



ANALYTICAL HIGHLIGHT

FOCUS ON

Renewable energy sector

- It is estimated that the renewable energy industry supports the employment of **1.2 million workers** in the EU-28 – with the majority in wind, solar and bioenergy industries¹ (a figure that could rise to 2 million by 2020).
- Renewable energy in Europe is projected to account for almost **one third of total generation by 2030**.
- Investments in renewable energy are projected to positively impact on employment up to 2020. The associated jobs are likely to fall within the **engineering and construction sectors**.
- Skills investment is a priority in many countries. In the majority of cases, extensive reskilling is not required. Instead, the focus is on **upgrading skills through structured training**.

The renewable energy industry is growing in Europe

The use of renewable power for electricity and heating in Europe is growing. It is expected to have the largest market share in total power generation (26%) by 2020 and is projected to account for almost one third of total generation by 2030. This represents a significant increase from current levels². Jobs in the European renewable energy industry are expected to rise as the industry's importance grows.

Renewable energy sectors can be classified according to the principal economic activity and the use of technology – heating and electricity.³ It is also possible to make a distinction between renewable energy sources, such as solar, wind and hydro.

A common attribute to all renewable energy sectors is that employment spans the value chain from equipment manufacture, project development, construction and installation, to operations and maintenance. The employment associated with any individual renewable project tends to be front-loaded with many engineers, technicians and assemblers needed in the manufacture, project development and installation phases.

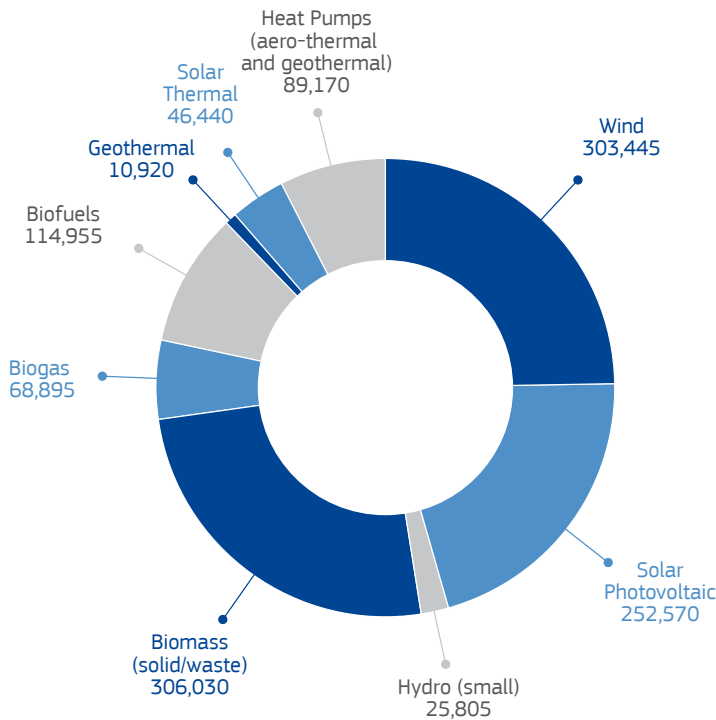
This is particularly pronounced in the case of large-scale electricity generation projects. For small-scale renewable installations, such as solar thermal, almost half of the associated jobs are instead associated with retail, installation and maintenance⁴.

Employment in many renewable energy activities is location-specific; jobs arise where capacity is installed. Given the project-based nature, work associated with the construction and installation phases is also liable to fluctuate depending on the flow of local projects or the degree of labour mobility. Levels of employment therefore tend to proceed in jumps as new installations are commissioned, though subsequent employment will tend to be relatively stable⁵.

Estimates vary for employment in renewable energy industries specifically. The most comprehensive, recent estimate is that renewable energy sectors support employment for 1.2 million workers in the EU-28 – with the majority in wind, solar and bioenergy industries (see Figure 1).

Looking ahead, the European Renewable Energy Council predicts that by 2020 renewable energy could provide employment for two million citizens in Europe, generating a market turnover of several hundred billion Euros⁶.

▼ Figure 1 – EU-28 employment in renewable energy by type of technology (direct and indirect jobs), 2012



Source: EurObserver (2013)⁷

Investments in renewable energy are projected to positively impact employment up to 2030

Investments in renewable energy, driven by and supporting EU and Member State targets are projected to positively impact employment up to 2030. The jobs associated are likely to fall within the engineering and construction sectors⁸.

Taking into account baseline trends and the job losses related to the downsizing of fossil fuel industries, a Cedefop study projects that the net positive employment effects of renewable energy policy to 2020 are estimated to be between 0.1% and 0.7% of total EU employment⁹.

Figure 2 details the employment effects in terms of number of jobs depending on different levels of capital investment in renewables. On this basis, a ‘business as usual’ scenario forecasts investments equivalent to 750,000 job openings per year. However, under a ‘decarbonisation’ scenario, based on investment to meet greenhouse gas and energy efficiency targets, additional employment represents some 304,000 jobs,

illustrating the positive impact of renewable sector policy developments at aggregate level.

However, from another perspective, such projections of employment in renewable energy sectors under-estimate the demand for skills, since they do not include either the demand arising from skills obsolescence as existing workers age, or the need to meet replacement demand as individuals exit the workforce. Demographic shifts in Europe will increase the number of job openings at all levels, placing further pressure on skills supply¹⁰.

Employment growth is linked to national policy

Markets and public policy support for different renewable technologies have developed disparately across the EU and its regions. Significant geographic differences in sector profiles across Europe are therefore expected and not always in predictable ways – for example, the solar thermal market is largest in Germany and Austria.

National forecasts show that, in most Member States, the levels of employment in the sector are expected to increase. The forecast increases are however dependent on levels of (policy-driven) investment and support. This includes anticipated increases in employment, for example, in Austria¹², Denmark¹³, France¹⁴, Slovakia¹⁵, and Sweden¹⁶.

In Germany, while 2012 employment in renewable energy industries was slightly down (-0.1%) on 2011 figures due to a decline in the Solar PV industry, future job prospects in the sector are positive¹⁷. In terms of occupations, national forecasts in Bulgaria¹⁸, Ireland¹⁹, Greece and Slovenia highlight strong medium-term demand and potential shortages for technicians operating renewable energy technologies, as well as engineers and construction craft workers.

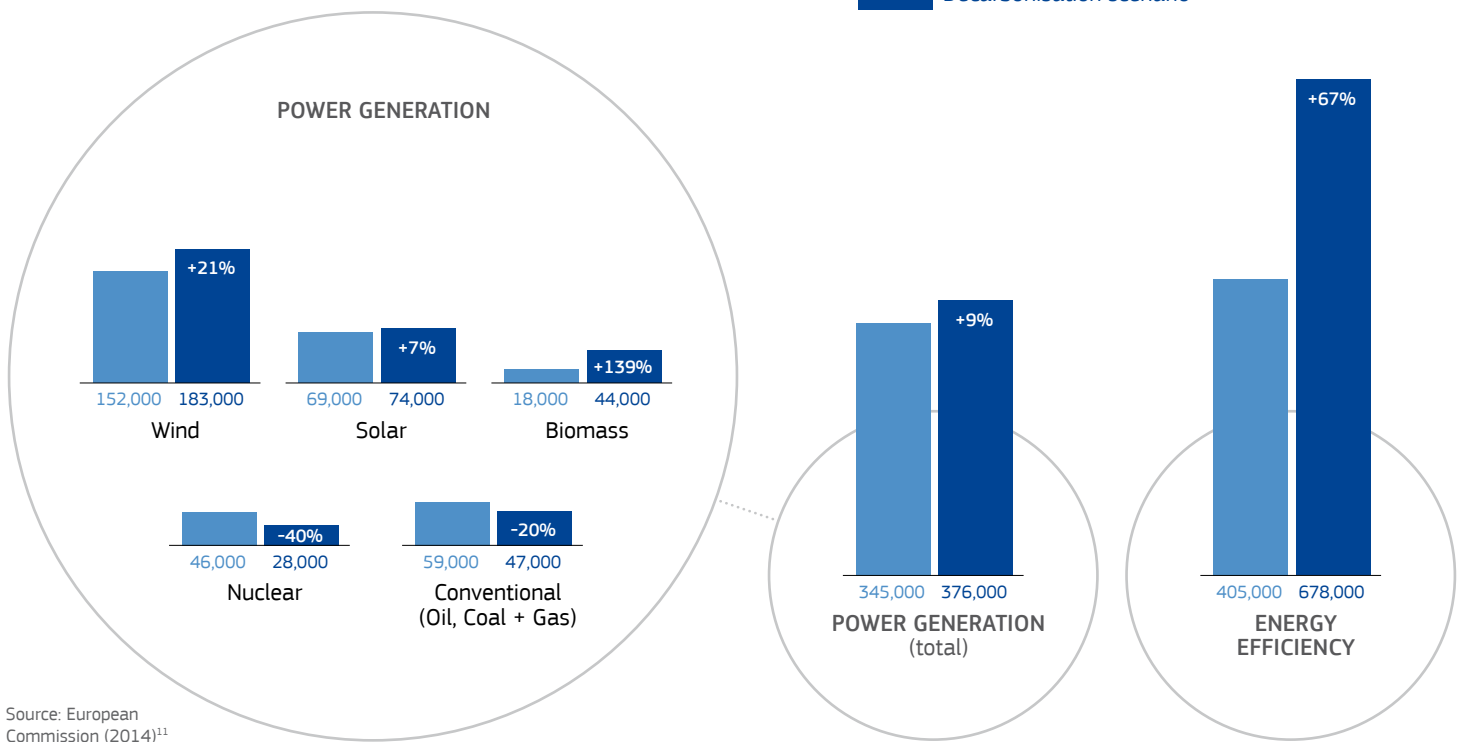
Skills challenges: new skills and upgraded skills

A key challenge to the renewable energy industry will be to align education and training to meet the emerging skill needs of both new and existing occupations and industries.

Job creation and the subsequent skills implications associated with EU climate action rely on significant increases and shifts in investments. Market and policy uncertainties, as well as the potential for localised spikes in demand, can cause challenges for education and training systems. In particular, time-lags between initial training and the eventual work placement mean that decisions on the design of education and training often need to be made in advance of market needs to support renewable industries²⁰.

In some parts of the sector, an entire job role may be related to renewable energy. Here, the occupational profile may be shaped by particular technologies, requiring technical skills related to development, construction and operation. Although some of these skills may be new or unique, many will be similar to skills already existing outside the sector.

▼ Figure 2 – Number of jobs associated with investments in the power sector and energy efficiency per year, 2011-2030



Source: European Commission (2014)¹¹

In particular, ‘new’ and priority skills related to innovation may be needed, such as problem-solving, design and working with stakeholders²¹.

Emerging occupations have been identified relating to the manufacture of renewable equipment (e.g. wind power design engineers), project development (e.g. wind resource assessment specialists), and production and operation (e.g. wind service mechatronics technicians; biomass production managers)²².

In other areas, and across all countries, renewables may form an additional aspect to an existing job. In the construction sector, for example, the small-scale installation of renewable technologies is often carried out by those working in dual roles as roofers, electricians or plumbers, who also install renewable technologies. Specialisms have emerged in the area of solar energy for small photovoltaic, large photovoltaic, solar thermal and concentrated solar installations. In terms of wind energy, there is a need for specialist small wind turbine installers²³.

In order to expand renewable energy capacity, investment to reinforce and upgrade workers’ skills is needed²⁴. Key skills include the need to develop and maintain awareness of the regulatory environment, management and teamwork skills to engage with other trades; as well as communication and marketing skills to engage with customers and sell their services²⁵.

In the majority of cases, extensive reskilling is not required. Instead, the focus is on upgrading certain skills through structured education and training; especially science, technology, engineering and maths (STEM) skills and the broad range of technical and managerial skills needed to adapt to new technologies. A commitment to training is particularly important because the renewable energy sector is already experiencing shortages not only in technical occupations such as solar installers and geothermal engineers, but also in more general occupations, such as sales and finance specialists, inspectors, auditors and lawyers²⁶. ■

- 1 EurObserver (2013), The state of renewable energies in Europe 2013
- 2 The share of renewable energy in gross final energy consumption in 2011 was 13%.
- 3 Renewable energy sources (RES) can also be used as fuel for transport, or biofuels. A separate analytical highlight is available on the automotive sector and the production of low-carbon vehicles.
- 4 Cedefop (2013), Skills for a low carbon Europe: The role of vocational education and training in a sustainable energy scenario
- 5 ibid.
- 6 EREC (2010), RE-thinking 2050: A 100% Renewable Energy Vision for the European Union
- 7 ibid. 1
- 8 Cambridge Econometrics, ICF GHK, IER (2011), Studies on sustainability issues: green jobs; trade and labour
- 9 ibid. 4
- 10 ibid.
- 11 European Commission (2014), Impact assessment accompanying a policy framework for climate and energy in the period from 2020 up to 2030, SWD/2014/015
- 12 3S (2013), Masterplan for Ensuring Human Resources for Renewable Energies (Austria)
- 13 Danish Energy Association (2013)
- 14 Commissariat Général au Développement Durable (2011), Gestion prévisionnelle des emplois et des compétences dans les secteurs de l'industrie et de l'énergie dans le contexte d'une économie verte
- 15 Bellan, P. (2010), Green jobs in the context of the Slovak labour market
- 16 Greenpeace Nordic (2013), Green jobs: Job effects of the transition to renewable energy,
- 17 GWS (2013), Renewable employed in the federal provinces: report on the updated estimate of the gross employment in 2012 in the German states
- 18 BUILD UP Skills Bulgaria (2013), Analysis of the national status quo: Current status, practices and trends in the building sector in Bulgaria
- 19 Skills and Labour Market Research Unit (2013), National Skills Bulletin 2013 (Ireland)
- 20 ibid. 4
- 21 ILO (2011), Skills and occupational needs in renewable energy
- 22 ibid.
- 23 ibid.
- 24 ibid.
- 25 Cedefop (2011), Green skills and environmental awareness in vocational education and training
- 26 ibid. 21



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