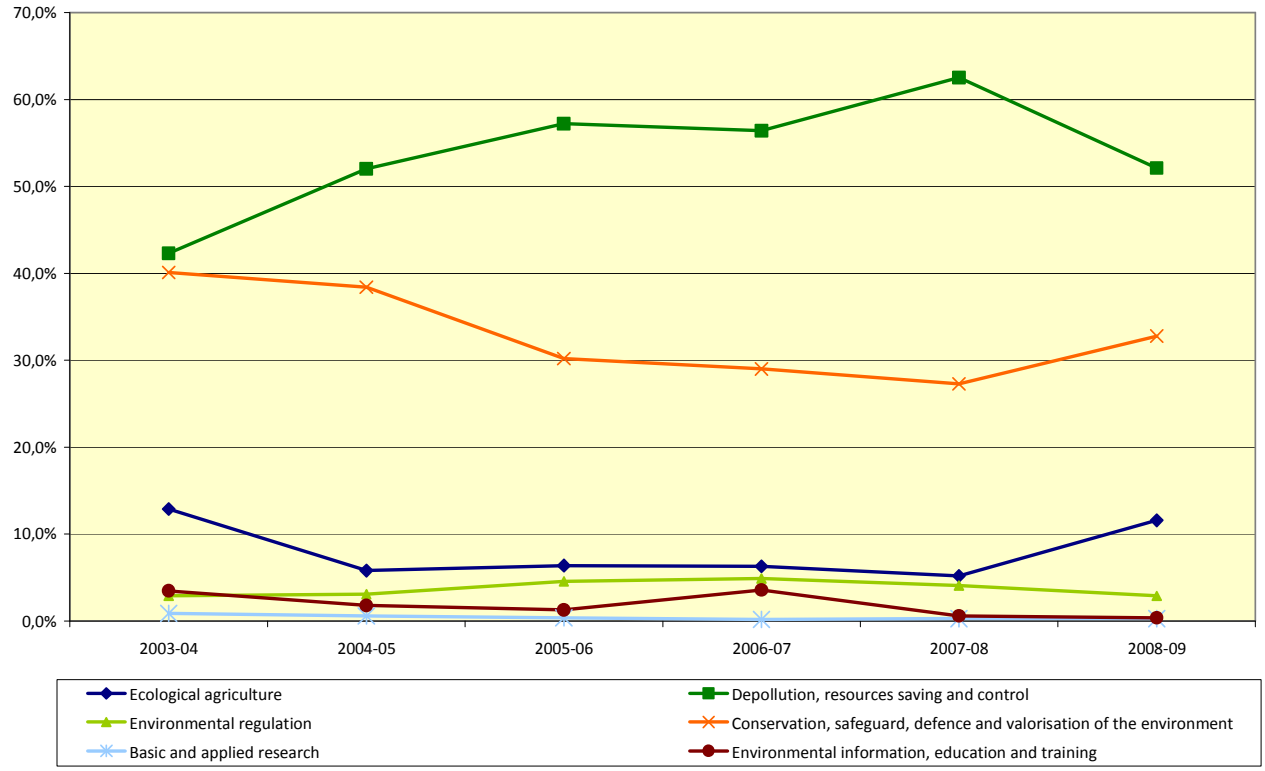
### *4.2.1. Vocational training courses*

As concerns the typologies of vocational training courses, most of them are addressed to workers (continuous training represents 75.9% of the total, increasing from 62.6% in 2003-2004). A smaller number of courses are addressed to youngsters after compulsory schooling (6%) or after a secondary diploma (8.4%), while courses directed to unemployed or disadvantaged workers represent a marginal share. In practice, it can be affirmed that while, in the past, vocational training in environmental subjects played a role in the school-work transition, nowadays it represents more an instrument for workers' requalification and skills updating. On the contrary, the attainment of professional qualifications is mainly achieved through university-level degrees.

The main subjects offered by courses are "Depollution, resources saving and control" and "Environmental conservation" (Figure 2). Courses related to depollution increased from 42.3% of the total in 2003-04 to 52.1% in 2008-09. Among these courses, the most diffused topics regard quality control, environmental certification, monitoring, security and environmental health.

Renewable energies and resource saving courses are on the rise, increasing from 4.5% in 2003-04 to 19.3% in 2008-09 (see Table 1 for a detail on the content of courses under these headings).

**Figure 2**




Source: ISFOL, IFOLAMB system

As concerns funding, 59% of total training courses was publicly financed in 2008-09, while 41% was privately financed. Public funding prevails among ecological agriculture (94.7% of courses) and conservation of the environment (74.3%) courses, while private funding prevails among depollution (57.7%) and environmental regulation (57.7%) courses.

**Table 1. Content of vocational training courses**

| | |
|---|---|
| Ecological agriculture | · Organic, integrated, biodynamic, low impact production<br>· Quality control and certification<br>· Marketing<br>· Other |
| Depollution, resources saving and control | · Waste<br>· Renewable energies and resources saving<br>· Water<br>· Air<br>· Noise<br>· Monitoring, security, hygiene, environmental health<br>· Quality control and certification<br>· Reclaim activities<br>· Electromagnetic pollution<br>· Other |
| Environmental regulation | |
| Conservation, safeguard, defence and valorisation of the environment | · Farm holidays<br>· Environmental tourism<br>· Cultural and environmental goods<br>· Soil defence, water and forest resources<br>· Urban green<br>· Urban planning<br>· Planning and management of resources<br>· Environmental impact<br>· Other |
| Basic and applied research | |
| Environmental information, education and training | · Education<br>· Information, dissemination and communication<br>· Training and updating |

Source: ISFOL, IFOLAMB system

### *4.2.2. University courses*

As concerns university courses, data reflect changes introduced by the reform of university of 1999, introducing a two-stage system (*lauree triennali*, corresponding to a BA, followed by *lauree specialistiche* or *lauree magistrali*, corresponding to MA) in place of the previous comprehensive degrees (*lauree a ciclo unico*). Since the first experimentations, the supply of environmental degree courses has significantly increased (+23% with respect to 2003/2004) although a decrease can be observed in the last year (619 courses in 2009/2010 with respect to 781 in 2007/2008).

Environmental degrees represented 14% of total degree courses activated in Italy in 2007-2008. An increasing trend, in particular, can be observed in advanced degrees (*lauree specialistiche* or *magistrali*) which together amounted to 46.2% of environmental university education supply, increasing from 28.3% in 2003/2004. In practice, it seems that environmental education is gradually increasing its function of specialisation on top of general skills acquired through basic degree courses. Environmental courses are more diffused across the following fields: geology, biology, chemistry/pharmaceutics, engineering, architecture and agriculture.

Environmental courses are more diffused across the faculties of geology, biology, chemistry/pharmaceutics, engineering, architecture and agriculture. According to ISFOL (2010), 43.5% of environmental graduates (BA) is employed after one year from the attainment of the degree, while 53.4% is employed after three years. However, the percentage of those who continue their studies is high (64.4% after one year and 37.7% after three years). Gender differences are sensible: 59% of men is at work after three years, against only 47.6% of women.

### *4.2.3. Post-graduate courses*

Finally, as concerns post-graduate (master) programmes, which are more specifically geared to the creation of high-level competences and professional profiles for the development of green jobs,a strong increase in the supply of opportunities has been recorded, although with a decreasing trend in most recent years. The number of environmental masters has increased from 60 activated in 1999/2000 to 208 in 2008/2009 (that is, almost four times more), to descend again down to 160 in 2009/10. The majority of masters are promoted by universities (81.7% in 2008/09), followed by private institutions and enterprises (around 17.8%). According to ISFOL data, the number of master programmes has rapidly increased thanks to small universities, which are spread over the territory (outside large cities) and often are more directly involved in environmental conservation projects and issues. Masters financed by European funds (e.g. *Alta formazione*) experimented instead a strong decrease, from almost 20% in 2003/04 to only 0.5% of the total (one master activated) in 2008/09.

As concerns topics, “Environmental conservation” is the most frequent (more than 54% of master programmes was activated in this area in 2008/09). Within this area, the most diffused fields are those related to “Planning and management of resources” (26.4%), “Soil defence, water and forest resources” (14.4%) and “Urban planning” (12.5%).The second area, in numeric terms, is “Depollution, resources saving and control” (31.3%) with a prevalence of programmes in “Monitoring, security, hygiene, environmental health” (11.5%), “Renewable energies and resources saving” (10.1%) and “Quality control and environmental certification” (9.6%).

As concerns costs, most master programmes (39%) provide for a student fee between EUR 1,500 and EUR 3,000. Nonetheless, the share of masters with a cost comprised between EUR 3,000 and EUR 4,500 is increasing (from 11.5% in 2003/04 to 30% in 2008/09), as well as the share of those with a cost higher than EUR 6,000 (10.2% in 2008/09).

Given the strategic role of master programmes in the development of green jobs, a specific survey on their quality and their role in the transition from education to work has been produced by ISFOL. According to this survey (dating back to 2007), although masters mainly aim at matching jobs and skills needs both in actual (54.8%) and potential (35.6%) terms, the involvement of social partners and the development of skills forecasting tools are two aspects that need to be fostered. The creation of innovative professional profiles, not existing yet in the labour market, involves 10.6% of total courses, while 12.5% of masters provides for an updating of existing skills. The survey shows that 80.6% of students were employed one year after the conclusion of the master.

This seems a quite promising result. Among them, 42.4% were employed also before the master (so the master represented an occasion for skills updating and perhaps to invest in a new sector), while the remaining 57.6% found a job after the conclusion of the programme. Again, gender differences emerge: the share of men in employment amounts to 83.9%, against 77.2% among women.

Interestingly, around 58% of employed find their job coherent with their studies. Nonetheless, from this viewpoint some gender differences emerge, as this share varies from 61% for men to 53.8% for women. Moreover, masters do not pave the way to stable employment, as only 22.6% of employed has an open-ended contract (of these, 70% were permanent employees even before the master); fixed-term and semi-autonomous workers are respectively 24.4% and 20%); self-employed are 22.9%.

## 5. Gender analysis of existing training practices

The situation of Italian women on the labour market in Italy is particularly alarming, with Italy scoring some of the highest gender inequality levels among the EU-27. This is also partially reflected in the environmental sector, which remains a largely male trade. According to data collected by ISFOL through the IFOLAMB Project, women represent 25% of those employed in the sector and they are mostly concentrated in the sustainable/environmental tourism sub-sector, followed by agro-forestry (respectively 34.7 and 25.7% of women employed in the sector). Women are also more likely to have precarious or atypical jobs and this holds also for the environmental sector.

On the other hand it should be noted that women's presence in the sector as more than doubled from 1993 to 2008 (from 12.7% to 25.5%). Furthermore women employed in the environmental sector are relatively more likely to occupy qualified professions as they have on average better education qualifications than men. This relative advantage is counterbalanced by the fact that the education system is still highly polarised at the upper secondary as well as the tertiary level. As concerns the latter, in the academic year 2007/08, the share of women enrolling in scientific or engineering faculties amounted respectively to 30.6% and 20.2%. Conversely, women prevailed in the liberal arts (68.2%), psychology (81.9%) and education (91.2%). The faculties of economics, political sciences and architecture appear to be more gender balanced. Noticeably, the recent EU report on gender differences (2010) in educational outcomes shows that Italy has not implemented any policy in favour gender equality (against vertical and horizontal segregation) in upper education.

**Consistent and reliable gender disaggregated data on participation to training activities in environmental related activities are not available in Italy**. As a general rule, it should be noted that training policies generally do not take into account the gender dimension, if we exclude Law

53/2000, whose aim is to "promote an equilibrium among work, care and training schedules" and which regulated, among other things, parental leaves and the financing of projects in favour of reconciliation (e.g. flexibility in working hours, distance work, etc.) also concerning the participation to training activities. On the contrary, the gender dimension is usually taken into account in ESF programming. In fact, equal opportunities and gender mainstreaming generally represent a transversal principle in the Operational Programmes presented by Regions, which are managing authorities of ESF in Italy and which finance a substantial part of training activities (ESF accounts for over half of the total resources devoted to continuous vocational training in Italy). The share of women involved in CVT activities financed by the ESF during the programming period 2000-06 amounted to 47.3% (nonetheless, a slight gender gap is evident).

Generally speaking it could be said that women's participation to Lifelong Learning activities is higher than that of men and this holds for both employed and unemployed women. The situation however changes when focusing on participation and access in Continuous and Vocational Training and when analyzing the employment sector. The advantage position of women in CVT is "limited" to the public sector while it is more critical in the private sector. A survey conducted in 2010 by ISFOL on the training behaviour of workers (ISFOL-INDACO-CVTS 2010), shows that in those sectors where women are least represented their likelihood of participating to CVT decreases and companies' investment in CVT for women is lower, such as for example the industry sector. Most importantly, the CVT gender gap is particularly high in the most innovative and competitive sectors, among which several green industries are located. This represents an important question mark concerning the evaluation of the gender impact of investment in CVT with regards to the lack of an adequate gender mainstreaming of such measures that would seem to "reinforce" the status quo instead of facilitating horizontal and vertical desegregation processes. Additional information which could shed light on women's participation to CVT provided by the INDACO survey concern the fact that such participation decreases for women aged between 35 and 44 ie during those years characterized by the greatest reconciliation pressures on women.

## 6. Conclusions: adequacy and effectiveness of training strategies

In Italy the transition to a greener economy represents a unique opportunity for the country's economy and productive system. Italian companies have responded particularly well to the challenge and are making important investments in order to increase the sustainability of their production methods but also in order to meet the demands of Italian and global consumers alike.These investments – supported both by European funds and directives as well as by generous incentives schemes whose future sustainability is seriously at risk - have an important anti-cyclical value as they are creating – also in the short run – new employment and training needs, especially among the younger generations. They are also bound to increase the human capital of the Italian

labour force as new employment created by the green economy tends to require highly qualified workers.

According to the evidence emerged during the desk analysis and from interviews with stakeholders at national and regional level, however, several issues emerge as concerns training related to the green economy. The first (and most relevant) issue concerns the planning of training courses and their linkage with the anticipation of skills needed in green professions. Beyond a generic goal of providing green skills (e.g. those related to resources saving and environmental conservation) to participants, the definition of professional profiles should be strictly linked to the demand of firms and to the opportunities emerging, also for self-entrepreneurship, in specific sectors (such as renewable energies, environmental certification and quality control, eco-housing, organic farming, sustainable mobility, and so on).

Unfortunately this linkage is not well developed and equally diffused over the national territory. Although the national skills anticipation system (the Excelsior survey carried out by Unioncamere and the Ministry of Labour and Social Policies) provides hiring trends and forecasts, for each profession, at national and regional/local level, the planning of training courses by regional continuous vocational training systems often is not based on such information, nor on complementary tools developed at regional/local level. The involvement of social partners in the definition of training profiles appears crucial, in order to enhance their compliance with territorial needs. It should be avoided, for instance, that vocational training courses in green subjects are discontinued after the first year of activity, because the professional profile created does not match labour market needs, or there is not a sufficient number of applications in the second year. The missed renovation of a course has, among its by-products, a negative effect on those who have attained the qualification in the first year, as it signals to the market poor quality/effectiveness of training. The related question is: what is the most effective way to make planning of training activities more adherent to territorial skills needs?

Another important issue is the absence of a common skills certification system in Italy, also as concerns the validation of non formal skills. This has a specific impact on green jobs, as in many cases (as seen in the previous sections) green jobs require a top-up of existing, "traditional" skills, rather than radically new competences. Validation of these skills is not easy, and several methodologies are adopted across Europe. The regional competences on vocational training in Italy make it necessary to develop unitary schemes, so as to favour mobility of workers across regions and better define green workers (who, for instance, could be object of specific labour market policies or incentives).

Finally, as concerns monitoring, labour market statistics should be permeated by the concepts of environmental impact and "green" employment. Currently it is not possible to know how many workers are green (to a different extent, as pointed out by the *GreenItaly report*) within a specific sector, nor to have information about their educational level, their wage and the differences in terms of gender. Existing statistics are only based on ad-hoc surveys or ex-post classifications based on primary data. Clearly, this has an impact on the definition of training profiles and strategies. In particular, in order to inform enrolment choices by students, it should be important

to have a systematic and frequently updated comparative monitoring on how “green” education and training perform with respect to training in other disciplines (at the level of secondary, under-graduate and post-graduate education). What are the European practices in this field?

An additional criticality emerged from the analysis concerns the lack of gender mainstreaming measures in training programs and in efforts to de-segregate the education sector, which is still highly polarised with women under-represented in STEM sectors. This lack of gender sensitiveness is mostly reflected in training and education programs in the green sector even though lack of data undermines a more rigorous analysis of the phenomenon.