OECD Green Growth Studies
Greener Skills and Jobs

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Green skills and jobs
What are they?

Green skills are those skills needed to adapt products, services and processes to climate change and the related environmental requirements and regulations. Cedefop\(^1\) defines green skills as “the knowledge, abilities, values and attitudes needed to live in, develop and support a sustainable and resource-efficient society” (Cedefop, 2012). Green skills will be needed by all sectors and at all levels in the workforce.

Demand for green skills is driven by a range of factors, including public policies and targets, and defined by three main trends:

- Across occupations and industries, greening requires upgrading skills and adjusting qualification requirements;
- New or emerging economic activities create new or renewed occupations and related qualifications and skills profiles; and
- Structural changes create a need to realign sectors that will decline as a result of the greening of the economy and retrain workers accordingly.

The successful transition to a low carbon economy will only be possible by ensuring that workers are able to adapt and transfer from areas of decreasing employment to other industries and that human capital exists and is maximised to develop new industries.

The concepts of green skills and green jobs are often conflated. While their exact meaning often depends on the context of use, the following definitions should help us understand their essence.

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\(^1\) European Centre for the Development of Vocational Training (Cedefop): [http://www.cedefop.europa.eu](http://www.cedefop.europa.eu)
Green skills
Why are they important?

A recent UNEP (2011) report analysis the economic and emissions impacts of the transition to a lower carbon economy. The modelling includes two “green” scenarios with different levels of increased investment over the period 2010-50, contrasted with two business-as-usual investment patterns.

RESULTS OF GREEN 1 AND 2 SCENARIOS AGAINST BUSINESS-AS-USUAL

In both of the scenarios there is a positive effect on gross domestic product (GDP) in the longer term as a result of the transition to lower carbon economy. This effect is magnified in scenario 2 with higher levels of green investment. The employment impacts are neutral in these scenarios, but these are net results, and therefore account for job losses as well as gains. The environmental impacts are significant, with large reductions in the ecological footprints of economies.

A new Cedefop study confirms that EU countries can attain a sustainable and energy-efficient economy and employment growth at the same time (Cedefop, 2013). Achieving them both requires greater integration of climate and energy polices with measures to support employment, and innovative and responsive vocational education and training (VET) policies that encourage the development of skills needed by a low-carbon economy.

While it’s not easy to say how many jobs will be created and/or destroyed by the greening of the economy, it is certain that the ongoing process of transformation of the economy will lead to significant changes in labour demand both between and within economic sectors.

**Greening the economy will affect skills** needs in three ways (Cedefop, 2012):

- Structural changes lead to increased demand for some occupations and decreases for others;
- New economic activity will create new occupations and there will be a need for new skills profiles and qualification and training frameworks; and
- Many existing occupations and industries will experience greening changes to tasks within their jobs, and this will require adjustments to the current training and qualification frameworks for these occupations.
Executive Summary

The successful transition to a low-carbon economy will only be possible by ensuring that workers are able to transfer from areas of decreasing employment to other industries, and if adequate human capital exists to develop new industries that will grow as a result of climate change mitigation and adaptation activities. Skills development activities will play a major role in each of these transitions.

A key finding highlighted by many chapters in the publication is the importance of policy integration and co-ordination. This report shows that to date, policy co-ordination appears to be uncertain and fragmented. This fragmentation can be traced back to resistance and uncertainty about environmental regulations and policies which makes it difficult to assess skills needs. There is also uncertainty around mechanisms for skill development, particularly the acquisition of skills through non-traditional channels.

The skills and training needs may be threefold:

- Upgrade skill sets in industries experiencing only minor adjustments;
- Gearing up educational institutions and firms to provide the new skills for new occupations and sectors that will emerge from the green economy; and
- Retraining and realigning skills in sectors that will decline as a result.

A major role going forward for public actors will be to provide direction and co-ordination for skills development and training activities to occur. Public actors also play an equally important role in stimulating the demand for green skills (such as through support for market demand for environmental goods and services such as renewable energy or energy efficiency retrofits). The role of public actors in managing the supply and demand for green skills is another aspect requiring co-ordination. This will prevent the situation of green skills demand being stimulated by government policy, but not being matched by equivalent action to meet this demand, leading to skills bottlenecks and/or programme failure due to unskilled operators.
Chapters throughout the report show the impacts of public policy action, through increasing environmental standards and regulations, on driving green skills and jobs demand. They also show that supply side emphasis to develop specific skills is required where public policy is driving significant demand for specific occupations and skill sets. Developing green skills is part of a broader challenge to increase the strategic management capabilities of small and medium-sized enterprises (SMEs). These firms make up the vast majority of businesses within our economies and over half of the employment, yet SMEs have limited awareness of their needs and options in terms of green skill development.
Supporting green skills is integral to the transition to a low-carbon economy. The identification, assessment and creation of green skills is essential in transitioning to a low-carbon economy and being able to capitalise on all the social, environmental and economic benefits that this brings.

Optimising public policy co-ordination is key for the transition. The major role for public actors will be to provide direction and co-ordination for skills development and training activities to occur. Green skills development needs to be integrated into the wider training and skills development policy rather than being seen as additional or separate to other forms of skills development.

Fostering portable skills and lifelong learning. One of the ways to achieve policy co-ordination and institutional integration is for agreement among institutions to a focus on transversal skills in resource efficiency rather than on the skills required by specific and identified green occupations. This focus would require the broader involvement of all the relevant actors; including employers, workers, unions, industry associations, educational institutions and governments at local, regional and national levels.

Key Recommendations

The publication provides evidence for seven areas for priority policy action:
Public policy action can drive green skills and jobs demand by increasing environmental standards and regulations at the same time as stimulating new markets. This is particularly apparent in energy and environmental policy, including support for energy efficiency and renewable energy. Policy action also needs to consider whether the pace of regulatory activity is supported for the resultant market development.

Public policy actors can accelerate the participation of market actors in the provision of skills activities by providing transparency around the path of these stimulation policies. This allows private actors to make investment decisions about growing businesses in these sectors. This also creates more resilient sectors that can withstand the eventual step down and withdrawal of public support.

Developing green skills is part of a broader challenge to increase the strategic management capabilities of SMEs. SMEs have limited awareness of their needs and options in terms of green skill development. This is coupled with an established acknowledgement that SMEs participate substantially less in formal training and skills development. To engage SMEs in the green skill transition requires a broader understanding of how SMEs respond to skills deficits and of their use of informal mechanisms for skills development.
Investing in R&D for anticipating and addressing gaps in knowledge.

Research to date has focused on skills needs for a number of high-technology occupations plus a few niche industries. This now needs to broaden out to encompass a broader range of skills. Policy attention needs to turn to making the case for why investing in green skills pays. Investment in research and development need to scale up as the transition unfolds new challenges for inclusive economic growth and sustainable employment.

The OECD and Cedefop will pursue their joint efforts to increase the awareness of policy makers and stakeholders of the changes and requirements brought about by the development of greener and sustainable economies.
Green skills for a low-carbon future
About this publication

This book emerged from the first Green Skills Forum which was jointly organized by the OECD and Cedefop.

The papers presented at the forum discussed new research, policy approaches, tools, strategies and local initiatives for green skills development.

This collection of studies contributes to efforts of maintaining discussion on emerging and cross-cutting issues on green growth, skills and jobs.

The publication is divided into three parts:

**Part I: Gearing up education and training for green growth** - discusses the creation of new markets and transforming existing ones; creating different demands on skills and forcing labour markets to change in order to remain competitive and innovative. The focus is on education and training systems based on examples from European countries.

**Part II: Enterprise approaches for a workforce fit for a green economy** - examines methods for skills identification and forecasting skills needs. Empirical evidence is presented on anticipated skills needed in green sectors and their matching training designs. The timing of trainings is found to be an important factor in generating benefits for all rather than dividing societies into winners and losers.

**Part III: Integrating skills into local development strategies for green job creation** - explores the challenge of developing green skills given the extreme diversity of needs in different industries, localities and countries at different levels of economic development. Case studies from European countries, United States and India support the analysis.

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**OECD Green Growth Studies series**

[http://dx.doi.org/10.1787/9789264208704-en](http://dx.doi.org/10.1787/9789264208704-en)
The Green Growth Studies series aims to provide in-depth reviews of the green growth issues faced by different sectors. These publications are available to purchase in hard copy or free of charge for online reading via www.oecd-ilibrary.org. Recent studies include:

- Greener Skills and Jobs (forthcoming in February 2014)
- Policy Instruments to Support Green Growth in Agriculture
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The Green Growth Papers complement the OECD Green Growth Studies series, and aim to stimulate discussion and analysis on specific topics and obtain feedback from interested audiences. The papers are generally available only in their original language, English, with a summary in the other if available. The OECD Green Growth papers are free of charge via www.oecd-ilibrary.org. Recent papers include:

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- Making Growth Green and Inclusive: The Case of Ethiopia
- Greening Global Value Chains: Innovation and the International Diffusion of Technologies and Knowledge
- What Have We Learned from Attempts to Introduce Green-Growth Policies?
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Highlights