



## BRIEFING NOTE

# Skills for green jobs

## Developing a low-carbon economy depends on improving existing skills rather than specialised green skills

By developing a low-carbon economy for green, sustainable growth, governments can have the best of both worlds. They can meet climate change obligations and reduce unemployment. To take advantage of the economic opportunities provided by the low-carbon economy, the workforce needs the right skills. But what are they?

There is an emerging consensus that to have the fundamental skills critical to make the transition to a low-carbon economy, emphasis is needed on improving current skills rather than developing new curricula and training to provide new green skills.

### A green economic recovery

Clear evidence of the link between developing a low-carbon economy and job creation is found in reactions to the economic crisis. Several Member States introduced economic stimulus packages in 2008-09 which included investment in energy efficiency and renewable-energy programmes. The European Economic Recovery Plan, launched in 2008, provided a fiscal stimulus of around EUR 200 billion to counter the economic downturn and focused investment on clean technologies and infrastructure. This theme has been carried over into the European Union's (EU) new strategy for sustainable growth and jobs, Europe 2020, which puts innovation and green growth at the heart of its blueprint for competitiveness.

### How green is my job?

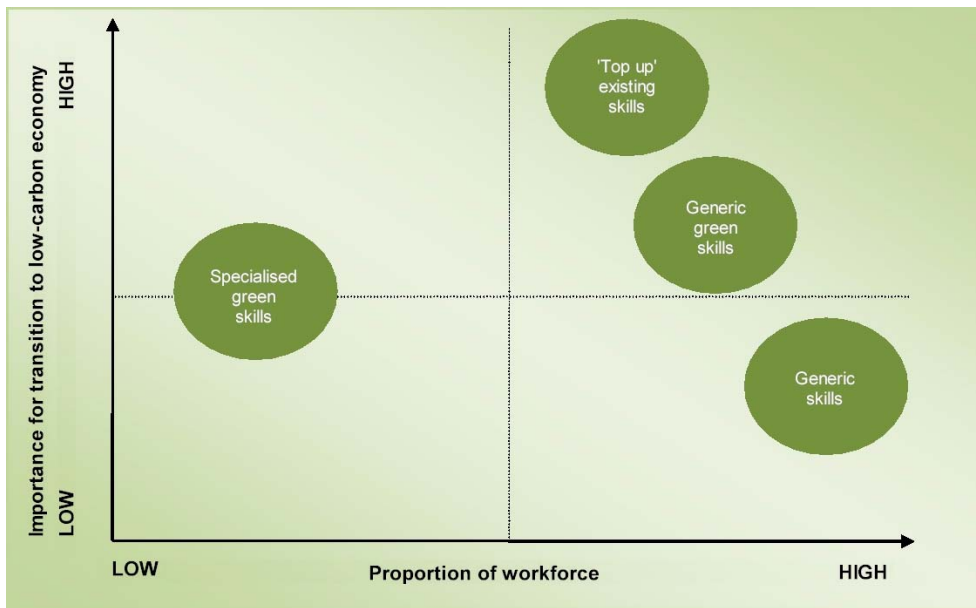
Cedefop's study *Skills for green jobs* <sup>(1)</sup>, (part of a broader study carried out with the International Labour Organisation (ILO), looks at the skills needed to develop a low-carbon economy in six Member States (Denmark, Germany, Estonia, Spain, France and the UK). The study shows that the boundaries between what is and is not low-carbon work are becoming increasingly blurred. The perception of whether a job is a new green one or an existing one with new elements differs between the six Member States. For example, an energy auditor in Estonia may be considered a new green occupation. However, in Germany, it can be seen as a change in the competences of an auditor, which is a long-established occupation. BusinessEurope also argues <sup>(2)</sup> that there is no clear definition of green jobs and the distinction between green and more conventional sectors is artificial. Trying to distinguish between jobs and skills that are green and those that are not can be unhelpful.

Cedefop's study also argues that many of the skills needed for low-carbon jobs can be found in existing occupations. A balance of generic skills (for example autonomy and communication), generic green skills (such as reducing waste and improving energy and resource efficiency) and 'topping up' existing job-related skills is much more important to developing a low-carbon economy than more specialised, green skills (see Figure 1).

<sup>(1)</sup> Cedefop: *Skills for green jobs: European synthesis report* (forthcoming 2010). See also, ILO: *Skills for green jobs: global synthesis report* (forthcoming 2010).

<sup>(2)</sup> BusinessEurope: *Greening the economy – Taking on employment and skills challenges*, 2010.

**Figure 1.** Skill needs for the low-carbon economy



### Green fields – Everywhere

Just as information technology skills have become essential to many aspects of working life, there are signs that green skills will become equally important to almost every job. However, Cedefop’s study also shows that the level of retraining required for workers to convert to an occupation in an entirely different, ‘greener’ industry may be less than expected. Skills in ‘old’ or even declining, industries may be valuable to the low-carbon economy. For example, workers with experience in shipbuilding and in the oil and gas sector are highly sought after in the wind turbine industry for their skills in welding, surface treatment and outfitting. Case studies suggest that, given a sound basis of generic skills, upskilling or ‘adding to’ existing job-related skills will enable someone to carry out the full range of tasks required by a new green occupation (see Table 1).

Although upskilling appears more effective than developing new green skills, some sectors will require significant investment in skills, because of the scale of upskilling required. For example, energy efficiency and construction of zero-carbon homes are heavily driven by national legislation. Concern over the construction industry’s capacity to meet low-carbon requirements with its existing workforce is based more on the number of workers that need to be upskilled –

even though the new skills required are not especially complicated <sup>(3)</sup>.

### Green growth comes from the STEM

However, the EU suffers from systemic weaknesses in its skills base which limit productivity and competitiveness and reduce the EU’s capacity to exploit the opportunities offered by green growth. Deficits in management skills and technical, job-specific skills, many of which are related to science, technology, engineering and mathematics (referred to sometimes as STEM) are of greater concern than shortages of ‘new’ green skills.

Across Europe, STEM subjects are declining in popularity at secondary and tertiary education levels. Owing to demographic trends some countries do not have enough engineers to replace those who are retiring, resulting in a shortage of people with the skills to deliver major infrastructure projects. The lack of engineers is possibly the biggest problem for the environmental sector in Germany and is being made worse by fewer engineering graduates and apprenticeships in recent years <sup>(4)</sup>.

<sup>(3)</sup> ippr (2009), *The future’s green: jobs and the UK low-carbon transition*.

<sup>(4)</sup> *Skills for green jobs – Germany report* (2010), GHK and Economix Consulting for Cedefop.

Table 1. **Examples of upskilling to new occupations in Member States**

Member State	Occupation(s)	Core training	Upskilling	New occupation
Denmark	Industry electrician / energy technologist	VET qualifications / tertiary engineering qualifications	Knowledge of energy sources, ability to integrate energy systems, project management	Manager in renewable energy
	Industrial operator / industry electrician	VET qualifications / upper secondary qualifications	Assembly, installation of parts, use of tools	Wind turbine operator
Estonia	Construction worker	No professional standard	Knowledge of energy systems, data analysis, project management	Energy auditor
France	Recycling sector worker	General certificate of vocational qualification	Sorting and reception techniques, knowledge of conditioning and storage	Waste recycling operator
	Product design and services	22 initial training courses with varying specialisation	Integrating environmental criteria in design process, integrated assessment and life cycle analysis	Eco-designer
Germany	Electronic / mechatronic technician	Initial vocational training	Electronics and hydraulic systems, safety procedures, operation and services	Wind power service technician
	Plumber / electric and heating installer	Initial vocational training	Technical training, knowledge of administrative procedures, entrepreneurial skills	Solar energy entrepreneur / Installations project designer
United Kingdom	Engineer in energy sector	Tertiary engineering qualifications	Installation and maintenance of low-carbon technologies, customer service skills	Smart energy expert / smart energy manager
	Commodity trader / broker	Tertiary qualification	Practical skills on functioning of carbon market, understanding of trading tools	Carbon trader / broker

### Skill development priorities for the low-carbon economy

In the future, every job will be a green job. Understanding the environmental impact of an occupation needs to be mainstreamed into education and training systems. Integrating sustainable development and environmental issues into existing qualifications is much more effective than creating new training standards. Every new apprenticeship

ought to have a low-carbon element, as is currently the case in Australia.

Skill development strategies need to do several things.

- First, is to enable people to add to their existing skills through training tailored to their particular needs and made accessible through diverse range of tools and methods. However, upskilling needs to be both affordable and profitable. A

recent UK survey found that although most electricians were keen to train in photo-voltaic installation, they were reluctant to pay the training provider EUR 2 050 for the course <sup>(5)</sup>.

- Second, is to attract students at secondary and tertiary level into STEM subjects and develop these core skills which provide the basis of high-level low-carbon skills. The UK's Confederation of British Industry is currently considering a EUR 1 100 'golden carrot' for each student enrolling on a STEM degree.
- Third, generic skills need to be improved across the entire workforce. In this sense, generic skills refer to both skills required in almost any occupation and the green skills that should be part of any job.
- Fourth, more emphasis is needed on training the trainers. There are not enough trainers and teachers aware of environmental issues and able to teach new techniques. Shortages are particularly acute in the agriculture and construction sectors.

The six Member States examined in Cedefop's study are all aware of the employment potential of moving to a low-carbon economy. However, none have skill development integrated into their environmental strategies and programmes. France is probably the most advanced in this respect, with its recent 'Mobilisation plan for green jobs'. Skills strategies that address systemic weaknesses in the labour market are being updated and will have benefits for green jobs.

Danish case studies show the importance of taking a cross-sectoral perspective when identifying skill needs. In only considering narrow sectoral needs, companies can miss innovation and job growth potential in new markets for green energy.

National and regional governments have been supportive in developing alternative energy sources, for example wind energy in Denmark, and using them to stimulate job creation through coordinated employment, skills upgrading and innovation policies. Cedefop's study shows that regional governments lead the way in providing comprehensive and organised skills strategies and in developing successful public-private initiatives that have achieved impressive results and could be considered best practices. However, governments at all levels need to be aware of the implications of removing support, as shown by the recent collapse of the solar photo-voltaic industry in Spain.

To exploit fully the job creation potential of the low-carbon economy, Europe's policy-makers now need to ensure that their support for skills and training matches the focus and ambition of their strategies to promote investment in green innovation and infrastructure.

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<sup>(5)</sup> Quoted in workshop entitled 'Green skills, green jobs: opportunities for the South West Low Carbon Economy', South West Observatory Skills and Learning, UK (November 2009). GBP 1 = EUR 1.14 in exchange rate conversion as of 15 April 2010.