

## **European Commission background paper on: The employment dimension of greening of the EU economy**

### **1 PREFACE**

*This background paper is aimed to support discussions in the Belgian Presidency Ministerial Conference on "Promoting Green Employment: a major indispensable driver behind a successful transition towards a competitive low carbon economy" on 28-29 September 2010 in La Hulpe, Brussels. The paper should be seen solely in this context and does not constitute an official or final position of the EU Commission in this context.*

### **2 RATIONALE: why do we want to talk about employment effects of greening of the economy?**

EU Member States and the European Commission have already proposed a broad range of policies that support the transition to a more resource efficient, greener and competitive economy. The challenge will now consist of their effective implementation. Measures will be further developed and refined under the Europe 2020 strategy and its flagship initiatives. Implementing the Europe 2020 objective of "sustainable growth" will require further efforts to review and alter our consumption and production practices and habits and therefore to improve energy efficiency, to develop renewable energy sources (RES), to capture and store carbon dioxide (CO<sub>2</sub>) and other harmful emissions, to modernise the European infrastructure (including transport networks and energy supply), to integrate environmental responsibility in business models, to promote environmental friendly land use and agriculture, or to create conditions conducive to environment-related research and innovation.

It is to be expected that all these drivers will have important implications on labour markets: it will affect how and what will be produced and how work is organised. At this stage the understanding of the precise dynamics of labour market outcomes is still far from advanced since the transitions involve technological innovations and changes in work organisation which are very difficult to predict today. Nevertheless, the available research findings provide a useful starting point to give a qualitative assessment of some employment related trends and to give indications to policy makers on how to respond to the challenges created by this transition.

### **3 THE ISSUE: what should be our proposed approach towards "green jobs"?**

The Commission believes that the employment dimension of greening of the economy understood as the implementation of policies envisaged under the "sustainable growth" pillar of Europe 2020 strategy, should get more attention from policymakers.

This should be the case for the following reasons:

- Crisis and unemployment – because of deteriorated situation on EU labour markets (around 4 million jobs were lost in EU in 2009<sup>1</sup>), we need to look closely at all possible opportunities for job creation and mitigate any further potential worsening of the employment situation. The aim is to ensure that greening of the economy contributes as much as possible to the employment objective as set out in the Europe 2020 strategy.
- The Europe 2020 strategy & climate change mainstreaming – the Europe 2020 strategy implies strengthening interlinkages between the policies implemented under the "sustainable growth" and "inclusive growth" pillars of the strategy. This requires us to carefully assess and determine which EU policy framework would provide the most efficient responses in terms of investments in business, human capital and employment and in terms of successfully managing economic greening.

This note understands the "green" employment effects as covering all jobs that are maintained, created or lost in the transition process towards a greener economy. The use of a specific "green jobs" definition (*stricto sensu*) seems less attractive especially since the measurement of "green jobs" and the comparison of the data over time is not straightforward because a "green job" is a relative and dynamic concept. Virtually every new product is more energy-efficient than the model it replaces – a fact particularly noticeable in relation to vehicles. Thus the dividing line between "green" and "environmentally inefficient" jobs is not always easy to draw. Moreover, the dividing line may shift over time in response to progress in technology, work organisation, workers' skills, training and education, so that past levels of "green" efficiency may no longer be regarded as adequate.

A narrow definition of "green jobs" is not recommendable also to avoid putting too much focus on specific areas of the economy (e.g. renewable energy) to the detriment of other sectors that can also potentially create "green" jobs. As an illustration when talking about "green jobs" one can refer to the Eurostat data collection on the so-called "eco-industries" (i.e. environmental goods and services sector/EGSS). These statistics provide information on employment related to activities with a so-called environmental purpose (occupying in total 3,4 million people in 2008), but, it is clear that those statistics are not able to provide information on all labour market changes that will arise as a consequence of greening of the economy.

For the reasons mentioned above the Commission suggests that less time should be spent defining what a "green job" is<sup>2</sup>. Efforts should rather focus on proposing and implementing measures to tackle what otherwise could become an enduring shortage of qualified workers for the new "green" economy. A key priority is now to support the economic transition in a way to reap all possible opportunities in terms of job creation and to modernise labour markets towards achieving "sustainable" and "inclusive growth". For this to happen the policy

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<sup>1</sup> *Labour market and wage developments in 2009*, European Economy 5/2010.

<sup>2</sup> However the Commission will continue working on conceptual issues in this field with MS, International Organisations and bilaterally including with the U.S. administration that already undertook significant efforts in terms of measurement and analysis of employment in green economy.

debate should look at the potential impact of the greening of the economy on the characteristics of jobs and their qualities.

#### **4 EVIDENCE: what we have learned so far?**

Given the growing interest in and need for information about "green jobs", the Commission is in particular looking at the following issues:

- how employment, especially its composition, and workers will be affected by the transition towards a greener economy;
- how employment policies are likely to help facilitating the transition;
- how the transition is likely to lead to the new ways of working.

Below we provide a short summary of preliminary findings to be presented in more detail in the Staff Working Document on *Employment dimension of a greener economy* to be published later this year as an annex to the so-called Flagship Communication "*An Agenda for new skills and job*"). These findings should be treated as work in progress: studies are still ongoing, "sustainable growth" policies are still to be refined and dynamics of greening and its employment dimension are still to be studied in detail.

##### *4.1 Potential employment effects – in brief*

Available studies suggest that environmental policies are more likely to lead to a redistribution of jobs within and across sectors than to changes in absolute employment levels<sup>3</sup>. Of course, behind these net changes in total employment some significant gross flows into "green(er)" sectors and out of traditional sectors as well as shifts within sectors will occur. The employment losses due to the transition to a greener economy would be *inter alia* due to production shifts to non-EU locations, to adjustment costs and simply the costs of internalizing environmental externalities. There is as yet not enough known about structural changes, not least in terms of how to meet new skill demands. The channels that can reinforce or weaken the transmission of the effects of climate change and climate policies are manifold and include the labour intensity of production, the nature of the distribution systems,

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<sup>3</sup> European Trade Union Confederation (ETUC) (2007), Climate change and employment. Impact on employment in the European Union-25 of climate change and CO2 emission reduction measures by 2030, available at <http://www.tradeunionpress.eu/Web/EN/Activities/Environment/Studyclimatechange/rapport.pdf>

Institute for European Environmental Policy (IEEP) (2008), Burden sharing – impact of climate change mitigation policies on growth and jobs, study requested by the European Parliament's Temporary Committee on Climate Change, available at [http://www.ieep.eu/publications/pdfs/2008/cc\\_mitigation\\_impact.pdf](http://www.ieep.eu/publications/pdfs/2008/cc_mitigation_impact.pdf)

Center For Energy, Resources and Economic Sustainability (CERES) (2008), Energy efficiency policies efficiency, innovation, and job creation in California, available at [http://are.berkeley.edu/~dwrh/CERES\\_Web/Docs/UCB%20Energy%20Innovation%20and%20Job%20Creation%2010-20-08.pdf](http://are.berkeley.edu/~dwrh/CERES_Web/Docs/UCB%20Energy%20Innovation%20and%20Job%20Creation%2010-20-08.pdf)

international competitiveness and consumer preferences<sup>4</sup>. The following observations on the sectoral and regional impact can be made:

- The sectoral composition of employment will be affected as the creation of new "green" jobs may substitute for existing (inefficient) jobs, contribute to the greening of existing jobs, eliminate existing (inefficient) jobs, or establish new jobs. In addition, indirect knock-on effects may ripple through price, wage and income effects and affect employment in the rest of the economy. Not all employment effects will be permanent as for instance the labour intensities in the production of new products and new production processes will decline as technologies mature and an important part of the employment gains will disappear once the production and installation of new infrastructure has been completed<sup>5</sup>.
- The fact that the implementation of environmental and/or climate policy should lead to a large-scale redistribution of jobs within rather than between sectors is usually viewed as positive because it is considered easier for workers to change companies within the same sector than to find work in a different one. Other advantages of the intra-sectoral redistribution include lower retraining costs and shorter job search periods
- The impact on employment of "sustainable growth" policies would be felt most strongly in a negative way in energy extraction and refining, the power sector (oil, gas and coal based), and in the energy-intensive industries like for example basic chemicals, steel, non-ferrous metals (in particular aluminium), pulp and paper, lime and cement, some glass sectors, bricks, tiles and ceramics. Here, it is of interest to note that the sectors which will suffer most from job losses (gas, electricity, coal, oil) are strongly male-dominated. In this context it is also of interest to note that recovery measures developed as part of the crisis response also included frontloading measures to improve energy efficiency, strengthen the use of renewable energy, and the promotion the rapid take up of green products. The idea underlying this strategic approach is that the current economic crisis should not restrain the intensity and direction of the transition to a greener economy.
- The employment effects of the transition will contain a strong regional dimension, reflecting different initial starting points including the characteristics of the local economic activity, as well as specific features of local labour markets. As an illustration and although the overall adjustments in the agricultural and fisheries sector may be relatively small, the adjustments in some regions could be significant, notably in coastal and marine areas where the fisheries sector is an important sector of employment. The regions most likely to be affected by climate change include Southern Europe, the Mediterranean Basin, mountainous areas, coastal zones, densely populated floodplains and the Arctic region. 4.2 *Potential impacts on skills*

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<sup>4</sup> GHK (2009b), *The impacts of climate change on European employment and skills in the short to medium-term: a review of the literature final report (Volume 2)* available at <http://ec.europa.eu/social/main.jsp?catId=88&langId=en&eventsId=172&furtherEvents=yes>

<sup>5</sup> Fankhauser, S., F. Sehleier and N. Stern (2008), 'Climate change, innovation and jobs', *Climate Policy*, Vol. 8, No. 4, pp. 421-429.

A greener economy will create a demand for all sorts of skills, including low and high skills. In an initial phase, high-skilled workers may benefit more as transitions to new activities call for the implementation of advanced technologies. However, with market deployment of new technologies, lower-skilled workers should also be able to fill these jobs – provided they receive adequate training. The greening of the economy also opens up new possibilities for organising business practices within organisations and these organisations will need to be redesigned to make productive use of new 'clean' technologies. Having these in mind the issue of skills becomes of key importance. Hypothetically, it could mean that:

- Some skills/competencies become obsolete due to structural changes in the labour market and employment shifts both within and across sectors due to demands for a greener economy (e.g. as utility meter reading services are rendered obsolete by introduction of 'smart' household meters that automatically relay data to utility companies).
- Demand for some new skills is created as new "green-collar" occupations emerge to support adaptation to and mitigation of climate change (e.g. support and servicing of solar, wind and other renewable energy technologies).
- The skills required for existing jobs gain a stronger "green" element as existing occupational profiles change (e.g. bottle manufacturers learning new technical skills to reduce carbon emissions from production).

The lack of skilled labour is a significant concern of various environmental industries. It is not limited to the future: a number of sectors already face shortages. For instance, in Germany a lack of qualified workers has been flagged by representatives from the renewables industry, while companies in Britain are facing a shortage of technical specialists, designers, engineers and electricians in sectors going green<sup>6</sup>. An acute shortage of engineers was reported also by wind energy companies in other EU countries<sup>7</sup>. At the same time, labour shortages are not an exclusive tussle for companies involved in greening of the economy. Company surveys demonstrate that the mismatch between supply and demand is a feature of EU labour markets in general. However, since there is a potential risk that the implementation of "sustainable growth" policies will bring more severe skills mismatches, this question needs to be studied in detail.

Some preliminary research results indicate that the fundamental weakness in the EU's skills base relate more to the capacity for green growth in general than shortages in specialist "green tech" know-how. There is also an emerging consensus that more emphasis is needed on improving current skills rather than developing new curricula and training to provide new green skills. Table 1 below provides evidence from different EU Member States where existing occupations are "up-skilled" towards occupations engaged in policies fostering greening.

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<sup>6</sup>ECORYS (2008), Environment and labour force skills, a study by ECORYS for DG Environment, available at [http://ec.europa.eu/environment/enveco/industry\\_employment/pdf/labor\\_force.pdf](http://ec.europa.eu/environment/enveco/industry_employment/pdf/labor_force.pdf).

<sup>7</sup> Blanco, M., and G. Rodrigues (2009), Direct employment in the wind energy sector: An EU study, *Energy Policy*, Vol. 37, No. 8, pp. 2847-2857.

**Table 1: Member States' examples of up-skilling to new "green" occupations**

MS	Occupation(s)	Core training	Upskilling	New occupation
<b>Denmark</b>	Industry electrician / energy technologist	/VET qualifications tertiary qualifications	/Knowledge of energy sources, ability to integrate energy systems, project management	Manager in renewable energy
	Industrial operator / industry electrician	/ VET qualifications / secondary qualifications	Assembly, installation of parts, use of tools	Wind turbine operator
<b>Estonia</b>	Construction worker	No professional standard	Knowledge of energy systems, data analysis, project management	Energy auditor
<b>France</b>	Recycling worker	sector CQP - 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
<b>Germany</b>	Electronic Mechatronic Technician	/Initial vocational training	Electronics and hydraulic systems, operation and services	Wind Power Technician
	Plumber / Electric and Heating Installer	Initial vocational training	Technical knowledge administrative procedures, entrepreneurial skills	Solar Energy Entrepreneur / Installations Designer
<b>United Kingdom</b>	Engineer in energy sector	Tertiary qualifications	engineering 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

Source: CEDEFOP 2010

Public Employment Services (PES) have a key role to play in anticipating, designing and delivering appropriate training solutions. Recent evidence gathered by the European Commission<sup>8</sup> as well as testimonies from PES<sup>9</sup> show that those PES who also deliver vocational education and training (VET) or have a stronger role in contracted training appear to have a greater hands-on appreciation of the impact of greening policies on labour market issues. This could be explained by the fact that the that PES have a close dialogue with employers in this particular area appear to already be adjusting their business models and service delivery accordingly in relation to training service provision.

<sup>8</sup> EC information gathering exercise via EU PES network - April 2010

<sup>9</sup> Conference 'Greening the economy: implications for PES' Brussels, July 1-2, 2010

Thus the capacity of PES to intensify and serve better the needs of employers by providing them with adequately skilled labour supply will be most important in enabling a greener economy.

#### 4.3 *Potential impact on the quality of employment*

Discussing the quality of employment is complex and there is no simple measure of job quality. It is nevertheless important to monitor and study potential impacts of "sustainable growth" policies in its various dimension, such as socio-economic security (measures on pay, job satisfaction, number of employees working part-time or on fixed-term contracts, and diversity training); training (qualification levels and participation in education and training); working conditions (health and safety and social partnership/dialogue) and reconciliation of working and non-working life (work-life balance and gender balance).

The European Union needs jobs urgently given that so many were lost during and due to the crisis. However, the focus must not be only on the number of jobs, but also on their quality. The key question is whether and how will greening affect the work standards conventionally associated with the European model and whether it is able to promote sustainable and quality jobs. Among issues to be debated are the consequences in the case new jobs might be created in sectors which are outside the reach of collective bargaining. Also gender balance problems could arise because the sectors which will suffer most from job losses (gas, electricity, coal, oil) are strongly male-dominated. However we should also look at potential positive employment effects, due especially to infrastructure investments led by energy and resource efficiency policies that are likely to spur demand for workers in male dominated construction sector.

Another issue concerns potential new and emerging risks to occupational safety and health associated with new technologies in "green" jobs. For instance, installation of solar panels might bring a new combination of risks, such as electrical shocks combined with the risk of working at height.<sup>10</sup>

Finally, there is a risk that a number of jobs created within the transformation process are not sustainable. The employment gains (that are due to a higher labour intensity) of some of low-carbon technologies will probably not be sustained over the long term because differences in labour intensity are likely to diminish over time as those technologies mature and become more competitive<sup>11</sup>.

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<sup>10</sup> Challenges related to safety and health are currently investigated by the European Agency for Safety and Health at Work in the project *Foresight of new and emerging risks to occupational safety and health associated with new technologies in green jobs by 2020*.

<sup>11</sup> (Fankhauser et al. 2008)

## 5. CLOSING KNOWLEDGE GAPS: what needs to be done next?

Energy, transport, energy efficiency policies and associated infrastructure investments will be the key next steps to redirect the EU economy towards sustainable growth<sup>12</sup>. The objective is to achieve this together with full employment.

Europe needs a well-functioning labour market that will support adjustments without increasing structural unemployment and inactivity. Europe also should have the ambition to be front-runner and benefit from the environmental and energy challenges through the creation of new and better "green" jobs. Adequate labour market information is needed for shaping "green" training and assessing placement opportunities. Public Employment Services (PES) have a key role to play in this context.

At the EU level different instruments are available to provide support and guidance for policy makers and other stakeholders involved in preparing responses to challenges created by greening of the economy including social dialogue, mutual learning and EU funding.

Last but not least the global nature of climate change underlines the need to intensify international cooperation. This is not only important for achieving environmental goals, but has also impact on employment in the EU. In the process towards a new international agreement on emission reductions, international sectoral agreements can reduce emissions as well as the danger of unfair competition by creating a level playing field in the market.

### 5.1 *Social dialogue*

Effective social dialogue helps to identify and shape the necessary responses to challenges identified above. Different initiatives to promote partnerships and information sharing are taking place already (e.g. in France, Germany, Italy, Malta, the Netherlands, Slovenia)<sup>13</sup>.

The role of the social partners and social dialogue in the adaptation to climate change and in the promotion of decent working conditions is well addressed also at the EU level. The Commission regularly consults European social partners on policies in areas such as climate change, energy, transport and trade. Moreover, the 2010-2012 multi-annual work programme of the European social partners includes the topic of employment and climate change. Taking into account the adaptation towards a greener economy, the Commission encourages the European social partners to further develop "EU guidelines for anticipating, preparing and managing restructuring in a socially responsible way". Social Partners could also have an interest to provide their views in the framework of the new Industrial Policy Communication.

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<sup>12</sup> *State of the Union*, Speech by President Barroso in the EP.

<sup>13</sup> European Employment Observatory 2009 available at <http://www.eu-employment-observatory.net/en/reviews/natArticles.aspx?id=55&title=The%20employment%20dimension%20of%20economy%20greening>.



## 5.2 *Policy learning and knowledge sharing*

The EU aim is to enable the creation of jobs that would be at the same time: sustainable, good quality, and greener. This is why the mainstreaming of climate change and policy development should concern in particular policies like flexicurity, skills and training, certification and occupation classification, quality of work or Corporate Social Responsibility as pointed out in the Europe 2020 strategy. Policy learning will be crucial in this context but also to explore innovative budgetary solutions that support the development of employment friendly measures.

However, even though national administrations can be fully aware of challenges and opportunities emerging from the implementation of "sustainable growth" policies, the EU and its Member States are only at an early stage of building coordinated strategies that would bring about an efficient and complementary policy toolbox leading towards a greener economy and full employment. Some progress has been made, especially when it comes to education and training. For instance, some regions engaged in cooperation with different stakeholders: industry and educational bodies such as universities and vocational training institutions in order to identify skills required for jobs linked to economy greening (CEDEFOP 2010 forthcoming).

Preliminary Commission analysis suggests that employment policies should focus particularly on easing transitions, investing in human capital and monitoring skills requirements, and promoting partnership and information sharing between all concerned actors. Taking into account the current state of play, a significant effort will be required from labour market institutions to collect and consider relevant information in order to design and implement appropriate employment policy measures including monitoring devices. The work initiated by the Employment Committee (EMCO) in this domain is a good starting point and should be carried further. The results, especially when it comes to identifying relevant employment related indicators, should also be closely monitored and assessed by the European PES Network in order to consider ways in which it can build on the proposed recommendations from an operational point of view.

At the same time, the heterogeneity of EU labour markets, their local characteristics and institutions will need to be taken into account when deciding on further steps at the EU level. A recent CEDEFOP analysis of six EU Member States showed that perception of whether a precise job is: i) a new "green" one, or ii) an existing one with new elements, differs between countries. For example, an "energy auditor" in Estonia may be considered a new green occupation, while in Germany it can be seen as a change in the competences of an "auditor", which is a long established occupation. It suggests further work on new occupation classification, focused on revision of descriptions of key skills and competencies might be useful in channelling adequate training and retraining programmes.

Another relevant example is the European Skills Competences and Occupations (ESCO) project that will be launched soon. This could provide the platform from which unique green skills-sets can be defined and extracted to support Labour Market Information and guidance tools used notably by PES to re-orientate jobseekers to the opportunities increasing available in the "green" economy. It should also allow for bridging the gap between the worlds of education and that of work in this area and hence boost environmental skills education and

future curricular content. In conjunction with ESCO, the importance of close links by PES into the national vocational education and training (VET) systems and education authorities should be emphasised to allow for mutual information about new skills requirements and the timely adaptation of skills training to meet the new emerging green labour market needs.

### 5.3 EU Funding

The question of efficiency, level and scope of the support given by the EU funding to the employment policies focused on facilitating and complementing the economy greening will need to be included into further debate. The European Social Fund (ESF) is the EU's main instrument that supports investing in people. The explicit priorities of the ESF regulation encompass: increasing employment participation, fighting unemployment, enhancing the adaptability of workers and companies, and promoting social inclusion. At the same time achieving sustainable development has been mainstreamed in the ESF operational programmes since 2000. In pursuing these primary priorities, the ESF has, for years, supported a wide range of intervention related to the greening of the economy from raising-awareness modules to high skills trainings in specialised sectors. Some examples are provided in table 2 below.

**Table 2: Member States examples of programmes co-financed by ESF**

<p><b>Qualification course: energy saving assistant (Germany)</b> – long time unemployed are trained to become power saving assistants. Through a qualification course which is offered by the Energy Agency of Berlin and the Caritas, the assistants are enabled to advice low income households on how to save energy and thus money and to raise awareness for the management of scarce resources.</p> <p><b>Bildungsscheck: job-related advanced training project (Germany)</b> – the programme <i>Bildungsscheck</i> supported by the Land North Rhein Westphalia is co-financing 50% of the costs for a job-related educational advanced training, to the maximum support amount of 500 euro. Indicated are some examples of such advanced training courses in the field of ecological sustainability: operational waste management, energy of buildings, environmental management, waste management, optimizing the biological waste air purification, asbestos abatement, renewable energy systems, regenerative energy resources, technology and cost-effectiveness, planning of biogas premises.</p> <p><b>Emplea Verde: Adaptability and Employment (Spain)</b> – "Fundación Biodiversidad" (Ministry of Environment) manages the programme <i>Emplea Verde</i>. With a budget of €44 million the programme will train 50.000 people and support the creation of 1000 companies in the environmental sector. The foundation launches annual calls for projects to promote a better integration of environmental and sustainable issues in the management and the functioning of companies, to foster eco-innovation and to encourage the creation of enterprises in the environmental sector. The projects aim mainly at independent workers, SMEs and entrepreneurs. A special attention is paid to disadvantaged workers, workers of sectors at risk of redundancy, workers in the environmental sector.</p> <p><b>Trajectories for starters in the green sector 2010 (Netherlands)</b> – The project aims at providing (theoretical and practical) training to youngsters having not sufficient "start" qualification (i.e. degree of upper secondary education) to become an all-round green craftsman. After 2 years these youngster have to pass an exam. If they successfully pass the exam, they obtain an official degree (upper secondary education).</p> <p><b>Skills for Climate Change (Newham) Green builders: Equipping London businesses to compete in a changing market (UK)</b> – The project in East London identifies skills gaps directly related to climate change and responses to it, amongst small and medium-sized enterprises (SMEs) active in the built environment and construction services. The aim of the project is to identify the key green skills required and then develop learning tools. Areas of interest are energy efficiency, heating and ventilation, and the building envelope.</p>
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Source: European Commission (2010, forthcoming)