

1. Identification of future skill needs for the green economy

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The workshop on Future skill needs for the green economy, part of Cedefop's ongoing investigation of the development of skill needs across different sectors, brought together contributors to several recent studies on green skills and green jobs: social partners, academics and international organisations. The aim was to gain better insight into how the 'greening' of the economy is affecting the job market.

What are the main trends and mechanisms restructuring Europe's green economy? Which specific and general skills are new and emerging and which are declining? Which occupations are needed to mitigate climate change and what policies (national or EU initiatives) should be designed to meet the demand for green occupations? How to develop education and training systems to respond quickly to continuously changing requirements? How to bring closer educational and training standards to occupational standards and employer priorities in green jobs? These were the questions addressed by focus groups. The workshop concluded that the new prominence of environmental considerations is already having an impact on the job market. Workers from all walks of life need to expand their skill set so that they can help safeguard the environment.

1.1. Trends in the restructuring of Europe's green economy

The expansion of the green economy in Europe is being accelerated by concerns relating to energy generation, resource use and environmental management. Energy policies addressing the need to tackle climate change by reducing greenhouse gas emissions and, at the same time, achieve greater energy security along with a diversity of generation that has the flexibility to meet variable demand, are driving the development of renewable energy technologies. The impetus towards creating a European green economy comes from the widespread consensus among the scientific community of the dangers posed by greenhouse gases and the depletion of fossil fuels.

1.2. International agreements

These concerns are reflected in several international agreements, notably the Kyoto accord and prompted the EU, by agreement with the Member States, to impose targets on carbon emissions. The rising cost of energy and concerns over the security of supply of energy (e.g. Russia and Ukraine) – have added a sense of urgency to the campaign for energy conservation in the Member States.

1.3. EU policies

Within the EU an array of policies to tackle climate change are setting targets for national emissions, renewable energy, biofuel use, energy efficiency standards and so on. These EU policies and associated mechanisms such as the EU emissions trading scheme are accelerating the growth in 'green jobs'. Better waste management is also being driven by EU policy while the habitats, birds and water framework directives have been essential to improving environmental protection across Europe. These changes will be facilitated by greater flexibility of labour markets and the potential for labour movements within the EU.

1.4. Incentives by Member States

While the main drivers of change will apply across Europe there will be varying priorities between countries, for example solar technology may be prioritised in Spain while wave and tidal generation are more likely to be developed in the UK. These incentives include subsidies for the improvement of thermal efficiency of buildings and preferential tax treatment for eco-friendly transport. Such national differences will be determined by the natural capacity for generation, industrial capacity to develop facilities, political priorities along with differences in both legislation and public acceptability. In the UK, Scotland and Wales have produced green jobs strategies that seek to define the extent of the green economy and identify actions that may help its development. Yet, researchers have had difficulty in defining the scope of 'green jobs' and recognising that all occupations will need 'greening' with all workers requiring some generic 'green' skills, the identification of a specific 'green jobs' sector seems inappropriate. Within the workshop it was agreed that the skills gap should be identified within the European climate change programme II and its associated action plan and addressed through the relevant national measures such as renewable energy strategies and national energy efficiency schemes.

1.5. Green economy versus sectoral changes

The growth of the green economy will not result in the loss of business sectors. Some may decline such as coal mining and other heavy industries but most sectors will simply evolve. Although waste management and agricultural production of biofuels are likely to provide many low-skills jobs, a decline in physical low-skills employment is anticipated. A growth in virtual, electronic interaction and more multidisciplinary working are anticipated, for example, with the need for technical staff to have better communication skills. It is likely that innovation requiring high skills research, including value engineering methods that evaluate the relative inputs and outputs of both products and processes will grow. However, there will also be an increase in 'green collar' vocational employment to implement new low carbon technologies.

Adopting 'green issues' can inadvertently result in some sections of society incurring losses. A concerted move away from private road transport for example, would damage the freight industry. One way of possibly eliciting the support of industries who may suffer as a result of 'going green' is to create a compensation fund at EU level. There is an example of

such a fund in operation; the 'globalisation fund' is specifically designed to assist those who have suffered unemployment as a result of global competition. Other policies which might promote the adoption of a 'green agenda' include selective incentives for the adoption of sustainable practices and training programmes which are designed to equip participants with a more holistic perspective on their skills and business practices.

1.6. Skills paradigm

The skills associated with the emerging green economy can be categorised into generic skills and specific skills. The latter group are particularly relevant for the green economy. This is because the green economy creates a new skills paradigm that, in general, is more holistic in approach than the traditional skills paradigm. The new paradigm places greater emphasis on design and working in multidisciplinary teams with high degree of autonomy and responsibility. Projects often entail bringing together professionals from widely diverse backgrounds such as engineers, planners and architects with ecologists and archaeologists. This means that generic skills such as strategic leadership and adaptability will be important in the green economy. In general, a good knowledge of the sciences, including engineering, environmental and biological, is a feature of many of the skill sets required by the emerging green economy.

1.7. Specific skills

It is generally agreed that the specific skills associated with the merging green economy are not, in general, entirely new skills. Rather, it is more generally the case that the skills are either an add-on or an amalgam of existing skills. An example of add-on skills are the competences required for the installation of sustainable biomass heating technologies (wood pellets or wood chip boilers) technologies such as solar tubes and panels, photo-voltaic tiles or geothermal heating systems. In these cases, some knowledge of plumbing is required to install these sustainable heating systems; similarly solar tube and panel technologies require fitting or electrical skills. Good diagnostic skills will also be in demand in the emerging green economy. The ability to measure the carbon footprint will be an important competence. The rising cost of energy combined with a greater awareness of environmental issues, and legislation such as the European building performance energy Directive will create a strong demand for energy assessors.

1.8. Greening of occupations and skills

All occupations will need 'greening' with a spectrum from those new jobs focused solely on the delivery of green goods or services to those that will require more limited changes to improve energy efficiency and reduce resource use. There will be a need to develop the skills base for each mitigation technology whether in terms of renewable energy generation or energy/resource efficiency. There will be a demand not only for technological expertise but

also communication skills to provide advice on new technologies to both businesses and consumers. It will be vital to cascade information to a wide range of professionals, for example, planners, architects, builders, plumbers, etc. Broader provision of advice on carbon auditing and low carbon technologies for both business and individuals is likely to become an increasingly important sector. Professionals, such as carbon auditors, could be key to the delivery of emission reductions and achieving greenhouse gas targets but given their relatively small numbers within green jobs as a whole there is the danger that their skills needs may be overlooked.

1.9. Curriculum development

It is important that a revised curriculum, particularly in terms of science and technology, provides the necessary knowledge of mitigation technologies. However, this will only be applicable to students. Both professionals and blue-collar workers will need retraining with relevant green skills. All lifelong learning programmes should provide appropriate skills updates to facilitate the transition to low carbon business. The provision of both specific technological skills and generic training related to carbon auditing and management are equally important. There is a case for the development of carbon auditing or management qualifications and their accreditation and recognition across the EU.

1.10. Role of social dialogue in defining education and training systems

Education and training systems will be better able to rapidly develop green skills requirements if there is improved social dialogue between those developing education systems and training standards and both employers and trade unions. The education system should promote multidisciplinary learning environments and, together with the social partners, should be encouraged to take a broader view of how competences are defined and acquired. In particular, the national qualifications frameworks should facilitate career progression in both vertical and horizontal directions; the need for more holistic skills entails a concomitant requirement for a flexible qualifications system that supports and encourages the continuous acquisition of additional competences. Such a framework should include the recognition of informal learning mechanisms, accreditation of prior learning, and the increasing scope for 'train the trainer' programmes and it should also include both the opportunity and supports for more quality internships. A closer working relationship needs to be developed between the needs of industry and the formal education and training system. There may be a role for the EU in this context in terms of promoting a green awareness in education and in exploring the possibility of creating EU wide certification for green skills such as, for example, energy assessors.

There is a requirement for better coordination between those developing environmental policy and managing the transition to a low carbon economy and those developing skills

training. Continuous professional development through the provision of greening or mitigation technology modules is essential for most of the future workforce who are in employment.

1.11. Training of trainers

Rapid technological innovation and market response may result in the availability of adequately trained professionals becoming a key rate limiting factor for greenhouse gas reductions. If the market develops ahead of education there will be a need for better links with those innovators and professionals who are leading technological developments. In a fast moving technological area the training of trainers through rapidly developed 'greening' or technological modules and the accreditation of those working in newly emerging areas will be important.

1.12. New skills for new jobs

New skill needs should be identified early so that there is support for training the trainers to take on skills implications of new mitigation policies. For example, targets for the use of biomass may be set, yet it is essential that gaps in agricultural training and knowledge of the production technologies are bridged if changes are to be realised. Matching of skills to jobs are strategic priorities for the EU. The European Commission's 'New skills for new jobs' initiative, therefore, sets the outline for one of the key future priorities: how to better anticipate skill needs and better coordinate employment and education policies.

1.13. Societal aspects of skill needs for the green economy

Societal aspects of the green economy are evident, however under researched. Tackling climate change requires a new way of working that will affect the whole of society. Therefore, skills and education needs should be examined across not just all business and jobs sectors but wider society too. Behavioural and technological changes to deliver mitigation across society will happen because they are either economically beneficial, driven by legislative or fiscal measures, or a response to training and education, or a combination of these. Skills training and education have perhaps to date received less attention than the others in terms of their importance to achieving a rapid transition to a low carbon society. The type of policies which would promote a 'green economy' includes measures designed to enhance the public awareness of the benefits of adopting green issues. Such a campaign should be organised nationally and at EU level.