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The harsher employment effects of a necessary paradigm shift in climate policy will need active transition management

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Policy implications

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There is a consensus in Europe that reversing climate change is the overall policy priority for the coming decades. The associated transformation into a resource-efficient and low-carbon economy will entail a fundamental restructuring of the European economy. While Europe has set itself ambitious targets, the policy framework at the European level is fragmented: an ambiguous and incomplete Emissions Trading System; a number of sectoral initiatives; open questions about carbon taxes; and a variety of uncoordinated national practices. Dedicated employment policies to promote and facilitate green transition on the labour market are completely absent. A more stringent and comprehensive climate policy, with better policy co-ordination, is a prerequisite for a successful outcome. But this will have to be based also on realistic impact analyses of the likely

social and employment effects. Economic policy tools and a roadmap for reaching climate targets must be clearly defined, along with accompanying policies to guarantee fair burden-sharing during the process of transformation.

Broad climate policy targets and achievements to date

The broader framework of climate policy is defined by the agreement reached by the group of G8 nations in 2009 to cut global greenhouse gas (ghg) emissions by half by 2050 and to implement a stricter target of 80% ghg emission cuts for industrialised countries (both on the basis of 1990 levels), in order to avoid irreversible climate change. This 80% target thus represents the reference value for assessment of any climate policy for the industrialised countries, including the EU27.

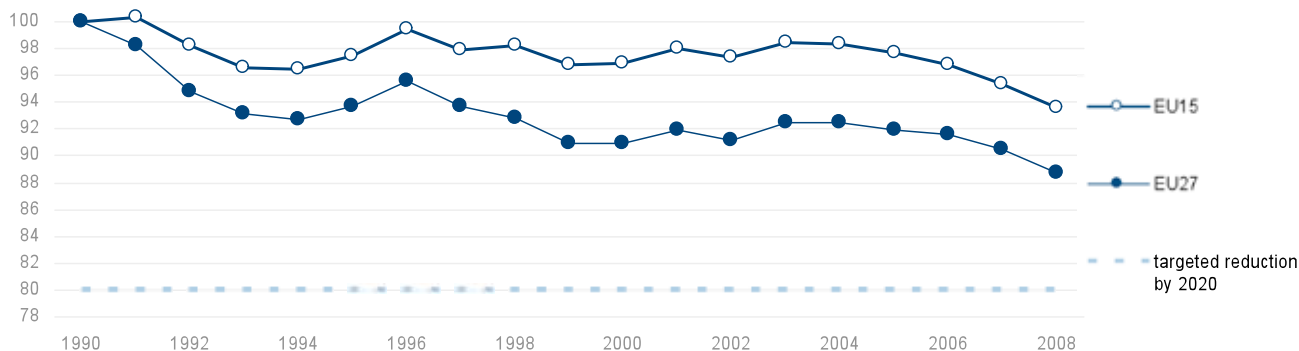
The EU 2020 Strategy, with its triple priorities of 'smart, sustainable and inclusive growth', has formulated headline targets relating to sustainability to be achieved by the year 2020. These include a 20% reduction of ghg emissions (rising to 30% if the rest of the world promises significant cuts), increasing the share of renewable energy to 20% of all energy generation, and a 20% increase in energy efficiency. It has also devoted one of its 'flagship initiatives' to a 'resource-efficient Europe' (European Commission 2010).

European performance since 1990 – more effect generated by crisis than by climate policy

Whereas global ghg emissions in 2008 were 41% above 1990 levels and emissions by developed countries (subject to the Kyoto Protocol) showed no decrease (Schepelmann *et al.* 2009), the EU succeeded in significantly cutting its emissions during this period. However, the rate of reduction is too low and the EU is still lagging behind the proportional fulfilment of the 2020 targets, with EU15 ghg emissions down by 6.5% during the period 1990-2008 and EU27 emissions by 11.3% (Figure 1).

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Figure 1 Reduction of greenhouse gas emissions in the EU15 and EU27, on basis of 1990 levels (%)



Source: EEA dataservice

A breakdown shows that a significant proportion of the cut in emissions was achieved during the first decade of the observation period, as in 1999 ghg emissions were 9.1% below the reference level of 1990 in the EU27 and 5.3% below this level in the EU15. The period 2000-2007 saw no more than a marginal decrease in emissions (0.4% in EU27 and 1.4% in the EU15). The single crisis year of 2008 contributed a larger decrease than the preceding eight years together, amounting to 1.8% in both the EU27 and the EU15. The good performance during the 1990s was mainly attributable to the collapse of the traditional industrial base of the Central Eastern European (CEE) countries and of eastern Germany during the initial phase of the post-1989 transformation¹. The wider post-unification recession in Europe in the early 1990s also 'helped'. Out of the EU27's total 11.3% reduction in emissions between 1990 and 2008, 7.3% had already been achieved in 1994 (at the lowest point of the transformation crisis in the CEE), constituting a clear demonstration that the bulk of the emission cuts was attributable to output contraction and economic crisis.

Resource productivity – a measure of the genuine adaptation of an economy, as it sets material input against economic output² – shows only marginal improvement. While labour productivity in the EU27 grew by 14.2% during the 1999-2007 period, resource productivity improved by just 7% (Eurostat 2010). Resource efficiency has not yet become a driver of economic decisions.

The difference among the resource productivity characteristics displayed by individual member states is a frequently overlooked point (Figure 2). The gaps are enormous as, for example, the level of resource productivity in Luxembourg is thirty-fold what it is in Bulgaria; this gap is thus far wider than corresponding gaps in GDP/capita or wages. Even if Europe as a whole is currently profiting from the huge 'emission drops' in the CEE new member states caused by the collapse of their traditional industrial base in the early nineties, these countries face particularly great challenges when it comes to the need to increase resource productivity in the future. At the same time, it is important to note that it is not production alone that determines the resource efficiency – in a wider but more relevant sense – of a given country or region. What matters above all is consumption. A country might, after all, specialise in economic

activities with low-resource use and emissions, while importing resource-intensive products.

One study conducted using consumption-based CO₂ accounting finds that Europe should add net imports of 4 tonnes CO₂ equivalent per person to its per capita production based CO₂ emissions. The latter were 10 tonnes CO₂ equivalent in 2008, so this would mean 40% additional emissions (Davis and Caldeira 2010) This is also an important policy implication for the future.

The European Environment Agency (EEA) report on tracking the European performance in meeting the Kyoto targets (EEA 2010) is optimistic with respect to fulfilment of the EU Kyoto targets by 2020. However, this envisaged fulfilment of the ghg reduction target, even if achieved, will be predominantly due to one-off events associated with economic crisis and is not based on a sustainable implementation of measures aimed at achieving policy targets.

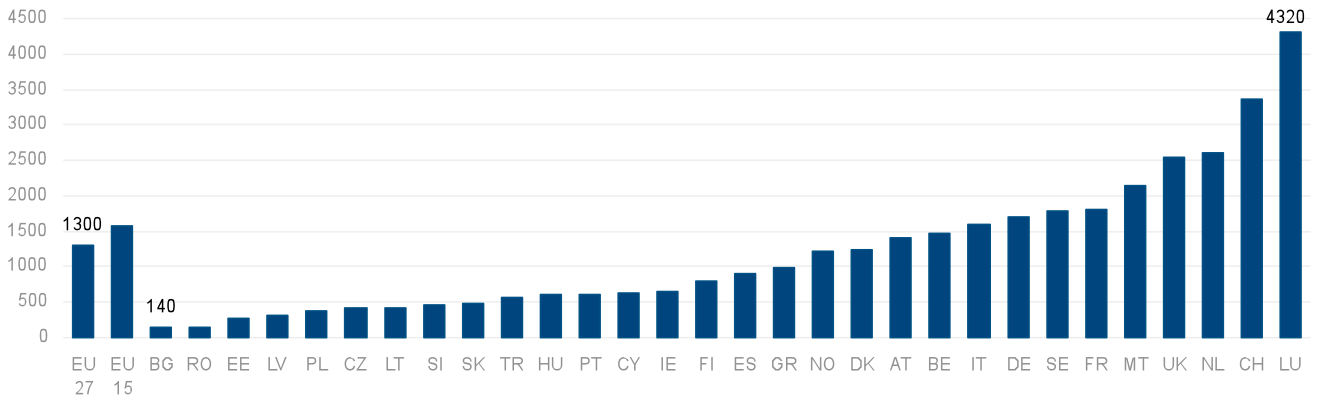
Even if Europe is performing better than the rest of the world, it is not on sustainable track towards fulfilment of the ambitious 2050 targets. The target of an 80% cut in emissions for the industrialised economies by 2050 means a cut in emissions to two tonnes of CO₂ equivalent per head per year. In 2008 emissions in Europe were ten tonnes with an extra 4 tonnes CO₂ equivalent of imports. There is thus a long way to go to match this long-term objective.

Implementation of economic instruments to date

Implementation of effective policies is the cornerstone for achievement of climate policy targets. What we currently find on the European level is a predominance of declaratory objectives without any concrete roadmap or instruments of implementation.

1 The decline in the former GDR improved the German and thus EU15 performance also.
 2 Resource Productivity (GDP/DMC) is defined as the ratio between gross domestic product (GDP) and domestic material consumption (DMC).

Figure 2 Resource productivity (value added in EUR generated by one ton of resource input), 2008



Source: Eurostat (2010) Online databases

The central issue is to achieve the right 'carbon price'. Economic policy instruments that determine the effective carbon price include 'cap and trade' policy (like emissions trading), a variety of carbon-related taxes (Cottrell *et al.* 2010) and the direct involvement of the state through steering mechanisms (e.g. emission standards, levies on carbon-based energy generation and use, while providing subsidies for environmental innovation). These instruments, taken on their own, would be incapable of translating policy targets into business reality. What is needed is a co-ordinated policy mix of these instruments, with a clear implementation agenda on the European level, and this is largely missing.

The European Emission Trading System (EU ETS) clearly demonstrates the uncertainties and distortions of the policy instruments that have been only partially implemented. The current form of the EU ETS has been criticised in several respects, as it fails to give proper incentives to economic actors to reduce CO₂ intensity (Le Cacheux 2010). It has been also subject to wide-scale manipulation and fraud and has thus become a source of uncertainty for economic actors (cf. ETUC 2010).

The Commission is currently finalising the design of the third trading phase of the ETS which will begin in January 2013 and last until 2020. The Commission's stated objective is to increase the share of emission permits that are auctioned rather than allocated for free. A key concern will be the potentially negative impact of the next phase of the ETS on the competitiveness of affected businesses. The potential exposure level of industries or sectors to EU ETS depends on the CO₂ intensity of production, the opportunity to abate carbon emissions within the sector, and the ability to pass along carbon cost increases through to output prices.

The literature presents a mixed picture as to the possible effects of the future ETS regime. A study by CEP argues that most industry sectors entitled to free emission permits would not face an increased risk of closure if they had to pay for permits (CEP 2010). Another study by the ZEW Institute points to the longer-term uncertainty about carbon leakage – in which carbon-intensive production within the EU is outsourced to non-EU countries and the relevant goods are then imported –

and the extent to which firms are able to pass on carbon costs (Oberndorfer *et al.* 2010). According to a study by the WWA consultancy group commissioned by the EIUG and the TUC, the forecast increase in the total energy bill for energy-intensive industries, taking electricity, gas, and emission reduction schemes together, is projected to be between 18% and 141% by 2020, which constitutes an incredibly wide range (EIUG and TUC 2010).

There is thus a substantial uncertainty about the third phase of EU ETS, with a hardly calculable increase in EU ETS costs driven by an assumed increase in the price of allowances. While economic actors are becoming aware that the costs of using environmental resources will increasingly appear in their operations, when it comes to making the necessary investments and adjustments, it is the predictability of these cost increases that matters.

Given the weakness of the ETS and the lack of a European carbon tax, the core elements of a European climate policy framework are missing. Setting aside provisions applicable in specific policy areas – such as the directive on energy performance of buildings, the European energy efficiency action plan, the regulation of emission standards for passenger cars – fundamental and binding instruments are thus missing. The policy framework itself is incomplete, as a successful transformation process on this magnitude clearly demands an integrated approach with the inclusion of appropriate industrial, regional, employment and cohesion policies.

All this would be required in order to achieve the climate targets of 2020 in a sustainable manner and to offer a chance of achieving the more ambitious 2050 targets.

Employment effects

Under such circumstances, it is somewhat difficult to discuss the employment effects of European climate policy. We make an attempt to do so here only in order to highlight the contradictions between targets, intentions, implementation and reality.

It is important, at the outset, to distinguish between discussing the expected effects of *intended* climate policies (i.e. those formulated in terms of promises and targets) and a climate policy that is actually being *implemented* by means of effective and binding policy instruments. The same inconsistency affects employment forecasts. Most of the literature assumes the fulfilment of declared climate policy targets when calculating the positive employment effects, but tends to downplay the employment risks because it does not (or cannot) fully take into account the effects of measures that have not (yet) been implemented but would be required for the achievement of long-term targets.

If we look at some possible social consequences of a climate change mitigation policy, we identify two major impacts, one being the effect on employment and the other the way in which a higher carbon price affects different income groups of society, thus influencing social equity.

There is a broad consensus in the literature that, while climate policies would have no major aggregate impact on the *numbers* of jobs, a massive *redistribution* of jobs is to be expected: new jobs are being created; existing jobs will be transformed ('greened' jobs in existing industries); and some jobs will also disappear. These processes will exhibit huge differences by region, branch and labour market segment.

There is a clear consensus in the literature that jobs identified as 'green' will be net beneficiaries of the process, although the contours of this category are not clearly defined. Most often green jobs are referred to (European Commission 2009b) *as jobs that contribute to preserving or restoring environmental quality; jobs that reduce energy, materials, and water consumption; jobs that contribute to de-carbonize the economy and minimize all forms of waste and pollution*. This view focuses on the end product and does not account for the inputs of these activities that come from other sectors of the economy and are not necessarily described as green, as we will see under the sectoral overview.

Positive employment effects

Documents from the European Commission tend to overemphasize the positive side of the green restructuring process on employment ('green jobs') and to pay less attention to employment risks and structural labour market effects. This is typically true of the Commission Communication entitled '7 measures for 2 million new EU jobs' (European Commission 2009a) that calculates the employment creation effect of the measures of the European Energy Efficiency Action Plan. The 'Employment in Europe 2009' report takes a more nuanced approach, but also places green job creation squarely in the foreground (European Commission 2009b). This report predicts that the directive on Energy Performance of Buildings will create between 280,000 and 450,000 new jobs in the medium term. New jobs are linked to activities in retrofitting of buildings and energy management including related services. This very useful and important measure was implemented primarily as part of the national stimulus packages and it is necessary to make sure

that these do not fall victim to early exit strategies and austerity measures. The Commission report also reckons on there being 2.3-2.8 million jobs in the renewable energy sector in Europe by 2020.

According to a forecast contained in a study prepared by Syndex Consultancy for the ETUC, the 1.4 million jobs that existed in the European energy sector by 2005 would be likely to increase by a further 760,000 jobs by 2020 (Syndex 2009). The Syndex study warns, however, that the net job generation effect would be lower, as jobs in traditional forms of energy generation will be downscaled (e.g. by 80,000 in coal mining and 20,000 in related power plants).

Policymakers expect, further, that a new green industry in Europe might become an export engine providing the rest of the world with much needed green technology and equipment (the claim of becoming an export leader in green technology appears primarily in Germany but also on the European level). Developing green technology has, indeed, a great future job-creation potential and exports might also play a key role, assuming that Europe can manage to acquire a comparative advantage in this field. Not all countries, however, are expected to benefit from such a development.

It is also important to look at the quality aspect of green jobs. A study by the UNEP and ILO (UNEP 2009) highlights an important distinction when it points out that jobs which are 'green' in terms of the end product are not always green in terms of procedure because of the environmental damage caused by inappropriate practices (e.g. in the recycling industry). The report also addresses the issue of job quality in the context of green jobs. A discussion paper by the King Baudouin Foundation goes further, as it examines the implications of individual climate change mitigation measures for social justice and employment (Schiellerup and Chiavari 2009).

Employment risks and challenges in different sectors

Open questions and lack of predictability are above all characteristic of the energy-intensive industries and activities that are responsible for a large share of the emissions. It is here that the lack of concretely planned measures to achieve climate reduction targets leads to concerns that the severity of negative employment effects may be being underestimated. Manufacturing industry as a whole is responsible for a third of global energy use and for 36% of global CO₂ emissions (International Energy Agency 2007). Within manufacturing, the steel industry generates 30% of industrial CO₂ emissions and currently – after the elimination of excess capacities through decades of restructuring – employs 550,000 workers in Europe. The contribution of this industry to further emission reduction is expected on the basis of further energy efficiency improvements and not of further downsizing.

It is important to recognise that many energy-intensive products have a low life-cycle carbon footprint, mainly due to their durability and recyclability. Energy-intensive sectors, such as

steel, chemicals and ceramics, provide many of the materials and products that are essential for the transition to a low-carbon economy and are inputs of green end products. The post-2012 EU ETS regime will be crucial for these industries in Europe and it is important that these peculiarities should be taken into account. Under current circumstances, future employment effects are not foreseeable.

Transportation is a particularly critical industry, both with a view to its climatic effect and to its key role in the European economy. The automobile industry and its supplier industries employ a total of more than 12 million people in Europe, making it the backbone of the European manufacturing industry. Of these workers, 2.3 million are directly involved in the production of vehicles, while some ten million are employed in the supplier industries (ACEA 2010). Currently only some 250,000 jobs are directly involved in the manufacturing of fuel-efficient, low-pollution and low-emission cars and may thus be regarded as 'green' (UNEP 2009). It may be expected that, insofar as the long-term CO₂ emission target – of 95g/km per vehicle produced by 2020 – is met, the number of jobs classified as green will grow correspondingly. This does not, however, fully answer the question as to the sustainability of the current level of employment in the European automobile industry. Much will depend on the future role of individual road transport within the broad transport concept of the EU, and in this respect huge uncertainty prevails.

Even if the need to reverse climate change is widely regarded as a major opportunity to reduce transport-related emissions by a diversion of transport capacity away from individual transport towards public transport systems, this is certainly not what is happening in practice. Employment in European railway transport has fallen in the last few decades and, during only the short period between 2000 and 2004, the number of jobs in this sector fell by 14 percent (UNEP 2009). It is not yet apparent what policies and economic instruments would be applied to reverse this process and what this would mean for employment. It is extremely difficult, under such circumstances, to make any forecast of the likely development of employment in the automobile industry over the next decade.

Due to the absence of core elements from the European climate policy framework, especially where the most polluting industries (i.e. the energy-intensive industries and road transport) are concerned, the employment risks of needed but not yet existing measures are hard to assess. Only if the risks were to become more clearly perceptible would actors and policy-makers be in a position to address these challenges by targeted policy measures.

Conclusions

We have outlined the basic context of climate change mitigation policies in the European Union and found that declared climate policy targets are not supported by corresponding concrete economic tools designed to achieve their implementation. Examples of the already existing economic instruments (like the EU ETS) show this quite clearly, leading to a situation in which

it is still impossible to calculate the effective carbon price of the future. Even if Europe seems to be on track for formal fulfilment of the medium-term emission-cut objectives, this is in no way based on a thoroughgoing reorientation of economic activity, but more on the one-off effects of crisis. The paradigm shift is still to come and for it to take place we need a more comprehensive climate policy and one that is implemented also in practice.

There are also fundamental gaps in the overall framework of climate policy, as regards, for example, how it aims to achieve emission cuts – whether by actually reducing activities that are energy-intensive or by increasing the efficiency of such activities. The current track record shows that what has been achieved so far was based largely on the former option. To the extent that this 'success' is based on carbon leakage – importing energy-intensive goods previously produced in Europe from outside the EU – it brings no real benefit at the global level.

As we have shown in the case of the automobile industry and with view to energy-intensive industries, the current policy framework and implementation practice does not allow the full scale of risks and challenges to be properly explored. Sustainable achievement of the 2020 climate targets and any kind of achievement of the longer-term targets would require harder measures (including completion of the ETS, introduction of a European carbon tax and devising of a sustainable European transport concept). The effects of these measures would, however, have harsher impacts on employment than is assumed on the basis of the current implementation practice. In such a case, the transition to a low-carbon economy will encompass a full-scale transformation of the whole European economy with wide-ranging employment impacts.

Since the transformation to a low-carbon economy is a policy-driven process, 'anticipation' of change can be more straightforward and explicit, and responses to its challenges (above all in relation to employment) can be planned and integrated into the policy framework from the outset. This would include, above all, the design of targeted labour market policies to ease necessary transitions, alongside the requisite matching education and training measures. Industrial policy measures are needed to promote innovation and address the transformation problems of specific branches (sectoral policies). Regional policies must address the specific problems experienced by regions affected by an accumulation of restructuring effects. The resource efficiency gap between new and old EU member states needs to be addressed by targeted cohesion policy.

As with all major restructuring processes, managing the transformation by means of appropriate policy instruments and involvement of the social partners will be a decisive factor in its ultimate success. How the costs of the transition will be distributed among the various actors and within society is a crucial question.

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