Industrial change, risks, opportunities and social transition to a low-carbon economy and society

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1. Introduction

For industry in general, the reduction of CO_2 emissions is a real challenge. The low-carbon transition policies to be implemented during the period 2010–2030 are anticipatory policies designed to take account of the greenhouse gas emission commitments made by states, the pace and general conditions of which will be updated by forthcoming UN climate change conferences.

For the principal sectors of the first and second industrial revolutions – coal and steel, on the one hand, and electricity and motor vehicles, on the other – the whole set of production and utilisation parameters are being called into question by the advent of a low-carbon imperative calling for efficiency and prudent energy consumption.

The energy- and carbon-intensive sectors, located as they are at the organisational hub of developed industrial societies, are also both capital-intensive and labour-intensive. They represent, as such, the living product of decades of regulatory, commercial and tax policies and measures which both ensured the industrial development of European countries and moulded their economic and social organisation.

We will argue that if employment and human resource issues are not better incorporated into climate policies, they can be expected to become a significant barrier to the economic, technological and societal changes needed to manage the transition towards a low-carbon economy. Vigorous action to deal with climate change, consisting of both mitigation and

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adaptation measures, must be based on two essential components: (i) the rapid introduction of the policy options most effective for achieving the twofold dividend of the fight against climate change and the creation of quality jobs; and (ii) the introduction of instruments to anticipate and accompany, in a socially responsible manner, the changes that will be required.

Section 2 contains an overview of the sectoral challenges that the European industry will face due to the transition to a low-carbon economy, particularly in relation to employment. To this end, we will make use of the large body of empirical material accumulated by our studies between 2007 and 2011.[1]

Section 3 addresses the basic framework of a comprehensive and multi-sectoral industrial policy, and in Section 4 we emphasise the crucial role of social dialogue in the transition to a low-carbon economy.

2. Sectoral employment effects of climate policy measures

The impact of climate policy measures will differ considerably from one sector to another: some sectors will be restructured and jobs will be shed; others will be developed in a manner that entails job creation; while a third category will have to change existing jobs, such as transport and some parts of manufacturing (metals and chemicals).

While there is no strict correspondence between energy-intensive sectors – the first to be affected by low-carbon policies – and job-intensive sectors, nonetheless, direct impacts will be compounded by indirect impacts that affect the economy as a whole. This will apply to downstream sectors, such as after-sales or distribution, which will be affected by changes in consumer preferences.

1. The three papers covered the following topics: climate change and employment (Syndex 2007): www.etuc.org/a/3675; climate disturbances, new industrial policies and exiting the crisis (Syndex 2009): www.etuc.org/a/6788; and the employment impact of climate policies in the European Union (Syndex 2011): http://resourcecentre.etuc.org/Climate-Change-86.html

In 2007, the 'Climate change and employment' study (Syndex 2007) calculated that, on the basis of a general hypothesis of policies and measures generating a 40 per cent reduction in greenhouse gas emissions in EU countries by 2030, our so-called 'mesoeconomic' sectoral models would display a slight positive net outcome in terms of job creation (+1.5 per cent). However, this overall result concealed considerable fluctuations, both within and between sectors, in terms of both job supply and demand, as well as qualifications. This redistribution of jobs reflects less the idea that some sectors will be winners and others will be losers than an even more important challenge, namely the need for actors to manage the opportunities and risks generated by the so-called 'low-carbon' policies and measures.

In order to illustrate our analyses and recommendations in relation to low-carbon industrial policy, we present three sectors covered by the European Emissions Trading System (ETS) – electricity, steel and chemicals – as well as two sectors not covered by ETS but covered by European low-carbon policies through new sets of regulations governing use of their products, namely, the automobile and machinery and capital goods sectors.

2.1 The electricity sector: the question of occupational transitions

While it is possible, to some extent, to find replacement technologies for the supply of electricity to buildings and transport, this is not yet the case in relation to industrial applications requiring the supply of high-voltage electric currents. This is essentially why achievement of the greenhouse-gas emission-reduction targets that Europe has set itself for 2020 requires the implementation of CO_2 capture and storage technology.

On the basis of the scenarios studied (DG TREN as a baseline, DG Environment for NSAT), we have introduced a deviation labelled 'NSAT Syndex' (Network Security Analysis Tool) that combines job creation in renewable energy forms and the spread of CSC technologies by 2030.

There is a serious risk that the necessary investment will be delayed because of the financial crisis that broke in late 2008.

Job creation resulting from investment in electricity production stems essentially from two sources:

– direct and indirect jobs in renewable energy and the renovation of thermal power plants, more than 50 per cent of which will require renovation. This job creation is estimated at more than 750,000 full-time equivalent jobs (FTE) on annual average during the period 2005–2030, the vast majority of them in metalworking, to which will be added jobs in transport and distribution;
– jobs in the capital goods sector, of a similar quantity.

Inversely, in thermal power stations (coal and oil) the total expected job losses are calculated as 21,000 FTE (14,000 for coal and 7,000 for oil), most of them concentrated in the EU countries where coal continues to play a major role in electricity production. Thanks to the introduction of CSC technologies, the extent of these losses will be limited.

The central issue with regard to production jobs is the contraction of jobs in coal-fired power stations, which cannot be offset by job development in renewable energies, since the latter correspond to different occupations and occupational statuses. The occupation of wind power operator does not, in other words, resemble that of thermal power station operator.

Maintenance occupations have today become one of the key occupations for raising the rate of capacity utilisation and these play a substantial role in optimising production costs.

In parallel with the net job creation linked to investment in electricity production, there will be job losses in the coal sector by 2030. During the period 2005–2030, the fall in coal mining jobs is expected to be between 74,000 under the first scenario (business-as-usual) and 87,000 under the second (NSAT alternative linked to the measures contained in the EU Climate-Energy package), to which must be added job losses in the production of capital goods for mines. It can therefore be considered that the job losses in coal mining in Europe in the scenario linked to the European climate-energy package will affect somewhere between 77,000 and 87,000 workers and that these reflect in part the continuing restructuring in the coal industry (77,000) and in part the 'decarbonisation' of electricity production (10,000).

Regardless of how the existing stock of thermal power stations evolves, the question of EU policy on long-term security of supply will arise.

2.2 Steel: technological and occupational transition

According to the International Energy Agency (IEA, 2007), the steel sector accounts for between 6 and 7 per cent of world CO_2 emissions; this figure is as high as 10 per cent if emissions from the mining and transportation of raw materials are included.

The steel industry accounts for 30 per cent of total CO_2 emissions from industry. China is the country with the highest emissions, both because it is the number-one world producer of steel and because its steel industry is 90 per cent based on cast-iron production, represented by an extensive range of technologies ranging from the most modern to craft-based.

Until 2020, the European steel industry must be protected by the granting of free emission rights, among other sectors identified by the European Commission as potential victims of carbon leaks that are both open to international competition and characterised by high energy intensity.

On the integrated liquid steel production sites, we estimated at 175,000 – for a production capacity of 200 million tonnes of steel – the number of jobs threatened by carbon leakage in the short term. These job losses will be limited to between 24,000 and 45,000 workers for reasons other than climate change by 2020. The European programme Ultra-low CO_2 Steelmaking (Ulcos), the flagship project of the European Steel Technology Platform ESTEP, is the only one of its kind in Europe. On the basis of research focused on the 80 technologies examined in this programme, the possibility was identified of implementing a technology compatible with the emissions reduction demands imposed on producers: the recycling of the gas from blast furnaces combined with the capture and storage of CO_2 would enable greenhouse gas emissions to the tune of at least 50 per cent per tonne of steel produced. Thanks to the technology for recycling blast furnace emissions, growth can be expected in jobs deriving directly from this change in each factory employing cast-iron production.

According to the Syndex hypothesis, the European steel industry:

– may be expected to correct the trade balance in steel and therefore increase its production capacities in line with consumption;
– should benefit from the combined progress of electric steels and cast-iron steels.

On the qualitative front, several types of development have to be taken into account:

– the evolution towards a process industry and away from the operation of blast furnaces will entail major changes in working methods: where the collective expertise of teams was essential for the smooth functioning of the tool, the new technological situation will require much stricter forms of regularity, based on reinforced and computerised measurement and monitoring instruments;
– the increasingly intensive functioning of the tool in the direction of greater energy efficiency, accuracy and rigour in operating standards will also mean that additional strain is placed on tools and materials, and this is bound to entail consequences for workers' safety.

2.3 Chemicals

The major risk in the chemicals industry is that firms will fail to face up to the challenges of change that confront them because the European chemicals industry, subject to the effects of globalisation and financialisation, is engaged in a process of profound transformation. The current crisis is causing even more confusion. The risks associated with restructuring European chemical production methods are all the greater in that they go back a long way and the investment and innovation strategies of firms established on the old continent have not dealt with the relevant challenges (investment levels show a declining trend and remain below those of the chemical industry in North America and Asia). The pressure on employment in Europe as a whole remains a constant feature (–2 per cent a year during the period 1997–2007).

Regulation by means of market mechanisms alone cannot be effective in the field of chemicals, when account is taken of:

– the diversity of the technological, competitive and social situations covered by this industry;
– the differing carbon intensity depending on countries and regions (which poses the challenge of managing the transitions and taking charge of the associated costs at the geographical level);
– sectors or sub-sectors marked by fairly defensive dynamics in some cases and fairly proactive ones in others: sensitivity and exposure to the challenges of the transformation towards a low-carbon

economy are not the same (hence the challenge of managing transitions and acceptance of the associated costs by the various branches of the chemical sector);

– the mix of large corporate groups and SMEs (which poses the challenge of managing transitions and acceptance of the associated costs by companies and within countries or regions). What is more, the chemical industry, on account of its complexity and lack of transparency, requires more impact studies and/or more reliable evaluations of the activities and employment challenges linked to the move towards a low-carbon economy. From this standpoint, the benchmarking tool (highly developed in the chemical industry on the basis of technical, financial but also social criteria) should certainly be utilised in a new and more proactive manner in order to promote social dialogue.

Finally, the available evaluations (McKinsey 2006) show that the European chemical industry has a non-negligible potential for greenhouse-gas reduction, in particular through the continuing improvement of its energy efficiency and broader recourse to renewable raw materials. This potential calls for non-negligible investment but offers in return advantages that should undoubtedly be emphasised (savings in operational costs, in particular by continuing the reduction of energy intensity, new markets, new economic models built on non-competitive agricultural alternative resources and so on). The development of the latter should certainly be encouraged insofar as it is possible to identify significant savings over the whole lifecycle of products.

The development of low-carbon products and technologies in the European chemical industry represents an opportunity to achieve stronger and more dynamic sectoral cooperation (in R&D and vocational training) based on a concerted approach which, given the high degree of fragmentation and financialisation of this industry, has so far failed to develop the requisite impetus. The emergence of new competences demanded by sustainable chemicals and the management of the transition of classic chemical products towards sustainable alternatives are major challenges from the employment standpoint. The creation of a structural fund to organise and/or accompany this twofold movement could constitute a political response, on condition that its implementation, aid and conditions of access be defined in sufficiently proactive terms and made subject to the requisite forms of control (particularly by the social partners and the trade unions).

2.4 The automobile industry

The motor industry is one of the most important industrial sectors in Europe, constituting one of the pillars of European industrial production. The European motor industry accounts for 31.8 per cent of world automobile production.

According to the European Automobile Manufacturers' Association (ACEA 2010), the automobile industry and its upstream industries employ some 12 million persons in Europe, of whom, in 2007, some 2.3 million were directly employed in the production of vehicles, with 10 million employed in the upstream industries.

The aim of reducing CO_2 emissions applied to the motor industry entails two different aspects: the reduction of the CO_2 emitted by the passenger cars and utility vehicles in circulation and the reduction of CO_2 during the process of vehicle production.

In 2008, new vehicles emitted on average 154g of CO_2 per kilometre. In 1995, only 3 per cent of new vehicles emitted less than 140g of CO_2 per kilometre, as against 42 per cent today.

The European Parliament and Council adopted new regulations on passenger car emission rates in December 2008. More than 65 per cent of newly registered vehicles will produce only 130g of CO_2 per kilometre by 2012. By 2015 all newly registered vehicles will be required to meet this standard, thanks to the development of the requisite technologies.

The motor car industry was hard hit by the financial crisis and the recession in the second half of 2008. Most experts expect to see a growing number of hybrid vehicles on the market in the coming years and the various forecasts of the evolution of CO_2 emissions by 2030 accordingly display major differences. This is the result principally of the different hypotheses concerning the proportion of hybrid and electric vehicles in the whole stock of vehicles, as well as concerning the total number of vehicles.

On the basis of the different forecasts for the sector, three hypotheses have been put forward for 2015, 2020, 2025 and 2030. Each corresponds to a different degree of penetration of hybrid and electric vehicles: low hypothesis, medium hypothesis and high hypothesis.

The employment impact on motor car assembly plants would be limited in Europe by 2030, in case of weak penetration of the 100 per cent electric vehicle and on account of the hybrid transition, which still involves a large proportion of conventional engines in the vehicles of tomorrow.

Accordingly, by 2030, the losses caused by the replacement of conventional engines by electric engines would represent, according to the three hypotheses, between 17,000 and 34,000 jobs.

The employment gains could broadly offset these losses, being more significant, namely, somewhere between 80,000 and 160,000 jobs, depending on the hypothesis.

The compromise reached with the motor car industry in the directive on emissions from passenger vehicles (130g of CO_2 per kilometre) will have to be quickly revised to reach the 95g of CO_2 per kilometre target advocated by the Commission. More effort is needed to make combustion engines cleaner, as advocated by the T&E network[2] at the European level, with a target of 80g of CO_2 per kilometre by 2020 and 60g by 2025.

Achieving this target thus presupposes a strengthening of the technological platforms at the European level, but also of the clusters between industries and R&D centres.

Europe, which is behind Japan in terms of the development of hybrid vehicles, must try twice as hard if it does not wish to face competition from heavyweight actors such as China in the field of electrical vehicles. In the absence of a powerful industrial actor in the field of batteries, the employment developments expected in the electrical sub-sector are likely to prove unmanageable.

2.5 Capital goods and machinery

In the EU27 the capital goods sector consisted of some 164,000 firms employing 3.7 million persons in 2006.

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2. Transport & Environment is a European-level environmental organisation. See: www.transportenvironment.org.

With value added estimated at 50 per cent, capital goods remain a key actor in the markets responsible for achieving energy efficiency and advanced environmental technology. The share of services is increasing considerably.

The hypotheses underlying employment potential are as follows:

– Germany (the number-one European producer in the machinery and capital goods sector) will retain, until 2020, its proportion of the average value added of 35 per cent within the EU27;
– Labour productivity will increase by 3 per cent a year (average over all sectors).
– There will be no relocation en masse to countries outside the EU27. The share of imports in upstream investments in the two sectors will not change.

According to studies by McKinsey, the market principally responsible for the achievement of energy efficiency – the market for innovative energy consumption or transformation solutions – will increase by 13 per cent a year between 2008 and 2020. It represents a broad range of areas of growth and possibilities for development of companies in the capital goods and electrical equipment sectors.

Assuming that the EU27's share in world production remains constant and that the necessary conditions for an increase in labour productivity and regional integration are met, it will be possible to create 670,000 jobs by 2020 in the two market segments in question, two-thirds of them in the energy production techniques and equipment sector.

The growth resulting from this division of labour, intensive and cross-sectoral, will represent a potential of 250,000 additional jobs, with support from the upstream investment made by this sector and the service sector, thus amounting in total to potential employment creation in excess of 900,000 additional jobs.

3. What is at stake: the definition of new industrial policies

The conjunction of the three basic parameters of a society's economy – its modes of production, consumption and social organisation – calls

for the implementation of new industrial policies that will bring about the requisite changes and redefinitions in the spheres of markets and regulations, public and private activity, taxation and finance, labour and technology, trade unions and politics.

3.1 Convergent multisectoral industrial policies

Adaptation to the imperative to reverse climate change calls for the definition of a new industrial policy framework. These industrial policies, while remaining compatible with market mechanisms, allow the construction of prospects, regularities and guarantees so as to:

– finance, in the medium and long term, the technological and social aspects of the low-carbon transition by providing industrialists with a regulatory, tax and statutory framework that has been stabilised in terms of its strategic orientations;
– organise a transition of the labour force which will, over and above its occupational dimension, entail a thoroughgoing change in wage relations that must be structured in accordance with – among other things – the new flexibility required of skilled labour;
– protect the low-carbon transition from the vagaries of financialisation of the globalised European economies to ensure that the desired ends are not jeopardised by speculation, of whatever kind.

These are the conditions that must be combined to halt the deindustrialisation of the European economies, recently aggravated by the financial crisis that escalated from the end of 2008.

3.2 How to get to grips with the risks of rapid deindustrialisation as a result of carbon leaks?

Policies to fight climate change are being introduced in a context marked by a relative weakening of European industries attributable to a number of factors, including:

– the industrial growth of emerging countries, giving rise to new competitors on the world market, first and foremost China;
– the policies of relocation to low-cost countries practised by numerous transnational European companies;

– the effects of the financial crisis of late 2008 which revealed, through its economic and social consequences, the high level of financialisation of the industrial economy of developed countries.

As is already clear, non-regulated low-carbon policies, in this context, harbour the risk of accelerating the deindustrialisation of European economies. To prevent such a situation, the new industrial policies must therefore simultaneously incorporate a defensive component, in the form of efforts to counter carbon leakage, and a proactive component, in the form of the development and generalised use of clean and low-carbon technologies.

Indeed, the application of regulations in Europe that would raise the costs of energy production through the implementation of CO_2 emission reduction policies amounts, in the absence of equivalent measures in other countries, to emitting more CO_2 for the same production. The result is counter-productive.

This is all the more true in that European industry is, in many sectors, among the least carbon-intensive in terms of emissions. This being the case, to substitute non-European production for European production will result, in most cases, in more pollution rather than less. This applies to the steel industry, chemicals, cement production and building materials, but also oil refineries.

Exposure to carbon leakage is thus the fate of any energy-intensive and globally traded industry.

The period beginning in 2013, with the auctioning of 100 per cent of electricity production emissions and the gradual auctioning of 30 to 80 per cent of the industrial sectors potentially facing carbon leaks, is thus fraught with great uncertainty. The latest European Commission proposals confirmed the danger represented by carbon leaks in the absence of an international agreement.

Steps to avoid the risks of carbon leakage without penalising the competitiveness of European producers can take two forms: either the granting of free emission rights, or adjustment at frontiers. The distribution of free emission rights amounts to the granting of subsidies that will very quickly distort competition among sectors and among domestic and imported production sites.

Adjustment at frontiers, by contrast, would place the importers and the European producers on an equal footing with regard to their carbon situation, in accordance with the WTO recommendations.

There are, however, three prerequisites for this:

– the issuing of carbon standards defined by sector in order to determine the best possible selection among available technologies;
– the creation of a European Carbon Standards Agency over and above the parties, responsible for implementation of standards;
– the promotion and organisation of carbon traceability for every product traded in the world.

Under these conditions, benchmarks based on comparisons between technologies or different forms of production can be devised using economic, social and environmental definitions that combine competitiveness, a low-energy approach and decent work.

3.3 Low-carbon R&D and the market

At the outset, the market for emissions trading rights was supposed to finance operators' investments in reducing their CO_2 emissions. Neither the first period nor the second produced this result, for several reasons, one being the over-allocation of quotas, another – and more important – one being that this mechanism does not work.

Auctioning of emission rights, scheduled from 2013, is aimed at meeting other purposes. Indeed, it appears to be, above all, a new form of revenue levied by states, with the bulk of receipts not being earmarked as a matter of priority for the financing of steps to combat climate change: the obligation to invest in low-carbon measures is to apply, it seems, to only 20 per cent of this revenue. The auctioning of CO_2 emissions thus becomes a form of revenue for states, levied on bases which lend themselves to speculation, very much resembling a covert variation on tax reform.

The fixing, by period, of the floor and ceiling prices of carbon would allow the introduction of some sort of transparency with the possibility of anticipation that could help limit speculation while safeguarding some revenue for states, particularly in order to encourage and take part in low-carbon investment and make it a priority in the field of R&D.

To date, the only technological platform that enables evaluation on the basis of the method that we will call 'pre-competitive cooperation on a European scale', is Ulcos (ultra-low carbon steel production) in the steel sector. This platform, the result of a public/private partnership, provides industrialists in the sector with a basis from which to launch the first stages of the low-carbon technology transition that must be accomplished over the coming years.

However, the carbon-emitting industries as a whole have not pooled the R&D measures required for the switch to low-carbon production, in some cases for reasons of competition among different European industrialists, in others because of a lack of resources and incentives on the part of states.

As a result of this, the research currently under way in many different sectors is manifestly inadequate. On the basis of this awareness, an initiative similar to Ulcos has recently been taken in coal technologies through the creation of the European technology platform ZEP (Zero Emission Fossils Power Plants). Even so, viewed on a global scale, this remains utterly inadequate.

How can the carbon market become an efficient and competitive tool for exiting this R&D impasse, which is rapidly becoming a handicap for European industry?

Linking the granting of emission rights to R&D expenditure on low-carbon technologies could constitute an effective solution in a competitive framework.

3.4 Capture and storage: a multi-sectoral and territorial transitional technology

The capture, transportation and storage of CO_2 appears today to be indispensable in many sectors for achieving CO_2 reduction goals in the coming years. This applies to chemicals, refineries, steel production, as well as cement, but also to electricity produced from fossil energies.

A transitional technology for use in the run-up to green technologies, this approach requires the construction of new regional infrastructures common to several industries. While capture is dependent on the spe-

cific features of each industry and remains within the sphere of competition, transportation relates, by contrast, to several industries on any given territory, and storage will come under the responsibility of the public authorities, at least for as long as it is subject to no known time limit.

The question of how to combine private resources exposed to competition with public means thus arises.

German electricity producers RWE and Vattenfall estimate total investment necessary for their CO_2 capture and storage demonstration installations at between 1 and 2 billion euros for a capacity of 450 MW or 500 MW.

In terms of strategy, these capture, transportation and storage technologies are complementary to the development of renewable energies.

3.5 The renewable energy development imperative

Among the different forms of renewable energy, four may be regarded as most promising in terms of application and development potential: wind energy (particularly at sea), hydroelectricity, solar energy (thermal solar energy, photovoltaic and solar energy concentration) and bioenergy.

Europe was world leader in wind energy for the manufacture of turbines and installations until the United States and China began to produce installations on a large scale in 2008. Projects for wind energy production at sea are proving of great interest and could achieve a capacity of 8.7 GW along the European coastline by 2015.

The investment costs per gigawatt (GW) required for constructing wind energy, hydroelectric or solar power stations by 2020 may seem high but they are no higher than the costs of conventional electricity power stations. The estimated costs for the construction of new nuclear power stations can be far higher, between 4.2 and 7.6 billion euros per GW.

All forecasts indicate growth in jobs linked to renewable energies during the coming decades. The high level of investment channelled into increasing the capacities of renewable energy will have as a corollary job growth in engineering, capital goods and machinery and other sectors.

4. A fair social transition and the role of social dialogue for a low carbon industrial Europe

Low-carbon policy did not cause any restructuring entailing jobs losses during 2000–2100. In the future, however, the low-carbon outlook is bound to contribute to destabilisation of the employment situation in the carbon-intensive sectors.

Low-carbon investment, similarly, will shape the employment of tomorrow and will inevitably lead to the loss of existing jobs.

The employment issue must be examined in two respects:

– first, the question of the transition of existing jobs and their characteristics in light of tomorrow's jobs;
– second, the creation of jobs associated with horizontal policies in the fields of (renewable) energy forms, energy efficiency (energy-efficient building products and materials, insulation materials, condensing boilers, heat pumps, thermal regulators) and industrial processes (speed variators, cogeneration) or transport (electric vehicles) and intelligent networks (Smart Grid).

A fair social transition is essential in order to retain competitive industries in Europe, and will be made possible by anticipating the retraining needs of the many workers involved. This will be manageable provided that the framework in which it is conducted:

– examines the question of the quality and location of the jobs concerned: even if, in some sectors – such as renewable energy, hybrid engines and new infrastructures – the employment balance sheet is positive, there is absolutely no guarantee that these jobs will be created in Europe and that they will be skilled jobs;
– defines the frameworks of social dialogue that must of necessity be put in place: the predominance of transnational rationales in company strategies requires the building of countervailing powers that allow democratisation of the strategic choices for employment and for the societies of tomorrow. To this end, there is a need to create the new institutions that will allow debates to take place and enable the different actors to put forward their points of view and their interests, in order to achieve a consensus in which industrial activity and jobs are integrated into the life of the regions;

– defines the place of public authorities, the state and local authorities in financing occupational transitions and infrastructures.

On the basis of the lessons learned from our studies (Syndex 2009 and 2011), we are attempting to help social partners identify existing and possible common actions at European level in order to maximise opportunities and minimise the negative effects of national strategies to combat climate change on employment.

4.1 The role of social partners in driving the change towards a new low-carbon economy

What are the main factors driving the change?

The first factor comprises energy-efficiency policies. Social partners and the public authorities, whether together or each in their separate capacities, have undertaken to become involved in numerous initiatives designed to enable gains in energy efficiency in the majority of European countries.

In most cases, these initiatives come from social tripartite institutions that seek to combine energy efficiency, employment and new qualifications. The building and public works sector is the first to have found ways of combining these two goals, as in the case of the 'employment/environment alliance' set up some time ago in Germany but also more recently in Belgium and Romania, on the initiative of the social partners.

There exist, however, other initiatives, showing that this approach can be applied to other sectors (for example, the resource efficiency network in Germany), that it can be trans-sectoral and focus in the first instance on the workplace (green workplaces in the United Kingdom). Special mention should be made of the Programme for Energy Efficiency in Sweden, which combines energy efficiency for high-energy intensity industrial sectors and staff training.

Over and above what can be achieved with vocational training, energy efficiency can also be a means of increasing firms' competitiveness and financing less widespread measures that support purchasing power (ecochèques and a fund to reduce overall energy costs in Belgium) or seek to improve occupational health (Wittenberg initiative in the German chemical industry).

A second analysis stresses the macroeconomic dimension (industrial policy). Three countries – Portugal, the UK and Denmark – have launched centralised initiatives, supported by the social partners, in the field of renewable energy and low-carbon policies such as CO_2 capture and storage, which is proving to be a transition technology suitable for multi-sectoral application over whole regions or countries. Another important initiative here is the scheme to turn the Copenhagen shipyards into an offshore wind energy production centre (Lindoe centre).

The stress on renewable energies means that the new energy situation has, in several countries, led to job creation and job transformation initiatives with explicit demand, within the framework of a developed social dialogue, for the creation of large numbers of new and quality jobs.

In parallel, local authorities are implementing decentralised industrial policies in close association with the social partners, such as the 'growth forums' in Denmark, 1,000 projects conducted by the regional and local authorities in the Portuguese cities of Evora or Viseo, or the city of Berlin which is developing local programmes with new energy technologies.

A low-carbon industrial policy and preventing carbon leakage, which would affect the globalised industries established in Europe, are essential.

This policy must also give time to existing precompetitive R&D policies, such as the Ulcos project (ultra-low carbon steel production) in the steel industry, financed by a public/private European partnership, governed by the social partners and the European Commission and intended to halve carbon emissions in the sector (by tonne of steel produced) over the next twenty years.

Indeed, even though low-carbon policies have not yet been the cause of restructuring leading to job losses, there can be no doubt that the expectation of such developments serves to destabilise the main industries concerned and has already had a marked negative impact in terms of the localisation of investment and employment in Europe.

4.2 Impact of the crisis

First of all, tripartite concertation is fairly well developed on the basis of the awareness – shared by employers, public authorities and trade un-

ions – that a return to economic growth can be accelerated by the green economy insofar as it is capable of creating jobs. Thus, in the early phase of the crisis, particularly in the new EU member states, we witnessed a development of tripartite concertation on green jobs in the context of the need to fight pollution and climate change – the two being frequently confused – as a response to the crisis.

It quickly became apparent that the impact of the economic crisis and the rescue of the financial system by nation-states had pretty much exhausted the available resources and that, as a result, there remained little room for financing support for the economy. The readjustments were different from one country to another and financial situations were more or less tense, and indeed extremely harsh for some countries. This resulted in a period of confusion and disappointment for some social partners and of questioning for others, depending on their expectations.

However, social partnership gave rise to some positive and unprecedented proposals, the originality of which is stressed by the social partners, who put all their efforts into this process. This applies to Bulgaria, Romania and, to some extent, to France, even if the Grenelle de l'Environnment (environment round table) had not been halted in quite such a brutal manner.

4.3 Social partner consultation for a new growth model

This unfavourable experience is likely to weigh down on the future, unless the work can be resumed without too much delay, for it will have shown in several European countries that the low-carbon transition is serving as a cover for underlying dynamics of broad social concertation, bringing together a wide range of public and private actors, governmental and non-governmental, whether they are working in specific or pre-existing institutions.

At the same time, it has shown the value and strength of the awareness-raising and information work undertaken by the social partners among their members. This work which we describe as unilateral – because it is subject to the initiative of each organisation – is today being continued in many different ways and must not be underestimated in terms of its capacity to provide a foundation for future discussions on these measures once the immediate financial constraints have been lifted.

It is rather an original scenario, after all, when social partners and NGOs are invited to discuss and propose measures for economic revival and job creation within a macroeconomic framework, and in this respect the low-carbon economy has already shown its potential for social creativity.

From this standpoint, bipartite social dialogues, still set, as they are, within medium- and long-term national policies, have a share in this originality in which economic democracy contributes by coming up with initiatives in the areas of industrial policy, energy efficiency, vocational training, jobs and working conditions.

In terms of the number and intensity of initiatives, the situation differs a great deal from one country to the next, with countries such as Germany and Belgium showing that they are full of ideas, in contrast to the great majority of cases studied.

5. Conclusions

The emphasis placed on ways in which policies designed to combat climate change can simultaneously serve as anti-crisis policies has enabled instances of active social partnership and social dialogue to see the light in numerous European countries, particularly where sectoral distribution of greenhouse gas emission rights has taken place, but also for the purpose of reaching the targets set.

By contrast, 'adaptation to climate change' is a topic not much discussed within social partner forums or in their contacts with government bodies.

However, the studies do stress the likelihood of widespread job losses in some sectors, such as tourism and agriculture, as a result of climate change. The challenge of providing a steady flow of investment to improve working conditions and occupational health and safety guarantees has been barely addressed, even though such investment would also have the advantage of attracting skilled workers into these sectors where working, health and safety conditions frequently leave much to be desired, as stressed by the UNEP-ILO study (2009).

Thus, the risks and opportunities entailed by the low-carbon transition with which workers and employers will be faced need to be managed in

such a way that they do not worsen the situation of the weakest members of society. This goal is being pursued in France by the Villes-Emploi initiative.

The transition to a low-carbon economy does not signify only finding green job alternatives for workers affected by the low-carbon transition, but also training skilled workers, promoting a constructive social dialogue and raising employers' awareness and understanding of these subjects.

To achieve this goal, initiatives on vocational training – over and above energy efficiency – represent a powerful instrument for the creation of new low-carbon jobs, including jobs for the workers made unemployed by the transition and the transformation of existing jobs. The new skills must be identified, as shown by the Romanian 'competences cartography' initiative, the Portuguese experiment with a 'new skills agency' and the attempts made in Spain to anticipate the inevitable changes to come. Some countries have already embarked on structured actions in the field of vocational training, such as Denmark and Germany, which have incorporated low-carbon programmes into their systems.

We are, nonetheless, aware that tools needed to anticipate the low-carbon socio-economic transition are sadly lacking in all the countries of Europe. We can only urge the social partners to discuss these new tools, which will increasingly be essential.

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