# 

SKILLS FOR A GREEN ECONOMYIN TOSCANA

A CASE STUDYFor green JOBS:

focus on Green building

September 2015

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# Foreword

This report was commissioned by Regione Toscana to illustrate the case study of Toscana in the framework of Egrejob project, concerning the development of green jobs. Special attention will be paid to analyse the potential for local economic development, connected to green jobs and the estimated skill needs in green activities. The main aim of the case study is to bring precise inputs to choose the sub-sector for testing training scheme devoted to the green jobs.

The study was coordinated by Franco Bortolotti, scientific coordinator of Ires Toscana (Istituto di Ricerche Economiche e Sociali), charged of the Labour Market Research Area and former professor under contract of Urban and Regional Economics (University of Florence). The draft has been prepared also by Manrico Benelli. expert on environmental reporting, planning and management of environmental resources and sustainability tools and in the use of assessment tools (Strategic Environmental Assessment, Impact Assessment, etc.); Enrico Fabbri, consultant for Italia Lavoro, responsible for Ires Toscana of Social Policy Research Area and Professor in Active Employment Policies (University of Florence); Roberta Pini (statistics, experienced in quantitative and qualitative research, manager at EuremaS.c., Research Coordinator Metamarketing Service Srl.

The report was carried out in the framework of the Egrejob project and is based on the Guidelines of March 2015 of the International Training Centre of the International Labour Organization (ITC-ILO). The research methodology and guidelines have been prepared by Ms. Alice Vozza (ITC ILO project coordinator) and Dr. Cristina Martinez (research coordinator) in consultation with the ILO’s Green Jobs Programme coordinated by Mr Kees Van der Ree.

We thank as precious privileged witnesses, for dedicating some time to be interviewed for our research: Sergio Gatteschi (manager of AFE – Florentine Agency for Energy), Architect Pietro Novelli, Architect Elio Imbrogno, Claudio Vigni (Director of Scuola Edile Siena); the experts of PIN – Polo Universitario Città di Prato.

The Toscana case study has also benefited from comments and discussions by the EGREJOB partners in Italy, Spain, Tunisia and Lebanon.

# Executive Summary

The overall picture of Italy and Toscana region in terms of green economy shows that the region, according to a 2013 survey, is ranked 4th at national level. Among Italian regions, Toscana is ranked 7th for the creation of green jobs. The specific cluster distribution of these jobs is characterized by the predominance of the category of production/delivery of services (59.2%), followed by research and product development (15.6%) and by installation/maintenance (13.7%). In accordance with the national trend, green jobs are deployed extensively in every stage of the production process, from the production and assembly of goods to new products and services design.

The green building sector was identified as strategic for Tuscan economy. Thus, a panel of 20 subjects, composed by companies and experts working in Toscana in the green building industry and ESCos (Energy Service Companies) was selected for a survey conducted using semi-structured interviews. Compared to the usual characteristics of companies (number of employees, revenue, type of company), the survey provided a picture of the green building sector as characterized by a strong heterogeneity and by a good dynamicity. The professional profiles emerging from the survey as strategic assets are high-level professionals (engineers and managers) as well as operational specialized technicians; the profile of the economic and financial expert in the energy field, though reputed as very important, is still not adequately present in the market.

The review of the instruments available in the Tuscan regional governmental planning system highlighted that the green economy issue is well present in the minds of the highest levels of strategic planners so that specific, sectoral planning tools are put into effect. The analysis contained in this Report on such tools highlighted and consolidated the knowledge of the key sectors of the Tuscan green economy.

|  |
| --- |
| KEY RECOMMENDATIONS |
| The results of the analysis and the projections contained in the present study point to a series of key recommendations to improve the opportunities for employment and the qualification of training in the sector of sustainable and green building and ESCO:   * Regulations that promote in a permanent way energy efficiency at EU, national and local level; * The spread of education among technicians who work in the building sector to implement the transition towards an integrate green approach to the building sector; * Urban renewal programs or spatial planning that could incorporate ESCO activities and, more generally, the structuring of smart cities as a tool for low energy intensity; * Synergy between technology manufacturers, local regulators, and regional policies: different actors have to interact to define better courses of action rooted in local conditions. |

# ASSESSMENTS AND RECOMMENDATIONS

The impact of the Green Economy in Toscana concerns both the public scenarios and the business realities of the territory. Within the regional public programming, the issue of green and sustainable economy is well embedded in regional planning, starting from more strategic documents up to more specific application measures, that dedicate significant financial resources to encourage and sustain green companies. Concerning the economic sector analysis, from a methodological point of view, it is evident that it is necessary to develop specific detection methods to avoid the risk of including in the green economy macro category those economic activities that are simply supporting activities (e.g. those activities of manufacturing and assembling of solid structures for the photovoltaic systems).

The overall picture of Italy and Toscana scenarios in terms of green economy is based on some indicators taken from the Fondazione Impresa research, which drew up a Green Economy Index (IGE), as result of the intersection of 21 performance indicators residing on well-known and established databases. Toscana is ranked 4th according to the 2013 research, preceded by Trentino Alto Adige, Umbria and Marche. The same index was calculated through the study of *Fondazione Toscana Sostenibile* (FTS) that distinguished the provinces within Toscana region. According to this ranking, the provinces where Green Economy is more consolidated are Grosseto, Siena and Lucca, followed by the province of Pisa. In terms of green investment, assembling the data related to the number of companies that have invested in the green economy in the period 2008 - 2013, Toscana is in the 7th position among Italian regions, preceded by the main Italian industrialized regions and by Lazio and Campania.

This position is confirmed by the observation of data on green jobs "recruitment", in which, substantially, the regions preceding Toscana, although with a different positioning, are the same that make up the scenario previously described. An analysis describing the good performance of eco-compatibility of the Italian manufacturing sector is subsequently provided, that highlights the attention of the Italian companies towards eco-efficiency related issues: two indicators, reduction of CO2 emissions and deduction of waste products, are particularly significant for evaluating the attention of the national productive system for the reduction of the environmental impact. In the period between 2008 and 2010, at European level, CO2 emissions decreased by 6.8% and in this context Italy performed very well (11.1%, with peaks of 13% in manufacturing and 19.2% in construction). It is worth noting that these dynamics, both at European and national level, are only partially due to the decline related to the economic crisis.

The identification of green jobs in Toscana was inspired by the methodology used in a study done by the Californian COE (Center of Excellence), and incorporated by the Symbola Foundation (2013). This approach distinguishes Green Jobs into two major groups:

* Green jobs in the strict sense, that is those profiles applying green skills in the performance of all or part of their duties; [[1]](#footnote-1)
* Profiles “activated” from the green economy, which do not have green skills but have the potential to acquire “green” characteristics, if located in green areas and sectors and following a specific training. [[2]](#footnote-2)

Within the SMEs category, the majority of green skills needs (46%) is expressed by small businesses (1-9 employees), followed by companies with more than 50 employees that express 37% of the needs, and finally, medium enterprises (10-49 employees) with only 17% of the needs expressed. Looking at the companies mostly searched profiles, many of the green jobs in the strict sense required by Tuscan companies are linked to the business' establishment: electricians, plumbers, mechanical engineers, but also installers of fixtures, isolation facilities and soundproofing. Then, a relevant need can be detected for the occupations in the design sector (analysts and software engineers, energy engineers, electrical engineers, industrial engineers). In terms of green jobs supply from a quantity point of view, Toscana ranks 7th among Italian regions, with a breakdown by department characterized by a predominance of production/service delivery (59.2%), followed by research and development product (15.6%) and installation/maintenance (13.7%).

At national level, green jobs are confirmed to be extensively used in the early stages of the production process, in the assembly phase and in the design of new products/services. The sector showing the biggest attraction in terms of employment is the construction sector: 32% of the demand is related to green building professional, followed by the fashion system (12.3%) and the manufacture of machinery and transport equipment (10.3%). The area related to smart cities and green building was the one on which a panel of 20 subjects operating in Toscana in the green building industry (9 enterprises including 2 Energy Saving Company or ESCO companies, 7 enterprises and some professional experts of the sector) was identified and with respect to which an investigation was conducted through semi-structured interviews. The outlined framework is characterized by a strong heterogeneity compared to the structural characteristics of enterprises (number of employees, turnover, type of company) and by a good dynamicity. The table on the main features of the companies interviewed reflects a fairly heterogeneous picture; the analysis of the prospects for the future indicate that this is a fairly dynamic sector in which nearly all companies expect an increase in revenue for the next three years with good employment prospects. In addition, 3 out of 9 companies surveyed adopted a path of quality certification. If we break down the various stages of the business cycle (design, orders entry, organization and service planning, delivery and evaluation) we note that the processes are almost all manned except for the evaluation phase. Only three companies reported that regulatory changes have affected the organization and working procedures (changes in laws on environment and security and the EU directives on energy efficiency and the more recent Decree No. 102/14).

The most demanded profiles on the market are generally high-level ones (mechanical and electrical engineers, business profiles of customer contact, engineers capable of performing calculations with timber structures, chemists, geologists) or specialized operational profiles (technician for wood, specialized carpenter). Almost all the considered profiles are difficult to find, particularly those in the role of the hinge between the market and the design. By focusing on green profiles, all respondents agree that this can be a strategic key point for the regional development. The needs and aims to strengthen the sector were: raising awareness, training, and regulatory changes. The identified profiles refer to high-level professionals (engineers and managers) or specialized operational technicians, as the economic and financial expert profile connected to interventions in the energy field is reputed as important but still not sufficiently available. The analysis of the instruments available under the green economy related regional planning, highlights how the issue is present at all the levels of the strategic governmental planning and further detailed by sectoral programming tools. The analysis of such instruments highlights and provides a confirmation of the key sectors of the Tuscan green economy, with respect to which the survey was conducted.

Here is a summary of the strengths and weaknesses, threats and opportunities for the two sectoral domains we examined (‘renewable energy’ as part of the smart cities and ‘green building’). The opportunities table, in our scheme, takes on the significance of the possible drivers for change in a progressive sense, in relation to the context examined.

Table 1- SWOT Analysis

|  |  |
| --- | --- |
| Strengths   1. Availability of resources from the EIB (European Investment Bank) 2. Green Building related policies 3. Savings management proposed by administrations 4. Modesty of out of-pocket costs in efficiency improvement operations 5. Progression of automation technologies to improve efficiency | Weakness   1. Lack of professionals 2. Lack of a culture in energy conservation among consumers 3. Public administration technical staff not updated 4. Economic and financial architecture is not easily manageable by government 5. Lack of major projects in the construction sector due to the crisis 6. Inertia of consumers 7. Projects are not always reliable, especially from the economic and financial point of view |
| Opportunities   1. Regulations that promote energy efficiency at EU, national and local level 2. Spread of education among technicians working in the building sector 3. Urban renewal programs or spatial planning that could incorporate ESCO activities 4. Synergy between technology manufacturers, local regulators, regional policies. | **Threats**   1. Budgetary, cash and organizational constraints. 2. Reduction of energy costs and fewer incentives to savings 3. Eventual emergence of political opposition to energy saving 4. Legislative instability |

# Chapter 1- SOCIO-ECONOMIC AND ENVIRONMENTAL PROFILE AND GREEN ECONOMY SNAPSHOT IN TOSCANA

## 1.1 Toscana: an overview

This chapter displays several graphs taken from ISTAT (National Institute of Statistics), that aim to provide an overall picture of Tuscan economy and society in so far as the issue of green jobs is concerned.

Figure 1- TOSCANA REGION - GEOGRAPHICAL LOCATION



Source - Toscana Region

In general, the crisis subsequent to the year 2008 constituted a breaking point in the regional development of Toscana as much as in the rest of Italy; after that year the GDP growth became substantially zero (see Fig. 2). Showing a trend which is substantially similar to that of Italy, Toscana, in recent years, benefited from an international dimension that brought its exports over the national average (Toscana trade surplus averagely exceeded 50%of the imports, while the national surplus, increasingly growing, exceeded from 3% to 10% of the total imports).

Figure 2 - GDP growth in Toscana 1995-2012

**Legend:**

* X axis: Years
* Y axis: Million Euro

Source - Toscana Region

Tuscan population has remained fairly stable, amounting to approximately 3 and a half million residents. This stability came from the combination of a negative natural increase and an influx of foreign residents (whose percentage increased from 3% to 10% in the last decade).

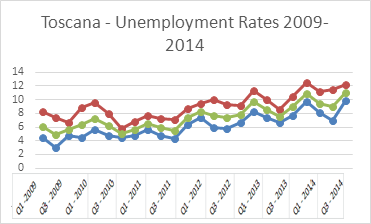
Figure 3 - Toscana demography 2005-2014



Source - Source: Toscana region

Finally, the job market showed a rise in unemployment, which rose from around 6% in the early years of the crisis to levels close to 10%. Just as nationally, this is due to the delayed enter into the job market of young workers from one side and by the gradual increase of retirement age of elderly people at work on the other side (as a results of the subsequent changes in the legal/statutory related framework at national level) .

Figure 4- unemployment rates 2009-2014

**

Source: Fondazione impresa

## 1.2 Toscana and the green economy

The position of Toscana within the green economy can be inferred from some parameters taken from the work of Fondazione Impresa, which defined a Green Economy Index (IGE) "as a body of knowledge accessible by the economic and institutional actors of the Green Economy." Such index, whereby it is possible to draw up a sort of ranking of the Italian regions, is the result of the intersection of 21 performance indicators (tab. 2) elaborated on the basis of known and well-established databases. The variables were selected according to the main aspects of the green economy by considering reliable and comparable information on the Italian regions drawn up until 2013.

Table 2-THE INDICATORS USED TO CALCULATE IGE 2013



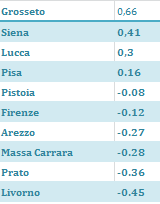
Source: Data process: Fondazione Impresa

According to the Green Economy Index (tab. 3), Trentino Alto Adige, Umbria and Marche are the 'greener' regions of Italy, the former standing out for a score significantly higher than the 2nd in rank (Umbria). In general, the ranking delineates a scenario in which the regions of Southern Italy tend to get lower ranks than Central and Northern regions. The same index was calculated by a specific study of Fondazione Toscana Sostenibile (Tab. 4), which sorted out the data according to the different provinces of Toscana. According to this ranking, the provinces where green economy is more present and consolidated are those of Grosseto, Siena, Lucca, followed by Pisa. A number of differences in the results, however, may provide useful information for future plans, management failures to be fixed, as well as information on issues related to geographic or orographic factors.

Table 3 - IGE 2013 - THE RANKING OF ITALIAN REGIONS

|  |  |  |
| --- | --- | --- |
| RANK 2013 | REGIONS | SCORE |
| 1 | Trentino Alto Adige | 1,004 |
| 2 | Umbria | 0,280 |
| 3 | Marche | 0,209 |
| 4 | Toscana | 0,176 |
| 5 | Emilia Romagna | 0,156 |
| 6 | Veneto | 0,134 |
| 7 | Piemonte | 0,132 |
| 8 | Abruzzo | 0,127 |
| 9 | Friuli Venezia Giulia | 0,126 |
| 10 | Valle d’Aosta | 0,074 |
| 11 | Sardegna | 0,068 |
| 12 | Basilicata | 0,064 |
| 13 | Lombardia | 0,018 |
| 14 | Calabria | -0,070 |
|  | ITALIA | -0,105 |
| 15 | Liguria | -0,249 |
| 16 | Molise | -0,250 |
| 17 | Puglia | -0,362 |
| 18 | Lazio | -0,481 |
| 19 | Campania | -0.510 |
| 20 | Sicilia | -0,645 |

Table 4 - GREEN ECONOMY INDEX (IGE) OF THE TUSCAN PROVINCES 2011



*source: Fondazione Toscana Sostenibile*

Source: FONDAZIONE TOSCANA SOSTENIBILE

The province of Grosseto, overall the best according to the Index (Tab. 5), derives its strengths from the agriculture and energy sectors -organic products and biomass, solar and wind power. A good performance in terms of energy efficiency and share of organic waste recycling should be noted as well. Similarly, the province of Siena has its best performance in terms of presence of organic operators, production of electric power from renewable sources and share of recycling. The rank of the province of Lucca originates instead by a compensation mechanism between very positive and very negative results. In terms of investments, by observing the data related to the companies that invested in green economy in the period 2008 - 2013 (Fig. 5), Toscana is ranked 7th among the 7 Italian regions and is preceded by the major industrialized Italian regions and by Lazio and Campania.

Table 5- INDICATORS OF THE IGE INDEX 2011 IN THE TUSCAN PROVINCES

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **AR** | **FI** | **GR** | **LI** | **LU** | **MC** | **PI** | **PT** | **PO** | **SI** |
| Electric power from renewable sources | 7 | 9 | 2 | 8 | 4 | 5 | 1 | 6 | 10 | 3 |
| Electric power from hydro sources | 4 | 6 | 5 | 8 | 1 | 2 | 8 | 3 | 8 | 7 |
| Electric power from geothermal sources | 4 | 4 | 2 | 4 | 4 | 4 | 1 | 4 | 4 | 3 |
| Electric power from other sources | 3 | 7 | 1 | 2 | 6 | 9 | 4 | 8 | 10 | 5 |
| Recycling | 8 | 4 | 9 | 5 | 1 | 9 | 6 | 7 | 2 | 3 |
| Organicfraction from RD | 9 | 8 | 4 | 5 | 1 | 7 | 3 | 2 | 10 | 6 |
| Waste disposed in garbagedumps | 8 | 5 | 7 | 9 | 1 | 1 | 10 | 4 | 1 | 6 |
| Organic farming operators | 3 | 5 | 1 | 6 | 9 | 8 | 4 | 7 | 10 | 2 |
| Energy efficiency | 2 | 1 | 4 | 10 | 9 | 8 | 6 | 3 | 7 | 5 |

Source - Fondazione toscana sostenibile

Figure 5- Number of companies that invested in GE 2008-2013

Source: Regione Toscana

Such a rank is confirmed by looking at the data on the "recruitment" of green jobs (Fig. 6). Substantially, the regions preceding Toscana in this graph, albeit different in ranks, are the same found in fig. 5 on the number of businesses.

Figure 6- Green Jobs recruitment 2013

Source: Regione Toscana

The attention of Italian companies for the various eco-efficiency issues is rather evident. In this respect, one can refer to two indicators which are particularly significant for evaluating the interest of the national economic production system for the reduction of its environmental impact:

• The reduction of CO2 emissions (fig . 7);

• The reduction of waste products (fig. 8).

In the period between 2008 and 2010, at European level, CO2 emissions decreased by 6.8%. This is a considerable achievement, only partly attributable to the slowdown of industrial production caused by the crisis, since the data of the decrease of emissions per unit of product amount to -3.2%. The positive trend of European CO2 emissions makes Italy one of the countries with the greatest performance; Italy performs even better in manufacturing (-11.1%, with peaks of -13%) and construction (-19.2%). Again, these data are only partly influenced by the economic decline due to the crisis, because the decrease of CO2 emissions per unit of production was 6.9% between 2008 and 2010.

Figure 7- PERCENTAGE VARIATION (2008-2010) OF TOTAL CARBON DIOXIDE EMISSIONS IN ITALY AND EUROPE

Source: Unioncamere - Fondazione Symbola (2013)

Source: 1: Unioncamere - Fondazione Symbola (2013)

With regard to waste production, the trend is also positive and Italy stands out among other European countries. The excellent performances of the Italian companies in eco-efficiency seem to be due to a number of reasons:

• Lowering the environmental impact often means reducing energy costs;

• The now thirty-year long tendency of the legislation on the environment (of European origin as well as national and regional) to adopt (mandatory) measures aimed at continually reduce the environmental impacts of industrial activities;

• Consumers are increasingly sensitive to environmental issues, which ultimately influence their buying decisions;

• The values linked to the production of environment-friendly goods (as well as services) are becoming more and more part of corporate policies, thus influencing choices, strategies and investments. This has major implications on the environmental impact of the industrial sectors of Italy. In this regard, the following graph shows the eco-impact of various Italian manufacturing sectors. The variables that were taken into account are:

* Energy input is the measure of the main energy products consumed by companies (fuel oil, natural gas, electricity ....) expressed in TOE (tons of oil equivalent).
* Waste management is the share of waste processed in order to be subsequently recycled.
* Production of waste is the amount of waste produced by companies, derived from the data collected and reported by the MUD (Modello Unico di Dichiarazione Ambientale - Single Module for Environmental Declaration) whose completion is mandatory for companies with more than 10 employees and for those ones producing hazardous waste.
* Polluting emissions is the amount of CO2 produced by companies.

.

Figure 8- Percentage variation (2008-2010) of the total production of waste in Italy and Europe

Source: Unioncamere Fondazione Symbola

The data contained in the following synoptic table (fig. 9) show that mechanics is the most virtuous industrial sector from the environmental point of view. In this table, mechanics is shortly followed by those sectors that, potentially, can have significant environmental impact, such as leather and footwear manufacturing, textiles, clothing manufacturing and production of food, beverages and tobacco. The most considerable environmental-impact, however, is caused by the production and refining of fuel oil and its derivatives. According to a diachronic perspective, though, the analysis of the data shown in the synoptic table points out a virtuous trend in which - in the period under consideration - the levels of all indicators previously discussed progressively decreased.

Figure 9: DISTRIBUTION OF THE MAIN SECTORS OF THE ITALIAN MANUFACTURING INDUSTRY ACCORDING TO the SUSTAINABILITY IMPACT[[3]](#footnote-3) GENERATED BY THE DIMENSION OF ENERGY INPUT, WASTE MANAGEMENT, EMISSIONS OF POLLUTANTS AND WASTE- ENVIRONMENTAL -IMPACT OF DIFFERENT SECTORS, 2013



Source: Data process of Fondazione Symbola based on data provided by Ecocerved and Istat (2013)

Fig. 10 shows the changes of three (waste, CO2 emissions, energy consumption) of the four variables already illustrated in fig. 9; additionally, fig. 10 shows the trend of the unmanaged waste (data complementary to the previous indicator called "waste management"). The trend of all indicators shows a decline: energy consumption per unit of product decreased to 6.3%, and so did CO2 emissions (-2.4%) and production of waste (-1, 9%), while the decline of the rate of unmanaged waste (-2.7%) indicates a specular increase of the recycling processes. [[4]](#footnote-4)

Figure 10: DYNAMIC ECO-IMPACT OF ITALIAN MANUFACTURING FIRMS PER UNIT OF PRODUCT, 2013.

Source: Unioncamere - Fondazione Symbola (2013)

## 1.3 Environmental Challenges

Of the regions in Italy, Toscana is characterised more than others by a good balance between town and country. The varied nature of the territory gives numerous advantages, such as being able to offer different tourist products, diversify production activities, reduce the risks of economic shocks, and respond to the impact of production activities on the environment using different tools. Toscana is the region with the **largest amount of woodland**: 13% of Italy’s woods are in our region[[5]](#footnote-5). Toscana icon is based on the quality of the environment and the structure of the territory. As well as guaranteeing sustainable development, this resource also permits economic return and the redistribution of income over the territory, increasing income where there is less industrial activity and services to companies. This has been translated in an increase in the amount of protected areas, adding additional regional, provincial and local parks to the national and state reserves. More than 8% of the territory in Toscana is covered by parkland. But Toscana has also an important **coastline** that stretches for 633 km (more than 95% is suitable for swimming). The impact of tourism on the population is a good indicator of the pressure that the coastal economic systems place on the environment[[6]](#footnote-6): the tendency is in fact to assess the degree of problems by relating the presence of tourists to how structured and populated the territory is. Though on one hand tourism is a noteworthy source of income for the coastal municipalities and therefore a powerful engine for economic development, on the other hand it is a potential factor of all-round pressure (consumption of water and energy resources, reduction of space, increase in air pollution, etc…) and for the marine ecosystems (increase in urban waste, increase in maritime traffic).

As far as the **air and noise dimension** , the many human activities that take place in urban and rural areas (the noise of motor vehicles, heating systems, factory chimneys, rubbish tips and fertilisers used in agriculture) emit pollutant substances into the air causing serious problems in terms of deteriorating the air quality. The emission of pollutants into the atmosphere has reached such levels as to risk damaging the climate, ecosystems, the health of the people, the damage to the cultural and historic heritage of monuments and buildings. The other great environmental problem connected to the air is above all but not only noise pollution in urban areas. Today noise levels are also recognised by standards and policies as a cause of great unease for people’s lives. A control system has been created at regional level consisting of control units that detect how many pollutants end up in the atmosphere every day. A special law lays down that mayors must stop the traffic when the situation becomes critical.

If we consider **water**, its consumed amount increases in proportion to the number of inhabitants and the production activity, and also due to the type of consumption. 75% of the water used for drinking water in Toscana comes from wells and springs, 25% from rivers and waterways and 2% from lakes and reservoirs. Before the water is used, it must be purified. In Toscana there are more than 180 purification systems that currently meet the water requirements of around 94% of the population. Alongside the growth in interest and awareness of environmental problems, in Toscana in particular the number of activities to monitor and control the production of **waste** has grown. Since 1994, the production pro capita of waste in Toscana has grown by 32%, and separate waste collection has gone up from 7% to 24% of the total amount of waste collected. The high production of urban and special waste remains a major environmental pressures of Toscana. However, a positive signal emerges from the data related to totals municipal waste in Toscana in 2009, amounting to 2,474.489 tons, a decrease of 2.67% compared to 2008, confirming the positive trend of reduction of waste production recorded in the previous years, albeit partly influenced by the difficult economic cycle[[7]](#footnote-7). As for special waste (which represent about 75% of the total waste produced in Toscana) in 2008, 8.2 million items of tons of waste have been produced (a slight increase over 2007) of which approximately 380,000 tonnes are hazardous waste.

The consumption of **electrical energy** is mainly due to industrial production activities. If we are to consider **solar energy**, **wind power** and **geothermal electricity** among the renewable energy sources, the percentage of energy produced from those sources amounts to over 22% for Toscana, an extremely high rate compared to the other regions in Italy (the average in Italy is 3%). The reason for this high amount of alternative energy is due to geothermal power: Toscana holds a monopoly on geothermal energy with more than 32 power stations concentrated in the territory of Siena, Pisa and Grosseto. The region’s energy programme has aimed strongly at directly using geothermal heat for urban district heating and for the needs of production activities, also in order to “attract” companies to geothermal areas to encourage socio-economic development. The source of energy with the greatest potential in Toscana is wind power. The wind power generators, the large windmills that directly convert the kinetic energy of the wind into mechanical energy which in turn activates a generator to produce electrical energy have reached a good level of technical reliability.

## 1.4 Chapter 1: Executive summary

Chapter 1 is dedicated to create an overall picture of both Italy and Toscana in general terms and regarding the economics scenario with a focus on the development of green economy in the region. The post 2008 crisis constitutes the breaking point after which the GDP growth became substantially zero; at the same time, in recent years Toscana benefited from an international dimension that brought its exports over the national average (averagely 50% of the imports while the national surplus exceed up to 10% of the total imports). Furthermore the job market shows, both, a rise in unemployment during the crisis years and a progressive extension of the retirement age essentially due to the reform process of the job market in terms of economic efficiency.

In terms of green economy, according to a 2013 survey (Green Economy Index), Toscana is ranked 4th and this provides some information aimed to quantify the good eco-compatibility performances of the Italian manufacturing sector. In this respect, one can refer to two indicators which are particularly significant for evaluating the interest of the national economic production system for the reduction of its environmental impact: the reduction of CO2 emissions and the reduction of waste products. In the period between 2008 and 2010, at European level, CO2 emissions decreased by 6.8%. The positive trend of European CO2 emissions makes Italy one of the countries with the greatest performance; Italy performs even better in manufacturing (-11.1%, with peaks of -13%) and construction (-19.2%). With reference to waste production, the trend is also positive and Italy stands out among other European countries.

# Chapter 2- THE GREEN JOB SUPPLY IN TOSCANA

## 2.1 Trends of green jobs in Italy

In order to identify green jobs in Toscana, we utilized the methodology applied in a study of the Californian COE (Center of Excellence).[[8]](#footnote-8) This methodology was later adopted by Fondazione Symbola (2013),[[9]](#footnote-9) which divided the green jobs into two major groups:

* Green jobs in the narrow sense [[10]](#footnote-10), occupations applying green skills for the accomplishment of all or part of the duties.
* Professional profiles that may be activated by the green economy, profiles which do not have green skills, yet have the potential to acquire those characteristics if located in green areas and sectors and following specific training.

The skills identified by the COE were later adapted to the taxonomy of Istat[[11]](#footnote-11). The number of 90 professional profiles related to 'green jobs in the narrow sense' is based on the Excelsior data about the expected employment of the companies. In 2013, the recruitment of green jobs in the narrow sense was calculated in around 52,000 units (seasonal + non-seasonal). This is 12.7% of the total recruitment (in this regard, note that this percentage was 12.2% in 2010 and 10.9% in 2009).

Overall, the region that offers the greatest number of green jobs is Lombardy (24.8% of total recruitments planned at national level), followed by Emilia Romagna (10.4%) and Lazio (9.1%). Toscana is ranked (only) 7th. The data shows, however, a strong cross cutting nature of green jobs, which tend to emerge even in the most difficult job markets like those of the South and the Islands (Calabria is ranked 1st for expected recruitment).

In 2013, the permanent contracts signed in relation to green jobs were 52%, compared to 40.5% of non-green professionals: what emerges, therefore, is a greater 'stability' of the contracts related to green jobs.

The green jobs option is accompanied by the progressive expansion of *tailor-made* processes: companies transform their structural organization introducing new profiles who are able to manage the newly activated processes. As a matter of fact, data show the prevalence of analysts and software engineers, followed by electricians and mechanical technicians and installers of industrial machinery and similar professionals. In general terms, what prevails is the request for medium-high qualifications (higher education degree and high school diploma) or, in the absence of the latter, the presence of professional qualifications/degrees. In short, green jobs seem to be characterized by high levels of specialization, which can be acquired as a result of a specific educational training.

## 2.2. Green jobs in Toscana: vacancies and emerging trends

A survey based on the Excelsior database[[12]](#footnote-12) about the expected yearly recruitment of Tuscan companies (2014) showed that the majority of green jobs find their place in the area of production/delivery of services (59.2%); minor areas involving green jobs are research and product development (15.6%) and installation/maintenance (13.7%). Like in the national trend, evidently, green jobs are utilized extensively in every stage of the production process, both in the production and assembly of goods and in the different stages of new products and services design.

Table 6- Distribution of non-seasonal job openings with regard to green jobs in the narrow sense sorted by business functional area. Toscana, 2014.

|  |  |  |
| --- | --- | --- |
| AREAS | VACANCIES | VACANCIES PERCENTAGE |
| 14 - Production/delivery of services | 1,497 | 59.2% |
| 15 - Designing, research and development, technical area | 396 | 15.6% |
| 09 - Installation, maintenance | 348 | 13.7% |
| 01 - Purchasing, storage | 77 | 3.1% |
| 10 - IT, Information systems | 58 | 2.3% |
| 04 - Quality, safety and environment certification | 39 | 1.5% |
| 17 - Sales/Wholesales | 39 | 1.5% |
| 08 - Office of the Director | 29 | 1.1% |
| 02 - Administration, legal office | 10 | 0.4% |
| 03 - Customer service | 10 | 0.4% |
| 06 - Accounting, management control, Finances | 10 | 0.4% |
| 13 – Personnel, human resources management | 10 | 0.4% |
| 18 – Other | 10 | 0.4% |
| Total | **2,530** | **100%** |

Source: Database Excelsior

Within the SME dimension, the majority of green job openings (46%) is distributed among micro and very small businesses (1-9 employees); companies with more than 50 employees provide 37% of all job openings, and finally, companies with 10- 49 employees only provide 17% of vacancies.

If one looks at the professional profiles that are mostly requested by companies, it is evident that many green jobs in the narrow sense[[13]](#footnote-13) needed by the Tuscan industry are those of the plant and design and installation area: in fact, most of the requests for personnel by companies concern electricians, plumbers, mechanical technicians, but also installers of fixtures/frames, insulation and sound proofing systems. Furthermore, there is a large demand for subjects working in the designing area: analysts and software engineers, energy engineers, electrical engineers, and industrial engineers.

It seems, therefore, that a rather strong link exists between those who are to work in eco-compatibility designing and those who will be asked to install new products.

Other profiles 'rotating around' these two categories of professionals deal with the marketing of new products: sale representatives, but also marketing specialists, market relations specialists, etc.[[14]](#footnote-14)

Table 7: Distribution of non-seasonal job openings with regard to green jobs in the narrow sense sorted by occupation (10 more numerous) and company size. Toscana, 2014

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| OCCUPATIONS | 1-9 EMPLOYEES | 10-49 EMPLOYEES | MORE THAN 50 EMPLOYEES | TOTAL |
| 6233 - Mechanical technicians, mechanical industrial machines installers and similar | 73.8%[[15]](#footnote-15) | 4.8% | 21.4% | 100% |
| 6137 - Electricians in building construction and similar occupations | 68.8% | 15.6% | 15.6% | 100% |
| 6136 - Plumbers, water and gas piping installers | 86.7% | 6.7% | 6.7% | 100% |
| 2114 - Software analysts and designers | 29.2% | 16.7% | 54.2% | 100% |
| 2211 - Energy and mechanical engineers | 21.4% | 21.4% | 57.1% | 100% |
| 3152 - Technicians of construction sites management | 0.0% | 75.0% | 25.0% | 100% |
| 3182 - Technicians of occupational safety and health | 50.0% | 25.0% | 25.0% | 100% |
| 2214 - Electronic and communication engineers | 0.0% | 0.0% | 100.0% | 100% |
| 2215 - Chemical, fuel oil and materials engineers | 0.0% | 33.3% | 66.7% | 100% |
| 2513 - Specialists in human resources management and development | 50.0% | 0.0% | 50.0% | 100% |
| TOTAL | **46%** | **17%** | **37%** | **100%** |

Source: Database Excelsior

A further, more detailed study on the skills of professionals may be conducted on the basis of regional inventories, of which we provide a couple of examples. Even by looking through the skills associated with each profile, it is apparent that, in many cases, the green professional profiles consist of professionals not originally green (or at least not particularly oriented to eco-compatibility). After proper training aimed to implement their missing green abilities, these profiles have acquired the relevant know-how in order to operate in the environmental field. In fact, if one considers the 42 green jobs profiles[[16]](#footnote-16) in the narrow sense for which we have sufficient data[[17]](#footnote-17), for 25 of them (59.2%) a university education is required, for 10 (23.8 %) a high school diploma is necessary, for 5 of them (11.9%) only a qualification of professional training is sufficient, and for 11 occupations (26.1%) no title is needed. Therefore, it is reasonable to assume that for those profiles for which the entry requirement is a diploma, professional qualification or training, or even no title, only an adequate training is sufficient to give them a 'green aspect.' Different considerations, however, should be made for those who must possess a degree in order to enter the profession. In some cases the university training must be specialized (environmental engineering, for example), in other cases the green skills are achieved through post-graduate training (this is the case, for example, of energy engineers, computer and electronic engineers specialized in green software designing).

Table 8: EXAMPLES OF SKILLS NEEDED FOR PROFESSIONALS BELONGING TO THE GREEN JOBS – MECHANICAL INSTALLERS – SOLAR POWER SYSTEMS INSTALLER

|  |  |
| --- | --- |
| Professional figure | Mechanical installers - Solar power systems installers |
| Skill | Install electrical systems |
| Proper installation of electrical panels connecting the solar power panel to the public electric network in compliance with the law |
| Skill | Install solar power systems |
| Assemble all components and then calibrate the system. Run testing procedures and provide proper documentation in compliance with the law |
| Skill | Run the maintenance of solar power systems |
| Run diagnostic and maintenance procedures of the solar power and electrical systems checking with proper instruments the parameters of energy produced by the system |

Source: Inventory of professions of the Regione Toscana

Table 9: EXAMPLES OF SKILLS NEEDED FOR PROFESSIONALS BELONGING TO THE GREEN JOBS – SALE REPRESENTATIVE – SENIOR SELLERS.

|  |  |
| --- | --- |
| Professional figure | Sale representatives - Senior sellers (solar power systems) |
| Skill | Plan and implement marketing strategies |
| Identify modalities of organization, management and development of sellers. Interpret reports of expected sales and final sales trends by analyzing deviations from targets. Monitor the sales performance of competitors. Submit to the director relevant data and proposals for business development. Conduct and coordinate research on customer satisfaction. Organize publicity events. Participate in fairs or publicity events in order to survey the market. Interact with designers and installers |
| Skill | Define for customers the technical requirements of solar power systems |
| Apply techniques for drafting budgets. Evaluate the potential of new sites to install solar power systems. Estimate the needs of customers. Estimate the energy that can be produced. Define the size of the facility (*stand alone*, for direct use, connected to the network). Make economic and financial assessments for installing solar power systems. Identify market prospects and incentive programs. Develop practices related to the energy bill. Plan the request for authorizations to the competent authorities. Provide the necessary support to designing and purchasing departments. |

Source: INVENTORY OF PROFESSIONS OF THE REGIONE TOSCANA AND REGIONE LOMBARDIA

## 2.3 Occupational requirements distribution per sector

The national trends analyzed in the previous chapters highlight the growing importance of green jobs for the Italian companies which aspire—also through green jobs—to increase their competitiveness. By analyzing the data offered by the Excelsior database, it is also possible to observe the current trends in Toscana. Before beginning, it is worth emphasizing that, even in this case, we adopted the classification according to the already discussed methodology of the Californian COE (Center of Excellence)—and later utilized by the Symbola Foundation (2013).[[18]](#footnote-18) However, in reference to the Tuscan green jobs, we will discuss only green jobs in the narrow sense and non-seasonal job openings, since we do not have any data on the so-called profiles that may be activated by the green economy.[[19]](#footnote-19) The following table shows the job openings in reference to the 'green profiles' (green jobs

in the narrow sense) sorted by main green sector.

Table 10: DISTRIBUTION OF NON-SEASONAL JOB OPENINGS OF TUSCAN COMPANIES IN RELATION TO GREEN JOBS IN THE NARROW SENSE IN 2014

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SECTORS | GREEN VACANCIES | GREEN VACANCIES % | TOTAL VACANCIES | GREEN / TOTAL VACANCIES % |
| 0301010115 – Construction | 810 | 32.0% | 1570 | 52% |
| 0201020103 - Textiles, clothing and footwear industries | 310 | 12.3% | 2250 | 14% |
| 0201070310 - Machinery construction, equipment and transportation industries | 260 | 10.3% | 830 | 31% |
| 0601010122 - Software and telecommunication services | 200 | 7.9% | 710 | 28% |
| 0601020123 - Advanced supporting services to companies | 160 | 6.3% | 750 | 21% |
| 0201080106 - Chemical, pharmaceutical and fuel oil extraction industries | 110 | 4.3% | 320 | 34% |
| 0201070209 - Metallurgic and nonmetallic products industry | 100 | 4.0% | 470 | 21% |
| 0201090214 - Public utilities (electric power, gas, water, waste collection) | 100 | 4.0% | 550 | 18% |
| 0601030125 - Operative supporting services to companies and people | 100 | 4.0% | 1970 | 5% |
| 0201060108 - Nonmetallic minerals manufacturing | 80 | 3.2% | 220 | 36% |
| 0201070111 - Electrical, electronic, optical and medical industries | 70 | 2.8% | 270 | 26% |
| 0401010118 - Retail commerce | 70 | 2.8% | 2670 | 3% |
| 0401010117 - Wholesale commerce | 60 | 2.4% | 770 | 8% |
| 0602010328 - Cultural, sport and other services to people | 30 | 1.2% | 980 | 3% |
| 0401010116 - Automotive and motorcycles retail and fixing | 20 | 0.8% | 290 | 7% |
| 0601050124 - Finance and insurance services | 20 | 0.8% | 580 | 3% |
| 0201030104 - Timber and furniture industries | 10 | 0.4% | 220 | 5% |
| 0201040105 - Paper products, paper technologies industries and press | 10 | 0.4% | 230 | 4% |
| 0601060121 - Media and communication services | 10 | 0.4% | 70 | 14% |
| **TOTAL** | **2530** | **100.0%** | **15720** | 16% |

Source: Database Excelsior

The sector showing the highest employment rate is the construction sector: 32% of the green job openings (810 workers) is related to construction. Then follow: the fashion sector (12.3%, corresponding to 310 workers), the machinery and transport equipment manufacturing (10.3% corresponding to 260 vacancies). Overall, the need for green jobs amounted to 2,530 job profiles. This corresponds to 10.7% of the total needs (in 2014, companies are estimated to have sought approximately 24,000 new professional profiles). The most requested green jobs in the narrow sense are shown in the following table.

Table 11: Distribution of non-seasonal job openings with regard to green jobs in the narrow sense sorted by occupation in 2014 (Toscana)

|  |  |  |
| --- | --- | --- |
| OCCUPATIONS | VACANCIES | VACANCIES % |
| 6233 - Mechanical technicians, mechanical industrial machines installers and similar | 420 | 16.60% |
| 6137 - Electricians in building construction and similar occupations | 320 | 12.65% |
| 6136 - Plumbers, water and gas piping installers | 310 | 12.25% |
| 2114 - Software analysts and designers | 230 | 9.09% |
| 2211 - Energy and mechanical engineers | 130 | 5.14% |
| 33346 - Sale representatives | 100 | 3.95% |
| 6134 - Installers of insulation and soundproofing systems | 90 | 3.56% |
| 4311 - Purchase management employees | 80 | 3.16% |
| 6127 - Installers of prefabricated and preformed products | 70 | 2.77% |
| 2515 - Marketing specialists | 70 | 2.77% |
| TOTAL | **2,530** | **100%** |

Source: Database Excelsior

The following synoptic tables show the most requested occupations in the four sectors that detain the highest employment rate.

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Table 12DISTRIBUTION OF NON-SEASONAL JOB OPENINGS OF CONSTRUCTION COMPANIES WITH REGARD TO GREEN JOBS IN THE NARROW SENSE SORTED BY OCCUPATION. TOSCANA 2014

|  |  |
| --- | --- |
| **Occupations** | **Vacancies** |
| 6136 - Plumbers, water and gas piping installers | 280 |
| 6137 - Electricians in building construction and similar occupations | 280 |
| 6127 - Installers of prefabricated and preformed products | 60 |
| **Total** | **810** |

Source: Database Excelsior

Table 13: DISTRIBUTION OF NON-SEASONAL JOB OPENINGS OF TEXTILES, CLOTHING AND FOOTWEAR COMPANIES WITH REGARD TO GREEN JOBS IN THE NARROW SENSE SORTED BY OCCUPATION. TOSCANA 2014.

|  |  |
| --- | --- |
| **Occupations** | **Vacancies** |
| 6233 - Mechanical and industrial machines installers and similar | 230 |
| 3131 - Mechanical technicians | 40 |
| **Total** | **310** |

Source: Database Excelsior

Table 14:DISTRIBUTION OF NON-SEASONAL JOB OPENINGS OF MACHINERY CONSTRUCTION, EQUIPMENT AND TRANSPORTATION COMPANIES WITH REGARD TO GREEN JOBS IN THE NARROW SENSE SORTED BY OCCUPATION. TOSCANA 2014.

|  |  |
| --- | --- |
| **Occupations** | **Vacancies** |
| 2211 – Energy and mechanical engineers | 80 |
| 6233 - Mechanical and industrial machines installers and similar | 80 |
| **Total** | **260** |

Source: Database Excelsior

Table 15: Distribution of non-seasonal job openings of software and telecommunication services companies with regard to green jobs in the narrow sense sorted by occupation. Toscana 2014

|  |  |
| --- | --- |
| **Occupations** | **Vacancies** |
| 2114 - Software analysts and designers | 160 |
| 3122 - Experts in application software | 30 |
| **Total** | **200** |

Source: Database Excelsior

## 2.4 Chapter 2- Executive summary

In 2013, the permanent contracts signed in relation to green jobs were 52%, compared to 40.5% of non-green professionals: what emerges, therefore, is a greater 'stability' of the contracts related to green jobs. The green jobs option is accompanied by the progressive expansion of tailor-made processes: companies transform their structural organization introducing new profiles that are able to manage the newly activated processes. Among the Italian regions, Toscana is ranked 7th for the creation of green jobs. The specific cluster distribution of these jobs is characterized by the predominance of the category of production/delivery of services (59.2%), followed by research and product development (15.6%) and installation/maintenance (13.7%). In accordance with the national trend, green jobs are utilized extensively in every stage of the production process, in both the production and assembly of goods and in different stages of the designing of new products and services.

# Chapter 3 - THE USE OF GREEN SKILLS IN TOSCANA

## 3.1 Sectors: general data

In this section, we will analyze the main sectors containing green jobs on the basis of the data provided by official statistics (often, the sectoral scope delimitations provided by the various sources do not converge at all, and are not fully consistent and comparable). In addition to the available data, we will provide some predictions for the period 2013-2015 (in pink in the tables that follow).[[20]](#footnote-20)

In order to analyze both regional and sectoral economies, a twofold work was conducted along the following lines: (a) quantification of the main data of sectors where green jobs may be developed; (b) delimitation of the scope of green activities in some of these sectors. (Sectors were chosen on the basis of potential green development in the light of available data and by considering potential sustainable developments of the regional planning). Within the limits of the available data, we collected usable data (for instance on wages and on the job injuries) also with the aim of informing and promoting *decent jobs*,[[21]](#footnote-21).

The first notable sector is construction, which was in serious crisis in recent years: between 2008 and 2012, the total added value decreased of a quarter (-26.5%), investments decreased of a half, and employment decreased of 22% (especially self-employment). Within the building sector, renovation activities held, since they operated on the restoration of a huge estate patrimony. These activities, as well as green activities (including green building, home automation and energy saving), constitute a powerful factor in fighting against the crisis.

Table 16: CONSTRUCTION (CODE ATECO ISTAT 41, 42, 43

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | |  |  |  |  |  |  |
| Year | Number of local units | Revenue - thousand Euros | Value added to the cost of the factors - thousand Euros | Cost of personnel - thousand Euros | Gross investments in tangible properties - thousand Euros | Number of workers | Number of employees | Propensity to invest |
| 2008 | 52,033 | 12,085,337 | 4,177,225 | 1,714,523 | 466,114 | 134,395 | 58,080 | 11.2% |
| 2009 | 54,819 | 9,756,922 | 3,238,942 | 2,367,163 | 260,675 | 129,357 | 74,140 | 8.0% |
| 2010 | 54,934 | 10,823,148 | 3,693,163 | 2,047,007 | 427,654 | 123,608 | 68,355 | 11.6% |
| 2011 | 47,404 | 10,658,709 | 3,108,866 | 1,729,510 | 340,087 | 112,545 | 59,192 | 10.9% |
| 2012 | 43,685 | 10,045,869 | 3,068,702 | 1,743,489 | 232,331 | 104,661 | 65,023 | 7.6% |
| 2013 | 43,342 | 9,720,852 | 3,017,192 | 1,746,422 | 261,376 | 98,029 | 64,639 | 8.7% |
| 2014 | 40,931 | 9,403,137 | 2,870,463 | 1,688,450 | 233,377 | 90,401 | 64,533 | 8.1% |
| 2015 | 38,520 | 9,085,423 | 2,723,734 | 1,630,478 | 205,379 | 82,773 | 64,427 | 7.5% |

Source: Data process based on Istat.

* Excelsior Expected recruitment in 2014: 1,550
* Excelsior Expected recruitment of green jobs in 2014 : 810
* Inail Work accidents in 2012: 4515
* INPS-registered employees in 2013: 61023 (average daily wage: 79 €) including:
* part-time employees: 10.9% (average daily wage: 49 €)
* fixed-term employees: 18.1% (average daily wage: 76 €)
* skilled workers 77.8% (average daily wage: 77 €)
* clerical workers 13.8% (average daily wage: 87 €)

Partly linked to the previous one, the sector of production and distribution of electricity works, together with the ESCO, operates for the rationalization of electricity consumption, particularly in buildings. Moreover, green activities (water supply, waste management, etc.) are also present in other sectors of public utilities. Overall, these are still sectors with a strong public presence, but with growing components of outsourced low-wage work.

Table 17: Electricity, gas, steam and air conditioning supply (code ateco istat 35 )

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Year** | **Number of local units** | **Revenue - thousandEuros** | **Value added to the cost of the factors - thousand Euros** | **Cost of personnel - thousand Euros** | **Gross investments in tangible properties - thousand Euros** | **Number of workers** | **Number of employees** |
| 2008 | 161 | 1,377,180 | 1,258,533 | 300,938 | 229,375 | 5,301 | 5,167 |
| 2009 | 191 | 2,162,004 | 963,040 | 267,308 | 153,930 | 4,570 | 4,376 |
| 2010 | 270 | 4,241,962 | 1,460,233 | 302,752 | 231,454 | 5,085 | 4,822 |
| 2011 | 282 | 2,551,074 | 1,444,279 | 307,299 | 284,975 | 5,120 | 4,880 |
| 2012 | 399 | 2,540,592 | 1,501,961 | 309,167 | 246,489 | 4,961 | 4,762 |
| 2013 | 431 | 3,389,331 | 1,408,387 | 314,428 | 244,719 | 4,968 | 4,710 |
| 2014 | 487 | 3,660,920 | 1,435,980 | 320,072 | 249,877 | 4,955 | 4,679 |
| 2015 | 544 | 3,932,509 | 1,463,573 | 325,717 | 255,036 | 4,942 | 4,648 |

Source: Data process based on Istat

* Excelsior Expected recruitment in 2014: 520 (including utilities)
* Excelsior Expected recruitment of green jobs in 2014: 100 (including utilities)
* Inail Work accidents in 2012: 98
* INPS-registered employees in 2013: 5443 (average daily wage: 138 €) including:
  + skilled workers 34% (average daily wage: 123 €)
  + clerical workers 55% (average daily wage: 134 €)

Table 18: Public utilities (code ateco istat 36, 37, 38, 39)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Year** | **Number of local units** | **Revenue - thousandEuros** | **Value added to the cost of the factors - thousand Euros** | **Cost of personnel - thousand Euros** | **Gross investments in tangible properties - thousand Euros** | **Number of workers** | **Number of employees** |
| 2008 | 673 | 2,152,979 | 764,516 | 437,537 | 224,233 | 11,259 | 10,600 |
| 2009 | 902 | 2,082,592 | 769,060 | 457,768 | 214,926 | 12,142 | 11,267 |
| 2010 | 654 | 1,960,074 | 917,849 | 501,491 | 150,016 | 11,955 | 11,297 |
| 2011 | 706 | 2,122,997 | 928,224 | 500,241 | 186,331 | 12,454 | 11,624 |
| 2012 | 572 | 2,229,208 | 990,393 | 516,390 | 377,135 | 12,845 | 12,214 |
| 2013 | 582 | 2,167,429 | 883,066 | 542,739 | 233,473 | 13,176 | 12,476 |
| 2014 | 542 | 2,186,715 | 886,085 | 562,757 | 234,455 | 13,525 | 12,834 |
| 2015 | 502 | 2,206,001 | 889,104 | 582,775 | 235,436 | 13,873 | 13,193 |

Source: Data process based on Istat

* Excelsior Expected recruitment in 2014: 520 (including production of electric power)
* Excelsior expected recruitment of green jobs in 2014: 100 (including production of electric power)
* Inail Work accidents in 2012: 1162
* INPS-registered employees in 2013: 9286 (average daily wage: 101 €)[[22]](#footnote-22) including:
  + skilled workers 68% (average daily wage: 93 €)
  + clerical workers 29% (average daily wage: 108 €)

The sectors of transportation, logistics and mobility are those with the highest environmental impact. Although more difficult to delineate in scope, the development of skills and resources of planning and information (traffic information) as well as the development of low impact technologies - and, more generally, of the components of smart urban systems -give shape to a significant expansion of green jobs. Firstly, the sector of transport construction (in Toscana, mainly ships, trains and motorcycles) was taken into consideration; second, the core sector of transportation and storage; finally, the broader field of computer sciences and telecommunications as areas wherein a more integrated area of sustainable mobility may be developed.

Table 19: Machinery manufacturing and transportation equipment industry (code ATECO istat 28, 29, 30, 33, 95)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Year** | **Number of localunits** | **Revenue - thousandEuros** | **Value added to the cost of the factors - thousand Euros** | **Cost of personnel - thousand Euros** | **Gross investments in tangible properties - thousand Euros** | **Number of workers** | **Number of employees** |
|  |  |  |  |  |  |  |  |
| 2008 | 7,897 | 10,984,283 | 2,960,723 | 1,784,098 | 371,381 | 53,108 | 43,184 |
| 2009 | 7,607 | 10,411,625 | 2,437,306 | 1,766,336 | 196,933 | 52,420 | 43,707 |
| 2010 | 7,547 | 10,283,841 | 2,761,173 | 1,882,063 | 247,048 | 50,766 | 41,785 |
| 2011 | 7,369 | 10,636,189 | 2,993,196 | 2,015,890 | 241,874 | 49,055 | 41,445 |
| 2012 | 6,439 | 9,935,387 | 2,834,714 | 1,716,749 | 217,575 | 48,595 | 40,412 |
| 2013 | 6,426 | 9,888,297 | 2,683,615 | 1,867,484 | 234,067 | 47,072 | 39,765 |
| 2014 | 6,110 | 9,700,974 | 2,645,679 | 1,878,970 | 227,103 | 45,832 | 38,984 |
| 2015 | 5,795 | 9,513,651 | 2,607,743 | 1,890,455 | 220,138 | 44,593 | 38,204 |
|  | | |  |  |  |  |  |

Source: Data process based on Istat.

* Excelsior Expected recruitment in 2014: 790
* Excelsior Expected recruitment of green jobs in 2014: 260

Table 20: Transportation, logistics and storage services (code ateco istat 49, 50, 51, 52, 53)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Year** | **Number of localunits** | **Revenue - thousandEuros** | **Value added to the cost of the factors - thousand Euros** | **Cost of personnel - thousand Euros** | **Gross investments in tangible properties - thousand Euros** | **Number of workers** | **Number of employees** |
| 2008 | 10,491 | 10,452,569 | 3,369,848 | 2,160,473 | 803,464 | 70,038 | 57,414 |
| 2009 | 12,469 | 8,088,202 | 3,073,070 | 2,104,995 | 629,550 | 67,724 | 55,539 |
| 2010 | 9,843 | 9,770,303 | 3,402,741 | 2,046,673 | 259,412 | 66,068 | 54,812 |
| 2011 | 9,851 | 10,717,693 | 3,749,083 | 2,160,787 | 308,951 | 66,493 | 55,267 |
| 2012 | 8,330 | 7,747,547 | 3,041,472 | 1,880,045 | 241,921 | 58,664 | 49,163 |
| 2013 | 8,115 | 8,521,097 | 3,166,056 | 1,919,075 | 470,527 | 58,604 | 49,407 |
| 2014 | 7,421 | 8,243,042 | 3,112,327 | 1,868,569 | 477,815 | 56,206 | 47,729 |
| 2015 | 6,727 | 7,964,986 | 3,058,598 | 1,818,063 | 485,104 | 53,808 | 46,052 |

Source: Data process based on Istat

* Excelsior Expected recruitment in 2014: 1470
* Excelsior Expected recruitment of green jobs in 2014: not relevant
* INAIL Work accidents in 2012: 3373
* INPS-registered employees in 2013: 47,865 (average daily wage: 92 €) including:
  + skilled workers 65% (average daily wage: 79 €)
  + clerical workers 29% (average daily wage: 106 €)

Table 21: Software and telecommunication services (code ateco istat 61, 62, 63

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Year | Number of localunits | Revenue - thousandEuros | Value added to the cost of the factors - thousand Euros | Cost of personnel - thousand Euros | Gross investments in tangible properties - thousand Euros | Number of workers | Number of employees |
| 2008 | 6,420 | 3,053,587 | 2,007,245 | 840,205 | 294,856 | 26,686 | 19,818 |
| 2009 | 6,296 | 2,404,537 | 2,083,072 | 818,496 | 57,661 | 25,917 | 19,153 |
| 2010 | 6,384 | 3,011,904 | 1,840,406 | 800,345 | 49,390 | 24,666 | 17,873 |
| 2011 | 6,462 | 2,925,845 | 1,914,509 | 745,034 | 81,111 | 24,034 | 17,528 |
| 2012 | 5,831 | 3,994,293 | 2,439,129 | 826,922 | 166,681 | 25,137 | 19,154 |
| 2013 | 5,975 | 3,798,849 | 2,258,614 | 776,192 | 156,374 | 23,794 | 17,819 |
| 2014 | 5,874 | 4,039,121 | 2,325,862 | 766,189 | 165,186 | 23,296 | 17,524 |
| 2015 | 5,773 | 4,279,393 | 2,393,109 | 756,186 | 173,997 | 22,798 | 17,229 |

Source: Data process based on Istat.

* Excelsior Expected recruitment in 2014: 480
* Excelsior Expected recruitment of green jobs in 2014: 200
* Inail Work accidents in 2012: 299
* INPS-registered employees in 2013: 30,568 (average daily wage: 93 €) including:
  + skilled workers 4% (average daily wage: 61 €)
  + clerical workers 86% (average daily wage: 89 €)

## 3.2 Survey on the economic activities related to smart cities and green buildings

Among the issues usually associated with 'smart cities' we find the energy rationalization of buildings (also for achieving European goals in terms of reduction of carbon dioxide from energy sources), the systematization of the energy certification, the coordinated use of low and medium enthalpy geothermal energy, the actions on sustainable mobility and the promotion of zero-emission buildings and energy networks of heating/cooling. In building construction in Italy, the share of companies that invest in low-impact (green) technology amounts to 21.5%.

Sustainable building, or, more generally, green building, is defined as a set of productions and techniques that contribute (especially if developed in a systemic way) to transform building construction into a low environmental impact construction. As a consequence, several elements are necessary to identify a company as belonging to the field of green building: the reduction of energy consumption, the bioclimatic approach, the application of renewable energy sources and the efficient use of facilities, the care for water saving and the usage of bio-ecological materials (possibly local, or low-impact products, or products resulting from recycling, and products sometimes resulting from a re-evaluation of local building traditions).

Green building does not alter the structure of the building production process; rather, it 'replaces' its components by activating from time to time even very different production chains and enhances several elements of the building system (e.g. natural materials for insulation). At least dozens of companies can be definitively included in the green building sector. These companies often have significant operational capacity and very often can count on up-to-date design skills. They are usually construction companies which conceived the development of green skills as a way to consolidate their market position and, in many cases, to acquire skills and abilities to integrate different technologies.

Next to green building, home automation is defined as a set of techniques aimed to improve the quality of life in houses and anthropized environments through the application of technology along with the disciplinary and professional contribution of building engineering, architecture, energy engineering, automation, electrical engineering, electronics, telecommunications and computer science. Home automation tends to be developed starting from the safety concerns of the market, and may tend to urge the integration of home systems. (However, this development requires technological capabilities and skills to address the market which are not usually available to local businesses).

Energy saving is an important component of both green building and home automation; yet, it is also an operational area of specialized companies. A comprehensive efficiency strategy for the use of energy flows found, both nationally and regionally, in the ESCO one of the essential instruments for the development of sustainable initiatives. Generally, these are initiatives that aim to improve energy efficiency by taking upon themselves the risk and relieving end users from any organizational effort and investment. Cost savings obtained from energy efficiency are shared between the ESCO and the end user through different types of commercial agreements. Several ESCO companies operate at the regional level, even though the development of the sector requires a clear guidance by the public entity that plans territorial organizations and also by some private categories (such as building managers).

Finally, ensuring a sustainable transportation system means to operate directly on the improvement of air quality of urban areas where most demands and dynamics of mobility are concentrated. It also means to improve collective health, to create a healthy environment and to ameliorate a transportation system which is often not very comfortable and fast. Wherever rail and road transportation systems are not contemplated, in fact, the public transportation system is inevitably affected by the urban traffic congestion, thus making void or inefficient public policies, investments and responsible choices of those citizens who opted to "leave the car at home" and use urban public transportation for their travels.[[23]](#footnote-23) It is therefore clear that the 'smart city' cannot ignore the possibility of building easy-to-use modalities of transportation that seek the efficiency of time, costs, fuel consumption and emissions per person. The so-called digital revolution introduced additional supporting tools for sustainable mobility, such as all mobile information services which in the past ten years underwent an important development with the simultaneous spread of mobile devices. In summary, the interventions identified with respect to sustainable mobility are the following:

• Interventions for electric mobility in major cities

• Interventions for bicycle mobility within urban and suburban areas

• Infrastructures for the redevelopment of urban mobility

• Interventions for road safety

• Interventions for the right to mobility

• Interventions for the development of sustainable mobility

Specialized consulting and design constitute the market objective of some innovative companies operating in Toscana. The sector's growth, however, requires the regional decision makers to take a decisive cultural leap.

The basic report shows more detailed information and data which identify a number of business activities in each of the areas mentioned above. Overall, these annexes describe the structure of the market sector of the emerging Tuscan green economy linked to the issues of the sustainable city. The report also shows the main regional policies linked to the development of green jobs in the above mentioned areas.

## 3.3 Data collection and field work

Based on careful observation of the regional reality of green jobs we identified the sector of the so-called smart cities as strategic, in particular green buildings. The sectors of smart cities and green buildings embrace a multiplicity of heterogeneous realities which include building activities that favor renewable energy sources, organize the efficient use of facilities and utilize eco-friendly, low environmental impact materials. Among such activities we also included those of high technological level, such as home automation, and the activities that use the ESCO as one of the most important application tools (efficient facility management and energy saving services offered to public and private institutions). [[24]](#footnote-24)

Structural data on green jobs in Tuscan firms are collected, following the desk analysis quoted in the previous chapter, through a two-step survey. First, we collected information through qualitative interviews (3.2 and 3.3); secondly, we described results from a little sample of 20 green building firms, based on a questionnaire utilizing ILO methodology.

The following pages report opinions and comments collected in semi-structured interviews that involved a group of companies operating in Toscana, both in the green building industry and ESCOs, and a group of sector experts.

## 3.4 The companies

Around 20 business activities were contacted and 9 companies (2 ESCO and 7 green building companies) were interviewed for this survey. Below is a table reporting the most important information.

The table, which shows the main features of the companies interviewed, draws a fairly heterogeneous picture. By looking at future scenarios, what emerges is that we are dealing with a fairly dynamic sector: nearly all companies expect an increase in revenue for the next three years with good employment prospects. Additionally, 3 out of 9 companies interviewed are in the process of obtaining a quality certification. Breaking down the various stages of the business cycle (planning, acquisition of the contract, organization and service planning, delivery and evaluation), one notices that all stages are supervised except for the evaluation phase (indicated only by 4 out of 9 companies interviewed). Only three companies reported the fact that changes in the law affected both organization and working procedures of this type (changes in laws on the environment and its security as well as the European directives for energy efficiency and the more recent Decree No. 102/14).

In general, **the most sought professional profiles** in the market are predominantly both high-level profiles (mechanical and electrical engineers, business profiles in customer relationships, engineers with ability to perform calculations with wood structures, chemists and geologists) and specialized operational profiles (wood technicians, contractors, personnel able to use machines such as forklifts, cranes and self-propelled vehicles). Almost all the profiles mentioned above are difficult to find in the market, especially those roles functioning as a link between the planning phase and the market. As far as the green profiles are concerned, all respondents agree that they can constitute a focal point in the development of the country. One respondent advised to encourage local supply chains in order to avoid the risk of favoring foreign companies. Needs and objectives aimed to strengthen the sector were mentioned by companies: raising awareness, training and regulatory changes. Among the emerging professionals playing a strategic role in the field, one mostly finds individuals involved in 'green' design: experts in energy management (EGE), experts in green building and green architecture, project managers, commissioners (executive managers for energy and environmental tasks).

Table 22: MAIN FEATURES OF THE COMPANIES INTERVIEWED

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COMPANY** | **SECTOR** | **JURIDICAL FORM** | **REVENUE** | **EMPLOYEES** | **CUSTOMERS** |
| ESTRACLIMA (CONSIAG group from Prato) | ESCO | SRL | morethan 1,000,000.00 | 28 | Private citizens and firms |
| ESCO SIENA | ESCO | SRL | morethan 1,000,000.00 | 9 | Firms |
| BIOARKT group from Prato | Sustainablearchitecture, Green building | Associated company | N/A | 16 | Private citizens, firms, real estate firms |
| ISOLANA SYSTEMS from Prato | Building construction - Insulationsystems | SRL | from 250,000.00 to 500,000.00 | 12 | Firms, end-users |
| AMBIENTE SC from Carrara | Environmentalengineering and Laboratory | Cooperative | morethan 1,000,000.00 | 120 | Firms, industries, public institutions |
| CALET from Pelago (FI) | Green building, semi-finished wood products | Other | from 100,000.00 to 200,000.00 | 3 | Private citizens, public institutions, professional partnerships |
| BMPCOMPANY from Figline-IncisaValdarno (FI) | Green building, woodbuildings | SRL | from 250,000.00 to 500,000.00 | 5 | Private institutions, public institutions |
| ABITA group from Vinci (FI) | Green building | SRL | morethan 1,000,000.00 | 3 | Private citizens |
| BIOBUILDING ENGINEERING from Bagno a Ripoli (FI) | Green building | SRL | from 250,000.00 to 500,000.00 | 7 | Private citizens, building companies |

Sources: IRES interviews 2015

Expertise and knowledge required to enter the sector and the skills that should be implemented range from the design to more operational skills. Let us mention some of the answers: "The engineering skills certainly make the lion's share, but these must be supported/integrated by economic/financial skills;" "Less generic theory provided in the training and more practical application;" "Individuals possessing transversal skills and traits that can emphasize and enrich their specific skills;" "To have knowledge and being able to apply it;" "methods of conservation and application of products;" "Use of International rating systems (such as LEED)."

The last question of the questionnaire intended to detect the importance and presence in this sector of a professional profile: the economic and financial expert of interventions in the energy and environment fields. Even for this question, quite heterogeneous responses were collected. For businesses of small size, this profile is not present and is not perceived as strategic. Companies of larger size were the only ones able to respond to this question in details using the grid provided on the skills and knowledge of the professional profile. This profile, or the skills needed to play this role, is present in these companies; however, it is not seen as a key or central profile for the production process. Below is a table containing the knowledge and skills that are considered by the companies interviewed as objective of training.

Table 23: THE OBJECTIVE OF TRAINING FOR THE COMPANIES INTERVIEWED

|  |  |
| --- | --- |
| Skills | Identifying forms of available fiscal support and activating the appropriate procedures  Elaborating the business plan of the intervention  Evaluating the feasibility and technical and economic affordability of the interventions for both energy and environmental regeneration |
| Skills | Regulatory framework (EU, national, regional and local level) in energy and environment, in particular for the building construction sector and new energy technologies from renewable sources  Contractual aspects governing the relations with suppliers of banking and energy services (Decree No. 115/2008) |

Sources: IRES interviews 2015

## 3.5 The opinion leaders

In order to complement the information of this survey, some opinion leaders were also interviewed. Specifically, we collected several experiences from the following institutions: Agenzia Provinciale di Firenze per l'Energia, Scuola Edile di Siena, 2 renown architects of the sector (Imbrogno, Novelli). The respondents agreed on the fact that green jobs in the green building industry represent a strategic line of development for the future. The growth of this sector is not, and will not be, linearly related to the GDP growth because of cultural factors (the propensity of consumers to buy sustainable products), institutional factors (a more effective supporting legislation and more competent public operators of city planning) and organizational factors (the strengthening of the organizational structure of the companies and their ability to work in a network). From the interviews, a picture of a restricted, almost niche market emerged, a market that is still not entirely known wherein competent and professional specialists are not easily found. The province of Bolzano is one of the most advanced realities in Italy on this issue, a province to be imitated as a model, though taking the proper precautions due to the presence of different specific cases and varied territorial contexts in Italy.

ESCO activities represent an even smaller subgroup that would require an independent regulatory framework, for instance, with the recognition of sector-specific profiles (e.g. wood contractors). Professionals and technicians are often not trained to perform the required tasks. It is a deficiency that starts from the top and involves almost all professional profiles: designers, construction managers, facility managers expert in energy efficiency, technicians (building contractors experts in assembling wood buildings) and professionals of the digital market (makers, FabLab...). In Italy, one can notice the lack of design firms that use team work and ensure a multidisciplinary professional activity which is able to cope with most needs. Thus, more than the creation of professional profiles from scratch, sector experts are oriented towards the structural introduction of environmental expertise in already existing profiles.

The profile of the economic and financial expert in interventions in the energy and environmental field has also been identified with other terms: Energy Manager and energy consultant. However, this is a profile that is considered as strategic. On the one hand, some of the respondents said that such profile by itself might not have much space in the market, given the configuration of the companies in our economic panorama; on the other hand, within the green job market, experts lament the deficiency of the skills corresponding to this profile.

Below are the issues that, according to the respondents, should be further enhanced:

Knowledge of the European Investment Bank funding tools related to energy saving[[25]](#footnote-25)| Sustainability of fossil and renewable energies | Natural cycles | Energy efficiency and systemic approach to planning | Knowledge of materials and sustainable products and methodology of application | Innovative technologies and new generation systems components | Procedures for quality and environmental sustainability | Process and product certification | Energy certification of buildings (Decree No. 192/2005) | Certification of environmental sustainability of buildings (LR 65 / 2014) | Tax incentives and reductions for sustainable building construction.

## 3.6. Green skills and training needs in a sample of green building businesses

Within the Egrejob project the research work on the needs of Tuscan businesses has been integrated with some interviews.[[26]](#footnote-26)

**CHARACHTERISTICS OF THE INNOVATIVE BUSINESS INTERVIEWED**

The 20 businesses interviewed in relation to the Environmental Goods and Services sector (EGSS) all belong to the code CReMA13.B Heat/Energy saving and management. Their territorial distribution is as follows: 9 Firenze, 3 Lucca, 2 Arezzo, 2 Pisa, 2 Livorno, 1 Siena e 1 Massa Carrara.

As concerns their dimension, businesses are mainly small.

Only 1 out of the 20 businesses interviewed is prevalently composed by women. In the other cases, the ownership and management of companies is males, with a percentage of occupied females equal to about 2,5%.

|  |  |
| --- | --- |
| **Duration of the business activity** | **Answers** |
| 1-4 years | 2 |
| 5-9 years | 9 |
| 10 years and beyond | 9 |
| **Total** | **20** |

The data gathered confirm trends and sectoral assessments already arisen in previous documents:

1. The sector is not yet completely specialized in these activities; it is frequent to find companies not dealing exclusively with Heat/Energy saving and management.
2. Businesses complain that clients have a poor knowledge of such products and services and are not always available to pay additional money to benefit from an energy retrofitting service.
3. People inside the businesses don't always perform definite roles in relation to their professional duties. Some entities are family-run businesses.
4. The training is mainly carried out to be compliant with compulsory courses and is prevalently related to the training offers of business associations.
5. Particular learning needs on the general running of the business are not identified. The green skills are perceived as more important and necessary. Here follow the most recommended skills:

Table 24: RECOMMENDED SKILLS

|  |
| --- |
| **Environmental awareness** and availability to learn sustainable development notions  High (according to 8/20 of interviewed companies). |
| **Coordination, management and entrepreneurial** skills to facilitate holistic and interdisciplinary approaches that meet economic, social and ecological objectives  High (7/20 of interviewed companies). |
| **System and risk analysis** skills to assess, interpret and understand both the need for a low carbon production and the requested measures  High (11/20 of interviewed companies). |
| **Entrepreneurial** skills to seize the low-carbon technologies opportunities;  High (10/20 of interviewed companies). |
| **Innovation** skills to identify opportunities and create new strategies for addressing green challenges  High (10/20 of interviewed companies). |
| **Marketing** skills for green products and services promotion;  High ( 7/20 of interviewed companies). |

1. As concerns the interaction with the subjects of the group, the interviewed businesses entertain relationships with suppliers and with same-sector companies. Differently, the interaction with University researchers is very low. The presence of informal networks is not detected.

## 3.7 ESCO and Green building: rationale of selection

The decision to identify the topic of green building and the ESCO instrument is the conclusion of a reflection on the role and the evidence of Toscana Region commitment towards a more sustainable economy system, together with the analysis of the regional general approach towards the Green Economy. The sectors of smart cities and green buildings embrace a multiplicity of heterogeneous realities which include building activities that favor renewable energy sources, organize the efficient use of facilities and utilize eco-friendly, low environmental impact materials. Among such activities we also included those of high technological level, such as home automation, and the activities that use the ESCO as one of the most important application tools (efficient facility management and energy saving services offered to public and private institutions).

Since 2005, Toscana Region initiated a process of eco-efficient design to address the global changes, starting by recognizing and rewarding good behaviors of citizens, companies, institutions and associations. The sustainability challenge started from projects and small/big initiatives that make their way in society, without waiting for governmental decisions or EU directives. This approach promotes and rewards the behaviors and experiences of innovative eco-efficient businesses, combining the principles of environmental protection with the production of innovation, competitiveness, economic efficiency and social equity. For this reason, Toscana Region has organized in the last 10 years, 5 events awards within Eco-efficient Toscana (“Toscana ecoefficiente”), involving over thousands of subjects at regional level, who carried out sustainable activities in different disciplines with quantifiable results, evaluated in terms of environmental sustainability.

The experience towards the eco-efficiency was reflected in the publication of the Guidelines on environmental sustainability and on the wood-building in Toscana; furthermore, after an agreement signed with the University of Florence, Eco - Design for temporary exhibits and Exhibit-Design Eco-criteria are, at the moment, the only existing instruments for scientific measuring of the environmental performance of temporary exhibition spaces. From this experience, the GreenWatcher project was born, that makes open to the public a scientific and ready-to-use tool for the self-assessment of companies environmental performances, available for all the economic activities.

The choice to focus on ESCO for Toscana comes from a series of general considerations on policies supported by the regional government:

* + Toscana financed the creation of the Distretto delle Energie Rinnovabili (Renewable Energy Cluster), a meeting point for companies interested in the green economy. The cluster is an example of research and application of economics of innovation and transfer of technology, promotion and dissemination of clean energy. Building on the experience of companies already present in the traditional geothermal area (Larderello and Amiata geothermal Area) that involves the provinces of Siena, Pisa and Grosseto, the cluster is the centre of the sustainable development of renewable energy in Toscana .
  + The Region supported the creation of Energea, a structure dedicated to technology transfer in renewable energy, as the result of a merger of two pre-existing centers (the Centre of Excellence for Geothermal Energy in Larderello, and the International Center for Technology Transfer in Monterotondo Maritime). Energea boasts research bodies such as the University of Pisa and the Sant'Anna School of Advanced Studies with the economic development activities of Co.Svi.G. Ltd (Consortium for the Development of Geothermal Areas). Co.Svi.G has an historical role in the development of the use of renewable energy in Toscana; it is composed by local authorities of geothermal areas and was the first actor that directly promoted sustainable development in those same territories, as well as being among the "founders" of the latest production facilities in the district.
  + In the 2007-2013 Programming period, Toscana region has implemented initiatives oriented towards clustering TT centres, rationalizing the demand for innovation and systematizing the provision of research, through the so called Innovation Poles characterized by strong public-private partnerships between industry . 2 innovation poles are operating in the sector of Technologies for renewable energy and Technologies for Smart Cities. They address the following topics: Renewables, Energy Efficiency, Green Economy, green building. They associate more than 1000 subjects (enterprises and Research center) dealing with these topics.

Finally, it must be stressed that the European Social Fund (ESF) Regional Operative Programme’s objectives set and funds allocated to the selected topic confirms the Toscana Region commitment to this challenge.

## Chapter 3 Executive summary

In order to analyze both regional and sectoral economies, a twofold work was conducted along the following lines: (a) quantification of the main data of sectors where green jobs may be developed; (b) delimitation of the scope of green activities in some of these sectors. Sectors were chosen on the basis of potential green development in the light of available data and by considering potential sustainable developments of the regional planning). The first notable sector is construction, which was in serious crisis in recent years: between 2008 and 2012, the total added value decreased of a quarter (-26.5%), investments decreased of a half, and employment decreased of 22% (especially self-employment). Within the building sector, renovation activities held, since they operated on the restoration of a huge estate patrimony. These activities, as well as green activities (including green building, home automation and energy saving), constitute a powerful factor in fighting against the crisis. In other terms the green building sector was identified as strategic in Tuscan economy.

A panel of 20 subjects—companies and experts working in Toscana in the green building industry and the ESCO—was selected for a survey conducted using semi-structured interviews. Compared to the usual characteristics of companies (number of employees, revenue, type of company), the survey provided a picture of the green building sector as characterized by a strong heterogeneity and by a good dynamic. The professions emerging from the survey as strategic assets are high-level professionals (engineers and managers) as well as operational specialized technicians; the economic and financial expert in the energy field, though reputed as quite important, is still not adequately present in the market.

# Chap. 4. INSTITUTIONS AND ORGANIZATIONS SUPPLYING SKILLS FOR SUSTAINABILITY IN TOSCANA

**The Italian Vocational and Educational Training**

The actors involved in the governance of the Italian education and vocational training system are the following:

Macintosh HD:Users:giuncox:Library:Caches:TemporaryItems:msoclip:0:clip_image001.gif    The Ministry of Education, University and Research that is responsible for setting the minimum public service performance levels (Livelli Essenziali delle prestazioni – LEP) for the education system;

Macintosh HD:Users:giuncox:Library:Caches:TemporaryItems:msoclip:0:clip_image001.gif    the Ministry of Labour and Social Policies that is responsible for setting the minimum public service performance levels (Livelli Essenziali delle prestazioni – LEP) for the vocational training system;

Macintosh HD:Users:giuncox:Library:Caches:TemporaryItems:msoclip:0:clip_image001.gif    the Regions and Autonomous Provinces that are the administrations in charge of planning, organising and supplying VET;

Macintosh HD:Users:giuncox:Library:Caches:TemporaryItems:msoclip:0:clip_image001.gif    the social partners that contribute to designing and organising active labour policies and particularly VET policies.

Compulsory education lasts 10 years (i.e. up to 16 years of age) and includes the whole first education cycle and the first two years of the second (either upper secondary schools or three/four-year vocational training courses). Everyone has the ‘right/duty’ (diritto/dovere) to pursue education and training for at least 12 years in the national school system, or until a three or four-year vocational qualification is obtained within the IVET system before reaching 18 years of age.

**The Tuscan VET**

The VET system in Toscana, articulated through the provincial training agencies, has been subject to a fundamental reform process in the last two years, that has, de facto, assigned the management of the training offer to  the regional administration, and has basically left to the  training agencies managed by the Provinces the role of executors of the training courses.

Two types of action may be activated within this framework:

- Three-year courses for students enrolled at the State Professional Institutes (IPS)

- Two-year courses for young drop-outs left the school system provided by accredited training agencies at the provincial level.

**The EU and Regional inputs**

The training policies, at regional and provincial levels,  are realized through the resources provided by  the European Social Fund (ESF) and the national funds provided by  the laws 236/1993 and 53/2000 plus other state, regional and provincial resources. The ESF is one of the structural funds of the European programming that advocates policies aimed at achieving full employment, improving quality and productivity at work and promote social integration.

The ESF Regional Operative programme (ROP) 2014-2020 of Toscana, with a budget of nearly EUR 733 million, aims to strengthen employment, education and social inclusion, and to improve operations within the regional public administration. The focus is on youth and the long-term unemployed who will be encouraged either to stay in education or to train in new skills adapted to the changing jobs market.

**The main ESF priorities in Toscana’s ROP are:**

Opportunities will be created to help the long-term unemployed and young people in particular acquire new competences and skills adapted to labour market needs. Vocational training, traineeships, grant-funded apprenticeships and support for the self-employed will all provide for a better orientation to a mobile workforce. Efforts will also be made to help women into employment by improving child care and moving towards a better work-life balance.

To encourage students to complete school and acquire new skills or participate in training programmes and apprenticeships, the OP will reinforce the links between education and work. Adaptations and innovations in education and training services will, in turn, lead to improved competences and mobility within the labour force.

A number of actions will promote social inclusion through employment for disadvantaged groups, the vulnerable and those facing poverty. There will also be better provisions for socio-educational services for children and the elderly.

Finally, improvements in the public administration’s operational database and software will enhance regional capacity.

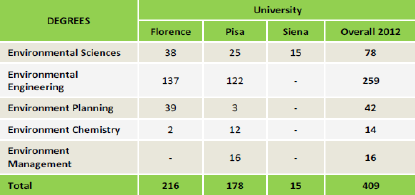
By creating jobs, training and apprenticeships for the region’s unemployed, youth and disadvantaged, Toscana’s OP will help to provide the skills and competences needed to respond to Italy’s changing and more mobile labour market.

The ESF ROP pursues several training topics related to the the green economy such as: renewable energy, waste management, reduction in the use of raw materials and optimization of the cycles of industrial production and craft ("do more with less").

**The Tuscan Research System**

As far as environmental training and Research and Development are concerned, the Tuscan academic system is based on three major universities (Florence, Pisa and Siena) and on a number of sites which generally focus on specific sectors. In 2012, the academic system created around 400 graduates in fields related to green economy and green jobs: environmental science, environmental engineering and chemistry, environmental planning and management (tab. 4.1). Furthermore, in the years 2011-2012, around 1400 students attended undergraduate courses related to the green economy.

Table 25: GRADUATES IN 'GREEN' STUDIES IN THE TUSCAN UNIVERSITY SYSTEM 2012



Source: Regione Toscana from DB MIUR 2012

The 3 Tuscan Universities (Florence, Pisa and Siena) offer a wide range of high level education (generally postgraduate) on relevant topics related to the Green Economy: sustainable energy management, management of health, safety, environment and quality systems, management of water, waste water and urban and special wastes, smart cities, innovative solutions for the construction industry.

Toscana public and private sectors have developed acknowledged excellence in R&D relevant to renewable energy value chains and annually train hundreds of professionals and researchers.

Toscana hosts specialized R&D centres in the renewable energy sector, which includes research in the relevant technologies, market aspects, specific value chain segments, and energy planning.

**Specialized National Research Centre (CNR) labs**:

CNR-IVALSA (www.ivalsa.cnr.it) in Florence, has a branch conducting applied research on sustainable forest management, with specific expertise on biomass energy. IVALSA is a centre with particularly specialized knowledge in Italy on efficient forest wood energy value-chain management and on wood fuel production cost analysis. CNR-ICCOM (www.iccom.cnr.it), in Florence and Pisa, has a branch specialized in the hydrogen value chain and on biomass based fuel cell technologies. It developed an ethanol based microfuels cell, and recently it has spun off R&D companies such as ACTA Spa (London stock exchange listed) which manufactures catalysts for hydrogen fuel cells. CNR-IGG (www.igg.cnr.it), the Institute of Geosciences and Earth Resources, headquartered in Pisa, which, in its geosciences activities area, includes also applied research on geothermal systems and energy, as well as on methodologies for monitoring of landfill biogas flows.

**Regional specialized renewable energy centres and partnerships**: The Centre of Excellence on Geothermal Energy Larderello, near Pisa and CITT (Centre for Technological Innovation Transfer on Renewable Energies) near Grosseto are the first steps towards the establishment of the Tuscan renewable energy technology district. In particular, CITT promotes the development of technology transfer, in connection with local enterprises for small wind, biomass, solar PV, concentrating solar power, cogeneration technologies, as well as energy efficiency using domotics solutions. Consortium LaMMA (Environmental Monitoring and Modelling Laboratory) in Sesto Fiorentino (Florence), is a partnership of Regione Toscana, CNR and Fondazione per il Clima e la Sostenibilità, which has expertise in wind energy modelling and has developed GIS-based wind resource mapping (www.lamma.rete.toscana.it). Public-private partnerships such as Pisa Hydrogen District: University of Pisa Dept. of Mechanical Engineering (www2.ing.unipi.it), the CRIM lab (Centre for Applied Research in Micro and Nano Engineering), Piaggio, ENEL Group and other private companies jointly study hydrogen energy systems (www.filieraidrogeno.it).

**Academic research groups and consortia.** Some of the most prominent Tuscan R&D academic groups with specialization in renewable energies include: University of Florence – CREAR (www.crear.unifi.it) Interdepartmental Centre for Renewable and Alternative Energies, promotes interdisciplinary research and training activities on renewable energies and is particularly focused on bio-energy value chains and in solar cooling technologies. Center of Inter-university Research on Biomass for Energy - CRIBE (www.sssup.it): a joint effort of Scuola Superiore S. Anna (Pisa) and University of Pisa, which is focused on the R&D of bioenergy systems as well as on agro-energy value chains hanks to the LAND-LAB (www.landlab.org), specialized in agronomics of biomass energy feedstock. University of Siena Chemistry Dept.(www.chim.unisi.it/chimica2), specialized in multi-criteria evaluation and planning of renewable energy investments, using economics and Energy Analysis methodologies.

The Tuscan university system is also complemented by a number of science campuses and technology parks (Fig. 4.1) that constitute the backdrop for the application of acquired skills by trying to encourage the development of new business activities. Business incubators provide a range of integrated, broad-spectrum services aimed at facilitating business and encouraging the development of networking opportunities. The main technology parks of Toscana are:

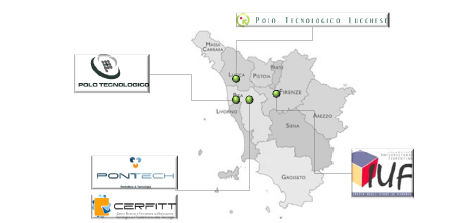
− Technology Park of Lucca, whose main objective is to support the transfer of technology and the competitiveness of SMEs *[TN: Small and medium-sized enterprises]*.

−Technology and Science Park and Business Incubator of Navacchio (PI), the largest science and technology park in Toscana, hosting over 60 SMEs and more than 600 employees. Navacchio Park is able to support businesses with promotion, administration and marketing services, assistance for Start Up procedures, partnering and networking within the incubator and in relation to external companies, support to the processes of fundraising, venture capital research and business intelligence.

− Consortium Pontech/Business Incubator CERFITT of Pontedera (PI) with 20 supported companies and a wide range of services such as promotion, administration and marketing services, support to Start Up procedures, partnering and networking within the incubator and in relation to external companies, support in the processes of fundraising, venture capital research and business intelligence.

− IUF Business Incubator of the University of Florence, with 9 university spin-offs and 1 Start Up. Also in this case, the business incubator offers a wide range of services of incubation and pre-incubation such as basic logistics, support to strategic partnerships, support in the procedures and fundraising, venture capital research and business intelligence, assistance to networking with inside and outside research infrastructures.

Figure 11: THE SYSTEM OF THE MAIN BUSINESS INCUBATORS AND TECHNOLOGY PARKS OF TOSCANA



Source: Regione Toscana

**Toscana Region Environmental framework**

Within the international, EU and national frameworks, the policies of the Regione Toscana in terms of Green economy are developed as part of the strategic planning of the national Government Program. This identifies sustainable development and green economy as stimuli for new qualified employment opportunities. Such general principles are embodied in various programming tools of the regional administration.[[27]](#footnote-27)

The **Regional Program of Development** (PRS = Programma Regionale di Sviluppo), a direct operational ramification of the Government Program, includes, among its guiding principles, that of "promoting sustainable and renewable development" and makes specific reference to the green economy as "one of the most significant, new opportunities for the Tuscan territory." The category of "sustainability, quality and infrastructure of the territory" is based on the support that public policies can provide in order to improve the overall efficiency of the economic system in terms of consumption of natural resources. This refers to a model of development that is explicitly attributed to the green economy. Also the analysis of the guidelines of the Integrated Development Projects (PIS = Progetti Integrati di Sviluppo) proposed in the Program points out, among the relevant regional technological Districts, those related to ICT and telecommunications and energy efficiency, renewable energies and green economy. Within the first area, emphasis is given to the development of a geographic informational infrastructure for the accessibility of the region "in order to have widespread information available for enabling an integrated flexible, safe and sustainable transportation system." Within the second area, the project aims to identify effective actions in order to promote the increase of energy efficiency of houses and businesses as well as the production of energy from renewable sources, also by creating a network of universities, research and innovation centers. On the side of production and employment, the project aims to identify a Tuscan system of green economy, for the part relating to renewable energy, and to support the creation of production chains such as that of ''sustainable building construction" according to a supply chain logic(green building, agricultural energies, Environmental Equipped Industrial Areas [APEA = AreeProduttiveEcologicamenteAttrezzate]).

The **Regional Plan of Economic Development** (PRSE = Piano Regionale di SviluppoEconomico) carries out the objectives of the economic policies defined by the Regional Development Program in the sectors of industry, artisanship, commerce, tourism, cooperation and services. A substantial part of the program follows the operative guidelines contained in the POR (Programma Operativo Regionale = Regional Operational Program) and in the executive program FAS. The final analysis of the objectives of the PRSE highlights the lines of action which directly show a correlation with the development of green economy and the creation of green jobs.

**Line 1** - strengthening the competitiveness of the Tuscan production system through innovation, technology transfer, cooperation between businesses and research centers, and the increase of advanced services to PMIs

**Line 2** - internationalization, promotion and investment attraction

**Line 3** - tourism, commerce and services sector aimed at the development and qualification of the job offer on the basis of environmental, social and economic criteria.

While providing a forcibly general framework, the analysis of this planning tool allows to perceive that the actions related to the three lines have in themselves potential elements of green economy and are possible stimulus factors for the creation of green jobs.

The **Regional Energy and Environment Plan 2012 - 2015** (PAER = Piano Ambientale ed Energetico Regionale) constitutes the transversal instrument that identifies guidelines and objectives for the entire regional planning on the environment. The Plan aims at fighting against climate change, promoting the green economy and the prevention of risks, and supporting the transition towards low carbon emissions through the spread of green economy. Remarkably, one of the regional priorities is aimed to promote green economy through four stages of development: Research, Production, Installation and Sustainable consumption and Efficiency. In support of this strategic plan, some specific "supply chains" are also identified: recovery of materials (recycling chain), wood (production of thermal and electric energy and green building), the heating chain, Smart Cities, energy conservation and eco-innovation.

The **Regional Plan for Air Quality 2012 - 2015** (PRQA = Piano Regionale per la qualità dell'aria) defines the operating guidelines contained in the PRS on the principles of environmental risk prevention and reduction of pollutants with particular reference to air pollutants. The Plan also defines the guidelines contained in PAER in reference to the "reduction of the population exposed to air pollution levels exceeding the limit values, to emissions of greenhouse gases, the rationalization and reduction of energy consumption and the increase of energy from renewable sources." The main causes of air pollution (public and private transportation, domestic heating and production activities) are contrasted by a transversal strategy of interventions that consist, among other things, of specific references to ''energy and environmental efficiency of production processes" as well as interventions on "behaviors, consumption patterns and lifestyles relating to the individual citizen."

Explicit references to the Green Economy are also contained in the **Regional Plan of Waste and Polluted Sites Management**(PRB = Piano regionale di gestione dei Rifiuti e Bonifica dei siti inquinati). By recalling the sectoral objectives of the PRS in terms of reduction of waste production, increase of recycling and support to recycling, the Plan aims to "Promote the green economy: to transform waste into a real resource by bringing its disposal cycle into a more general economic development and by promoting the market of secondary raw materials."

The **Integrated Regional Plan for Infrastructures and Transportation** (PRIIM = Piano Regionale Integrato per le Infrastrutture e la Mobilità) originates from the need to rationalize planning instruments and procedures in areas related to infrastructures and transportation. This Plan aims at eliminating, on the one hand, discordant planning acts and, on the other, at creating a common tool for the overall management of policies in related subjects. Among the actions for sustainable transportation, this Plan identifies a number of transversal strategies for technological innovation, communication and information through the application of ITC technologies. The Plan also coordinates strategies of implementation in public and private road transportation of people and goods. Additionally, the Plan includes the promotion of forms of shared use of private vehicles, such as car-sharing and car-pooling, and the qualification of parking and intermodal freight transportation.

## Chapter 4 - Executive summary

The actors involved in the governance of the Italian education and vocational training system are the following: The Ministry of Education, University and Research that is responsible for setting the minimum public service performance levels (Livelli Essenziali delle prestazioni – LEP) for the education system; the Ministry of Labour and Social Policies that is responsible for setting the minimum public service performance levels (Livelli Essenziali delle prestazioni – LEP) for the vocational training system; the Regions and Autonomous Provinces that are the administrations in charge of planning, organising and supplying VET; the social partners that contribute to the design and the organisation of active labour policies and particularly VET policies.

The Tuscan academic system is based on three major universities (Florence, Pisa and Siena) and on a number of sites which generally focus on specific sectors. Toscana public and private sectors have developed acknowledged excellence in R&D relevant to renewable energy value chains and annually train hundreds of professionals and researchers. The Tuscan university system is also complemented by a number of science campuses and technology parks that constitute the backdrop for the application of acquired skills by trying to encourage the development of new business activities. Business incubators provide a range of integrated, broad-spectrum services aimed at facilitating business and encouraging the development of networking opportunities.

The review of the instruments available to the Tuscan regional planning highlighted that the general issue of the green economy is present at the highest levels of strategic planning (Government Program) so that specific, sectoral planning tools are put into effect. The analysis contained in this Report on such instruments highlighted and consolidated the knowledge of the key sectors of the Tuscan green economy.

# Chap. 5.DECENT JOBS GAPS IN THE REGION / SECTOR / SUB-SECTOR

Italy is one of the European countries with more challenges in the field of undeclared work and more generally in the disrespect of labor law (the share of undeclared work -12%- is higher than in other EU members, except new ones[[28]](#footnote-28)). Data from the National Institute of Statistics indicate that undeclared work represents a significant problem in Italy, particularly in the services sector and in industry, as well as in certain regions. The building industry confirms this trend. Within this framework, Toscana is not in the worst position[[29]](#footnote-29), even if the attention paid to the non-respect of labor law and to undeclared work has clearly declined in the last years. [[30]](#footnote-30)

Despite the general problems affecting the Italian building sector the green building employs a higher share of skilled worker (less exposed to indecent work) than building as a whole[[31]](#footnote-31). On the other hand green building firms are often very small firms, so it is easier that evasion from the regulation happens, due to the less tight control from trade unions and state administrations.

The main problems  affecting the building branch as concerns decent work are:

Macintosh HD:Users:giuncox:Library:Caches:TemporaryItems:msoclip:0:clip_image001.gif   **Undeclared work**. According to ISTAT recent estimates, 12% of labour units are undeclared in Italy (10% in Toscana), whereas in the building sector the undeclared work concerns 10% of employees in central Italy (which pertains Toscana); this percentage raises to the  25% in Southern Italy.

Macintosh HD:Users:giuncox:Library:Caches:TemporaryItems:msoclip:0:clip_image001.gif   **Subcontracting work** is highly widespread in building branch; the building cycle can often encompass subcontracting more than twice; often work conditions in subcontracting firms are quite far from those prevailing in core firms, and the instability of jobs is higher. According to union officers, very often the segmentation of building cycle is due to the willing of firms to lower the wages and escape from union’s and state’s control. Green building sector is less involved in subcontracting chain, because  often work for small orders requires skilled work.

Macintosh HD:Users:giuncox:Library:Caches:TemporaryItems:msoclip:0:clip_image001.gif   **Gender equality**.  Gender segregation in workplace is high. Only 5% of employees in building is composed by women, usually as clerk. The informal character of Italian (and specifically Tuscan) labour market promotes the maintenance of gender stereotypes and hinders the entrance of women in building professions not only as manual workers but also in technical high skills.

Macintosh HD:Users:giuncox:Library:Caches:TemporaryItems:msoclip:0:clip_image001.gif   **Non-compliance of employment contracts**. The undeclared work is an extreme demonstration of non-compliance of employment contract, but there are some other aspects, like the non-compliance of limits as regards working time, the irregularities in social charge payment, or the non-recognition of skills acquired by workers (at the same time workers perceive their skills are originated only by means of experience, not through training)

Macintosh HD:Users:giuncox:Library:Caches:TemporaryItems:msoclip:0:clip_image001.gif   There is also a **non-compliance,** generally speaking, **of labour law**. In 2013 the “Direzione Regionale del Lavoro” controlled 2460 building firms, and noticed irregularities in 53% of them (it must be stressed that controls are targeted to  enterprises “at risk”, not towards a representative sample).  Cuts in public employees have reduced controls of 30%, in Toscana, between 2011 and 2012.

Macintosh HD:Users:giuncox:Library:Caches:TemporaryItems:msoclip:0:clip_image001.gif   **Accidents at work**. 10% of accident at work in Toscana concern building, representing a share that is higher than the Italian one. This is due to: obsolescence of work organization; lack of technical fitness of the enterprises; lack in safety planning and in  workers training;

Macintosh HD:Users:giuncox:Library:Caches:TemporaryItems:msoclip:0:clip_image001.gif   **Presence of undeclared work**. Accidents in building decreased by 49% between 2008 and 2012.

The fight against  “indecent work” can be found in:

a) regional policies[[32]](#footnote-32)

b) the system of bilateral bodies in the construction[[33]](#footnote-33) field.

Both systems are targeted to raise the skills of workers, especially young workers and disadvantaged people. Moreover, a type of sectoral social policies (through the Casse Edili[[34]](#footnote-34)) helps the training processes in a cooperative manner.

Table 26: PILOT DECENT WORK DASHBOARD IN GREEN BUILDING IN TOSCANA[[35]](#footnote-35)

|  |  |  |
| --- | --- | --- |
| **FACTORS DECENT JOB** | **Assessment from 1 to 10**  **[1=fair; 5=incomplete; 10=non-acceptable standards** | |
| **1 - Employment opportunities** | | 1 2 3 4 5 6 7 8 9 10  **❑ x ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑** |
| **2 - Adequate Earnings** | | 1 2 3 4 5 6 7 8 9 10  **❑ ❑ x ❑ ❑ ❑ ❑ ❑ ❑ ❑** |
| **3 - Decent working hours** | | 1 2 3 4 5 6 7 8 9 10  **❑ x ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑** |
| **4 - Combining work, family and personal life** | | 1 2 3 4 5 6 7 8 9 10  **❑ ❑ ❑ ❑ ❑ x ❑ ❑ ❑ ❑** |
| **5 - Unforced paid work** | | 1 2 3 4 5 6 7 8 9 10  **❑ ❑ ❑ x ❑ ❑ ❑ ❑ ❑ ❑** |
| **6 - Stability and security of work** | | 1 2 3 4 5 6 7 8 9 10  **❑ ❑ ❑ x ❑ ❑ ❑ ❑ ❑ ❑** |
| **7 - Equal opportunity and treatment in employment** | | 1 2 3 4 5 6 7 8 9 10  **❑ ❑ x ❑ ❑ ❑ ❑ ❑ ❑ ❑** |
| **8 - Safe Working environment** | | 1 2 3 4 5 6 7 8 9 10  **❑ ❑ ❑ ❑ x ❑ ❑ ❑ ❑ ❑** |
| **9 - Social Protection** | | 1 2 3 4 5 6 7 8 9 10  **❑ ❑ ❑ x ❑ ❑ ❑ ❑ ❑ ❑** |
| **10 - Social Dialogue and Workplace Relations** | | 1 2 3 4 5 6 7 8 9 10  **❑ ❑ ❑ x ❑ ❑ ❑ ❑ ❑ ❑** |

*IRES elaboration on interviews of Trade Union Officials*

## Chapter 5 Executive summary

The indicators related to the "decent work" show an intermediate positioning of the green building sector in Toscana. In general terms the green building shows a better situation in the construction industry (despite the fact that the construction industry shows several critical issues, as the incidence of illegal work and accidents); at local level, in a general framework, the indicators of Toscana are similar to the national average value, and much better than those relating to the southern regions.

# ANNEX: THE EGSS CLASSIFICATION AND THE EGREJOB PROJECT

The EGSS refers to Environmental Goods and Services Sector, a statistical delimitation of ‘green activities’ on which the European Union has recently started a survey. The EGSSs are broken down into two sectors: environmental protection (EP) and resource management (RM). The former includes those activities aimed to "prevent, reduce and eliminate pollution and any other form of environmental degradation."[[36]](#footnote-36) The latter are activities aimed to "preserve and maintain the stock of natural resources and safeguard them from exhaustion." Across the EU, there are around 4 million full-time equivalent-workers in these activities.

EGSS sectors produce between 2.4% and 6.2% of the GNP of each member country.

The output of EGSS sectors can be created through market activity, but also through non-market activities (e.g. public administrations) that do not attach a price to the goods produced. Otherwise, this output can be created through secondary activities carried out by companies that do not have such specific purpose (e.g. in-house waste management of any kind of companies). The activities of the EGSSs are a "diverse set of producers of technologies, goods and services that measure, control, recover, prevent, treat, minimize, research and raise awareness for environmental damages to air, water and soil, and for problems related to waste, noise, biodiversity, landscape and resource exhaustion."[[37]](#footnote-37)

It is evident that EGSS sectors play a key role in the transition to a sustainable economy, and are "important to analyze the choices involved in green development and green employment." However, it is also evident that these are sectors that 'produce' goods and environmental protection, and not just sectors that "respect the principles of compatibility." Hence, all activities such as green building--in an operational sense--or organic farming are excluded from this category. Green building and organic farming somehow 'apply' the dictates of EGSS sectors, yet constitute the vast majority of the 'green' activities in a broader sense. Since EGSSs must be created for the purpose of environmental protection, they include the design of innovative solutions and energy saving for building construction, but not the actual installation of solar panels or, for example, exterior insulation and finishing systems.

Furthermore, the actual collection of information constitutes a problem. In fact, the EGSS system is highly effective when gathering information directly from the source (is the activity of a single operator part of EGSS activities?). Yet, the same cannot be said when the EGSS system has to deal with data collected according to different logics (e.g., I can easily know the number of employees of the Tuscan Region, but how many of the employees of the Tuscan Regional Administration are engaged in EGSSs?).

In fact, a detection system is being implemented according to the possibilities and capabilities of the individual national statistical systems. The overall data displayed on the Eurostat website are the following and, evidently, show deficit figures:

Figure 12: Eurostat data on Employment in the environmental goods and services sector [env\_ac\_egss1

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GEO/TIME | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| European Union (28 countries) | **3,045,000** | **3,148,000** | **3,271,000** | **3,317,000** | **3,568,000** | **3,807,000** | **3,934,000** | **4,068,000** | **4,181,000** | **4,282,000** |
| Belgium | **:** | **74,330** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** |
| Bulgaria | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **26,671** | **29,080** |
| Czech Republic | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** |
| Denmark | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** |
| Germany (until 1990 former territory of the FRG) | **:** | **:** | **:** | **:** | **101,680** | **:** | **347,973** | **385,576** | **:** | **:** |
| Spain | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** |
| France | **:** | **:** | **:** | **:** | **:** | **241,954** | **373,185** | **318,969** | **416,847** | **:** |
| Italy | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** |
| Latvia | **:** | **:** | **:** | **:** | **:** | **27,752** | **23,330** | **24,069** | **:** | **:** |
| Lithuania | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **29,447** | **:** |
| Luxembourg | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **9,757** |
| Netherlands | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **126,700** |
| Austria | **:** | **:** | **:** | **:** | **:** | **167,665** | **169,589** | **170,192** | **171,245** | **180,729** |
| Poland | **:** | **:** | **:** | **:** | **329,412** | **:** | **:** | **:** | **:** | **:** |
| Portugal | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** |
| Romania | **:** | **:** | **268,418** | **234,829** | **132,654** | **179,620** | **127,859** | **118** | **130,266** | **146,026** |
| Finland | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** |
| Sweden | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** | **:** |

In some cases, the Eurostat database also contains more detailed figures (which are always specific and not organized according to different years); such is the case of the waste management sector:

Table 27: EUROSTAT DATA on EMPLOYMENT IN WASTE MANAGEMENT SECTOR

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GEO/TIME | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| European Union (28 countries) | 866,000 | 880,000 | 926,000 | 947,000 | 957,000 | 999,000 | 1,010,000 | 1,062,000 | 1,083,000 | 1,127,000 |
| Belgium | : | 20,481 | : | : | : | : | : | : | : | : |
| Bulgaria | : | : | : | : | : | : | : | : | 14,158 | 16,689 |
| Czech Republic | : | : | : | : | : | : | : | : | : | : |
| Denmark | : | : | : | : | : | : | : | : | : | : |
| Germany (until 1990 former territory of the FRG) | : | : | : | : | 10,668 | : | : | : | : | : |
| Spain | : | : | : | : | : | 65,915 | : | : | : | : |
| France | : | : | : | : | : | 83,918 | 87,953 | 90,137 | 95,027 | : |
| Italy | : | : | : | : | : | : | 117,509 | : | : | : |
| Latvia | : | : | : | : | : | 5,660 | 6,301 | 5,713 | : | : |
| Lithuania | : | : | : | : | : | : | : | : | 5,321 | : |
| Luxembourg | : | : | : | : | : | : | : | : | : | 1,175 |
| Netherlands | : | : | : | : | : | : | : | : | : | 31,800 |
| Austria | : | : | : | : | : | 19,632 | 19,408 | 19,984 | 20,431 | 22,033 |
| Poland | : | : | : | : | 73,676 | : | : | : | : | : |
| Portugal | : | : | : | : | : | : | : | : | : | : |
| Romania | : | : | 51,148 | 30,559 | 43,859 | 89,533 | 42,308 | 42 | 48,998 | 50,038 |
| Finland | : | : | : | : | : | : | : | : | : | : |
| Sweden | : | : | : | : | : | : | : | : | : | : |

Other cases concern Italian workers in water treatment (13,991 to 2,009) and water management (3,023 employees in 2009). EGSS Eurostat figures do not include regional data.

As for the sectors of activities analyzed by this study, there is almost no case of strict correspondence between sectors whose data were mentioned and EGSS sectors. As one may have noticed, we adopted a variety of criteria also in the basic report in Italian.[[38]](#footnote-38) Chapter 3 aimed to describe the scope of the most interesting green sectors for the purpose of testing parts of the Egrejob project. In chapter 3, we provided greater analytical details compare to chapter 4, which instead defined the 'size' of the sectors, but inevitably provided a wider scope where 'green' and 'non green' components cannot be clearly distinguished. (Moreover, the intended scope is anything but unique, because different classification systems are present to quantify different phenomena according to the degree of detail of the available statistics.) The following table attempts to connect these areas with the classification scheme of EGSSs:[[39]](#footnote-39)

Table 28: Connections Between the SECTORS identified in the Tuscany research and EGSS classification

|  |  |  |
| --- | --- | --- |
| *Chap. 3 of this report basic report* | ***Chap. 4 of this report*** | ***EGSSs*** |
| 3.2 Green building | 4.1 Building construction (ATECO 41, 42 and 43) | Green building is an integrated sector that is able to provide solutions to most/all areas covered by the CEPA(e.g. waste water management, noise reduction, air and climate protection, landscape protection, management of energy resources, heat saving, sustainable management of minerals...): we are dealing mainly but not exclusively with planning activities(which are often classified as services for the companies) closely linked to operational activities. |
| 3.3 Home automation |
| 3.4 Energy efficiency and ESCO | 4.2 Energy efficiency and renewable energy: energy and gas (ATECO 35) | Crema 13 management of energy resources |
| 4.2 Energy efficiency and renewable energy: water and waste (ATECO 36, 37, 38, 39) | Cepa 2 wastewater management  Cepa 3 waste management |
| 3.5 Sustainable transport | 4.3 Sustainable transport: transportation (ATECO 49) | Cepa 1 protection of ambient air and climate  Cepa 5 Noise and vibration abatement  Crema 13B Energy saving |
| 4.3 Sustainable transport: transport manufacturing (ATECO 29,30) | Cepa 1 protection of ambient air and climate  Cepa 5 Noise and vibration abatement  Crema 13B Energy saving |
| There are also a number of service activities for companies(technical services and consulting, research and development, and many activities for public administrations, e.g. regional planning) which play a transversal role, integrated with all previous activities. These service activities obviously include green components corresponding to one or more of the items of the EGSS classification. | | |

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**Note on contributors**

**Franco Bortolotti**, scientific coordinator of Ires Toscana (Istituto di Ricerche Economiche e Sociali), charged of the Labour Market Research Area and former professor under contract of Urban and Regional Economics (Dept. of Urbanistics, University of Florence, 1996-2000).

Relator in several national and regional scientific meetings in the following subjects: Industrial Districts, Local and Regional Development and Planning, Innovation, Governance in non standard Work, Governance in Environmental Economy.

Some of their scientific works are translated: “Inclusion Strategies. Regulating non-standard employment in the ‘Third Italy’”, *Regulating New Forms of Employment. Local Experiments and Social Innovation in Europe,* (ed. I.Regalia) Routledge, 2005; “La regulacion de la flexibilidad en Toscana”, *Revista de Trabajo*, N.9, 2011.

**Manrico Benelli**, Marine biologist,freelance, he gained work experiences in the field of environmental data analysis and environmental reporting. he helped to draft the regional reports on the state of the environment for Toscana. He also participated in the working groups that developed part of the regional planning and laws (Regional Environmental Action Plan). He developed a good knowledge of environmental regulations, laws and technical papers on freshwater and marine waters, urban and industrial waste management and noise pollution. He developed the use of assessment tools (Strategic Environmental Assessment, Impact Assessment, etc.) and contributed to the drafting of several processes of SEA and Impact Assessment on biological diversity.

**Enrico Fabbi**, Graduated in 1995 from University of Florence at faculty of political sciences.

In 1998 he received a Master degree in labour organisation sciences. He works in IRES Toscana studying labour market dynamics focusing on national and regional welfare policies. He collaborates with Labour market Ministry in the filed of labour policies. He teaches labour right at Political Sciences Faculty of Florence University. He is engaged on several Projects aimed to improve demand / offer matching (Programma Pari, Azione di Sistema Welfare To Work, Progetto S.O.La.Re) collaborating with public entity as Italia Lavoro spa, Formez, Regione Toscana, Regione Calabria. He contributes, as researcher, to several labour market and local development surveys.

**Roberta Pini**, statistics, experienced in quantitative and qualitative research, manager at EuremaS.c., Research Coordinator Metamarketing Service Srl. Roberta have more than 14 years of research experience projects in research. She has extensive experience as a statistical consultant in quantitative and qualitative methods. She has modeling and consulting experience across varied focus including social and economic sciences. Her areas of expertise include labour market, education and training. She has experience in statistical analysis, observation and collecting data.

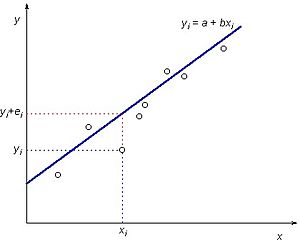


1. Green jobs in the strict sense’ are those professions fully aligned with the green economy [↑](#footnote-ref-1)
2. The ‘occupations activated by the green economy’ refer to ‘potentially’ green jobs, characterised by competences which increasingly incorporate those skills that are more closely linked to green jobs. [↑](#footnote-ref-2)
3. The results indicate the average placement in relation to the results obtained for each sector; the red color means low environmental perform [↑](#footnote-ref-3)
4. For a deeper analysis see pp. 19 and following. [↑](#footnote-ref-4)
5. Of more than one million hectares of woodland, approximately 18% is in the province of Grosseto, followed by Florence (17%) and Arezzo (16%). Tuscany is followed by Piemonte with 9.8%. (source: IRPET - Regional Institute for Tuscany Economic planning ). [↑](#footnote-ref-5)
6. It must be stressed that around 39% of tourists in Tuscany come to the sea. (Source: IRPET - Regional Institute for Tuscany Economic planning ). [↑](#footnote-ref-6)
7. Piano Ambientale ed Energetico Regionale 2012-2015 (PAER) from IRPET datas [↑](#footnote-ref-7)
8. COE (2009), *Understanding the Green Economy in California*, hypertext available at [www.coeccc.net](http://www.coeccc.net). This definition is different from that of ILO (“*green jobs* includes jobs that help to reduce the consumption of energy and raw materials, decarbonizes the economy, protect and restore ecosystems and biodiversity and minimize the production of waste and

   pollution. Green jobs can lead to lower environmental impacts directly e.g. in the transport sector as railway or subway operators providing energy efficient mass transportation or indirectly e.g. as technicians in industry or logistics

   managers in services reducing energy consumption in manufacturing and delivery of services”) [↑](#footnote-ref-8)
9. Fondazione Symbola - UnionCamere (2013), Green-Italy 2013. [↑](#footnote-ref-9)
10. Cf. Annex 1 of the basic report, which contains the list of the professional figures identified and codified according to the Istat CP 2011 classification. [↑](#footnote-ref-10)
11. [↑](#footnote-ref-11)
12. By means of clarification, it is necessary to emphasize that both the data processed by Excelsior on the expected employment and the data on the current employment derived from the analysis of the mandatory communications tend to diverge inexorably. (Mandatory communications are the employment notifications that each employer is required to submit to the Italian Ministry of Employment within 48 hours from hiring). This is due to various reasons: the statistical reason is that the actual picture is much larger than the data sample elaborated by Excelsior, and this is the cause of an unavoidable error; the reason of semantic nature is that the professional need detected by Excelsior does NOT coincide, in conceptual terms, with a mandatory notification that "simply" reports the number and tasks of the subjects that a company has hired. Moreover, the jobs needs of a company expressed by a single task often entail the recruiting of more persons who, with part-time contracts, cover the work-load of a full-time employee. [↑](#footnote-ref-12)
13. Remember that Excelsior is the unique data survey in Italy considering green jobs starting from Californian Center of Excellence (COE), 2009. [↑](#footnote-ref-13)
14. According to the Excelsior survey "Green Jobs in the strict sense” are, professionals profiles characterized by specific green skills", while the "Professional profiles activated from the green economy," are potentially green professions, in the sense that although they don’t have, inherently**,** green skills, they may acquire them depending on the context in which they operate (green-oriented businesses and supply chains). On 496 professional profiles surveyed by ISTAT, 90 professional profiles are green jobs in the strict sense and 100 are Professional profiles activated from the green economy, (Unioncamere, Parliamentary hearing on "Survey on the state and prospects of the green economy in Italy", 21 November 2013.). [↑](#footnote-ref-14)
15. NB: the yellow cells indicate major frequencies.

    [↑](#footnote-ref-15)
16. These data comes from the survey specifically realised by IRES on the repository of the professional profiles of Tuscany and Lombardy. Excelsior data only provides quantitative information on the professional profiles. Qualitative information such as the characteristics, competencies and skills for each professional profiles are, on the contrary, provided by the regional repository. [↑](#footnote-ref-16)
17. A complete list of green jobs is provided in the Italian basic report – annex 1, deriving from Unioncamere – fondazione Symbola 2013; for some of these green jobs, data are not statistically processed; others are examined in regional repository cited. [↑](#footnote-ref-17)
18. For more information on this classification see chapters 1 and 2. [↑](#footnote-ref-18)
19. For a definition of *green job in the narrow sense* and the *professional profiles that may be activated by the green economy* see chapters 1 and 2. [↑](#footnote-ref-19)
20. The rose cells report data resulting from a linear regression. In particular: the local units, revenue, personnel costs, the no. of persons employed, the n. of employees are calculated according to the annuity. While the added value is calculated in terms of turnover and gross investments are calculated according to the added value. The propensity to invest is the relationship between gross investment and added value of the year of reference. Estimates of data in the tables that summarize the performance of the sectors in the period 2013-2015 were obtained by applying the least squares method , by which the equation of a line has been defined that interpolates the scatter of points identified by the distributions of historical data . In particular : the local units, revenue, personnel costs, the no. of persons employed, the n . of employees are calculated according to the annuity (2015 ; 2014; 2015) . The added value is calculated based on the turnover, while gross investments are calculated according to the added value . The least squares method minimizes the sum of squares of the  distances of the points from the line. The graph below provides an insight of the proceedings

     [↑](#footnote-ref-20)
21. That is jobs meeting requirements of decent work – adequate wages, safe conditions, workers’ rights ,social dialogue and social protection (ILO research Guidelines, 2015) [↑](#footnote-ref-21)
22. Although it is not possible to have separate data for the green sector and for what is not "not green"; in general, according to the evidences provided by union representatives, the situation is slightly better in the areas of green jobs, because the position of workers is stronger, being more skilled [↑](#footnote-ref-22)
23. It is also to be remembered that the sustainable mobility of public transportation and infomobility may be integrated with projects aimed to promote other forms of sustainable mobility, such as bicycling and bike lanes. [↑](#footnote-ref-23)
24. Other sectoral data are added without quoting the source. In each branch description. Expected, total and “green” employment derive from Excelsior database; the number of work accidents is in the INAIL (national institute for work accident and safety) database; gross data on registered employees and average wage are in the INPS data base; [↑](#footnote-ref-24)
25. The EIB may provide, under different forms, 100% of the cost of energy-saving renovations. Many players are not aware of these opportunities or do not have adequate preparation to manage the EIB loans. [↑](#footnote-ref-25)
26. The data was collected using the interview outline provided by the ILO. For methodological consistency with the work carried out to date we have tried to interview mainly companies belonging to the field of green building. We also decided to interview a new panel of companies. [↑](#footnote-ref-26)
27. Although not an instrument for resources allocation, it should be remembered that, before the final planning, the new regional law on participation requires the launching of a public debate for public works that exceed 50 million of investment (and even below this amount, if established by the Regional Authority for Participation). The public debate is coordination with the Environmental Impact Assessment and is provided with a financial support for the processes of participation. [↑](#footnote-ref-27)
28. As stated in the key area “undeclared work” in document “Europe 2020” (<http://ec.europa.eu/europe2020/pdf/themes/07_shadow_economy.pdf> ), p.6. [↑](#footnote-ref-28)
29. The share of undeclared work is between 17% and 27% in southern regions. In Tuscany it is between 8% and 9%, according the year. (Istat, 2010) [↑](#footnote-ref-29)
30. It must be stressed that over the years, several measures have been adopted in order to ease the emergence of the black economy. Unfortunately these measures were barely evaluated in order to measure their effectiveness. Nonetheless, they have stimulated several researches and analysis, at least till 2012. After 2012 the trend has shown a certain decrease also from this point of view [↑](#footnote-ref-30)
31. Moreover, a specific fiscal law favours the fiscal regularity of the building restructurings. [↑](#footnote-ref-31)
32. E.g. implementing and financing the data base of public tenders [↑](#footnote-ref-32)
33. The “Casse edili” and “Scuole edili”, ensure, on local basis, income support benefits for workers suspended from work due to business crisis, provide training courses, support the knowledge of safety measures, etc. The Cassa Edile is joint body between the trade unions and employers, established by collective bargaining in the construction industry that provides certain benefits and allowances. The Fund combines the worker’s various periods of employment with the hours worked and related provisions in a single position. Furthermore, it delivers several welfare services such as: clothing for employees enrolled, scholarships for the children of members, participation to medical expenses of its members and families; study grants; integration of the salary of the employee in in case of illness, accident and occupational disease; allowances for handicapped children; aid for recovery of difficulties for children who use drugs. [↑](#footnote-ref-33)
34. [↑](#footnote-ref-34)
35. The table is filled by Unions representatives (Monica Stelloni, coordinator of Labour Market Department, CGIL Toscana Trade Union, and Giulia Baldi, secretar of FILLEA CGIL Toscana, trade union of construction worker) [↑](#footnote-ref-35)
36. Cf. Eurostat, Environmental goods and services sector, 2014, also on <http://ec.europa.eu/eurostat/statistics-explained/index.php/Environmental_goods_and_services_sector> [↑](#footnote-ref-36)
37. See: <http://ec.europa.eu/eurostat/documents/1798247/6191549/Practical-guide-towards-compiling-EGSS-statistics-230420.pdf/76af5a75-f588-4840-af66-34e49ef40f93> . See also <http://ec.europa.eu/eurostat/en/web/products-manuals-and-guidelines/-/KS-RA-09-012>. [↑](#footnote-ref-37)
38. The aim was to comply with the criteria indicated in the ILO document, *Sector Level Research into Skills for Green Jobs*. [↑](#footnote-ref-38)
39. The sector chosen for the training activity of the experimental project is highlighted in yellow. Also highlighted is the sector which is tightly integrated with the first one in so far as market and skills are concerned. [↑](#footnote-ref-39)