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Working conditions in "green jobs": Women in the renewable energy sector

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WiRES (Women in Renewable Energy Sector) is a project about women and green jobs. It was implemented in 2009 and 2010 by Adapt, the Association for International and Comparative Studies in Labour Law and Industrial Relations, in cooperation with its partners: the University of Szeged (Hungary) and the Union for Private Economic Enterprise (Bulgaria). WiRES' main objective was to investigate the role of social dialogue in boosting female employment rates and improving working conditions of women workers in the renewable energy sector (RES) in Europe.

The idea of the project stemmed from the analysis of the impact of the new environmental regulatory framework – at a European and national level – on employment and the labour market. The Climate and Energy Package, adopted by the European Union (EU) Parliament and Council in October 2008 (European Parliament and Council of the European Union, 2009), set new binding standards aimed at tackling climate change. One of the ambitious objectives is to increase the use of renewables (wind, solar, biomass, etc.) to 20 per cent of the total energy production by 2020.[1] The production of energy from renewable sources is expected to have an exponential occupational potential; the European Commission estimated that new energy jobs will increase up to 2.5 million in 2020 in the EU alone, with 60–70 per cent of the workforce engaged in manufacturing, engineering and installation services, and the remainder in agriculture. A qualified workforce, involving specific skills for renewable energy, will account for about 30 per cent of total employment, with the rest of the workforce exploiting specific skills and competencies already acquired in other industrial sectors (D'Orazio, 2009). The new environmental legislation is also expected to significantly affect production methods and processes. On the labour demand side, the so-called "job churn" effect is likely to be experienced, across sectors and within the same industry. New jobs will be created: some occupations may be replaced and others will disappear without any replacement; yet more will undergo changes in job content, required skills and work methods. This requires a well-managed restructuring, so that the competitiveness of enterprises is maintained and employment is preserved, and the transition of workers to other jobs of equivalent or even better quality is facilitated.

Given this context, the research question that inspired the WiRES project was whether social dialogue and industrial relations can support the restructuring processes related to the implementation of EU climate change policies, turning them into a driver for the creation of new and better employment opportunities not only for men but for women as well. Female employment, in fact, remains a challenging issue in many European countries. Historically, women have been more affected by underemployment than men and have also tended to be concentrated in more precarious types of jobs (Eurostat, 2010).

1. In 2009, the share of renewable energy sources in final consumption was around 11.7 per cent (Eurostat, June 2012).

In addition to this, a lot remains to be done in terms of the *quality* of women's participation. This includes issues surrounding the gender pay gap, horizontal and vertical segregation, and the organization of working time and work–life balance. According to Eurostat, in 2009, women's gross hourly earnings were on average 17 per cent lower than men's in the EU27. The gender pay gap extends well beyond the question of equal pay for equal work (EC, 2010a), as it encompasses several other aspects: the way women's competences are valued compared with men's within a firm; horizontal and vertical segregation; other inequalities mainly affecting women – in particular their disproportionate burden of family responsibilities and the difficulties in reconciling work with private life. When it comes to concerns of horizontal and vertical segregation,[2] there was not much positive improvement in sectors and occupations between 2003 and 2008. It is only recently that women have made advances into some jobs that were previously male-dominated (such as construction, electricity, gas and water supply, transport and communications, manufacturing and agriculture). Evidence of governmental policy efforts to feminize traditional industrial sectors in European countries is widespread but difficult to report here consistently. Among other initiatives, relevant policies have focused on developing childcare facilities and on reconciliation between work and family life. Research shows encouraging trends in the use of part-time work, job sharing, flexible hours and accounts for a narrowing of the gender gap.[3]

Institutional support has consistently improved female participation in the labour market. As an example, the Communication from the European Commission "Strategy for equality between women and men 2010–2015" (EC, 2010a) spelled out actions under five priority areas: equal economic independence; equal pay for equal work and work of equal value; equality in decision-making; dignity, integrity and an end to gender-based violence; and gender equality in external actions. The Strategy follows the dual approach of gender mainstreaming (meaning the integration of the gender dimension in all policy areas) and specific measures. The European Parliament fuelled governmental efforts to feminize national labour markets, even in times of crisis: the Resolution of 17 June 2010 on gender aspects of the economic downturn and financial crisis stressed the importance of including gender-related measures in recovery plans for all industries, and of giving women a voice in the decision-making process, by supporting their qualification in fields where they are still relatively little represented, such as IT, engineering and physics. In addition to institutional support, a good practice for the cause of the feminization of employment in industrial industries that is emanating from social

2. For definitions, see European Economic and Social Committee: *Women and Labour Market*, April 2008, p. 12.

3. See the project LIBRA, Let's Improve Bargaining, Relations and Agreements on work and life times balance, http://www.adapt.it/libra.

dialogue is to be found in the electricity sector. In 2007, Eurelectric, EPSU and EMCEF agreed the *Equal opportunities and diversity toolkit*, whereby they offer a set of guidelines and best practices for electricity companies to promote equality and diversity in the workplace (see below).

Regarding vertical segregation, the most striking feature is the low percentage of women in managerial and decision-making posts. In most Member States, women continue to be under-represented in decision-making processes and positions, in particular at the highest levels, despite the fact that they make up nearly half the workforce and more than half of new university graduates in the EU. Finally, the organization of working time and work–life balance continues to be hindered by modest changes in family roles (for instance, housework and care for children and elders are still predominantly the responsibility of women).[4]

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The green economy has scarcely been analysed from a gender perspective. One reason is that the sectors in which green jobs are mainly concentrated are characterized by female workforce under-representation (UNEP/ILO/IOE/ITUC, 2008). A second reason is that studies have mainly focused on economic investments and strategies that governments have chosen to promote more environmental friendly jobs without taking into consideration the situation of women. On the contrary, the European Parliament called on the EU and its Member States to give higher priority to green jobs for women (European Parliament, 2010a). This is a great challenge considering that the geography of the renewables sector's development varies across the EU and that female workers are strongly under-represented there. They are mostly concentrated in staff profiles such as administration and public relations. Now there is a risk that this segregation will be replicated in new green businesses and in the RES, leading to an unbalanced gender representation in certain occupations, especially in the highly technical ones. For instance, the typical value chain of a company in RES includes core businesses employing mainly engineers, technicians and specialized workers. But these are professional profiles where women have traditionally been – and continue to be – under-represented, also as a consequence of a lack of skills and qualifications in hard sciences.

The limited participation of women in the labour market and the challenge of equal opportunities promotion (such as fair treatment, recruitment, equal access to employment, gender pay gap, career paths and family-friendly policies) are likely to represent a relevant bargaining ground in eco-industries like renewables. Hence, it could be argued that restructuring processes related to the enactment of climate change policies could turn into a driver for the promotion of new and better employment opportunities for women too, especially in new Member States and other specific geographical areas,

4. European Commission: *Men and gender equality: Tackling gender-segregated family roles*, March 2010.

where women are over-represented in low-paid jobs. Thus, as WiRES research points out, a possible role for social partners and stakeholders would be supporting the transition to low-emitting economies by guaranteeing that female workers, typically employed in services, do not lose their jobs. Similarly, women who have spent a long time out of the labour market could be involved in information and awareness-raising activities, as well as being targeted for educational and training opportunities for requalification, promoted jointly by local institutions and social partners. Therefore, though RES can be part of the solution to environmental problems, it is also true that there are still challenges on the front of female employment, from access to the labour market and their working conditions to the safeguarding and promotion of equal opportunities, also taking into account the traditional prevalence of the male workforce in the energy industry. Social dialogue at the European, national and company level can help in preventing or limiting possible negative social consequences of change. In the broader framework of the restructuring processes linked to climate change policies, collective bargaining can play a crucial role in preparing workers (both women and men) and companies to cope with current and future labour market, environmental and gender-related challenges.

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WiRES' findings and outcomes

First, the WiRES project contributed to increasing awareness on gender issues in green jobs among social partners,[5] institutions and scholars, in many countries and among international and EU institutions. As an example, the European Parliament emphasized WiRES' core issues in its Resolutions on the negative impact of the crisis on women workers (European Parliament, 2010a) and on the need to give higher priority to green jobs for women, suggesting that the European Social Fund finances will be used for training projects in areas such as renewable energy (idem, 2010b).

Secondly, WiRES offered a contribution to enhancing studies on the impact of climate change policies on the labour market. Most of the existing

5. During the WiRES project, a consultation among social partners operating in the energy sector, at a national and European level, was launched about the role of social dialogue in initiating and influencing gender-oriented policies and practices in the field of renewable energy. Unfortunately, apart from the British employers' and trade unions' representatives and Eurelectric officials, very little feedback was received. The WiRES research team regrets to record limited support from the European Trade Union Confederation (ETUC) for the whole project. Nevertheless, having considered the decentralization trends in collective bargaining at a European and national level in the EU Member States (EC, 2011), further research might include interviews with social partners' representatives at enterprise level (instead of or in addition to national policy officers), although this would require greater efforts and time to ensure representativeness of the analysis.

literature builds on the assumption that an increase in green jobs flows from the positive relationship between environmental policies and the expansion of the renewable energy sector. Nonetheless, empirical research is not univocal about this; the lack of a shared definition of green jobs (UNEP/ILO/IOE/ITUC, 2008) and the coexistence of different approaches to data analysis hamper a reliable quantitative and qualitative assessment of the occupational effects of the green economy. Most studies do, however, conclude in favour of a neutral or slightly positive assessment, suggesting that negative effects are less likely to occur.

As far as the comparison between the traditional energy sector and the renewable energy sector is concerned, a study issued by UNEP in 2008 shows that, compared to fossil-fuel power plants, renewable energy generates more jobs per unit of installed capacity, per unit of power generated and per dollar invested. Despite such a job creation potential, women may face challenges in accessing green jobs in RES, which tend to concentrate in traditionally male-dominated occupations, and also because women often lack the necessary skills, qualifications and experience. Moreover, unlike the United States' labour market, where green jobs may also be viewed as "green-collar jobs",[6] European trends suggest that green sectors do not curb job polarization (i.e. low-paid unskilled jobs and highly skilled occupations). The limited research on the subject[7] also reports that the energy sector has a highly masculine image, based on a stereotype about women not being technologists and not capable (even when provided with appropriate support) of building, operating and maintaining sophisticated technologies. This idea seems to be reflected in the workforce gender composition in the energy sector: the share of female technical staff is at most 6 per cent; it is about 4 per cent in decision-making positions, and in the top management positions the share is less than 1 per cent. In contrast, other studies have argued that women typically demonstrate more inclination towards green issues than men, therefore presenting a more fertile terrain for female employment (OECD, 2008).

Thirdly, WiRES argued that social dialogue could play a role in easing and possibly shaping the transition towards a greener economy in renewables; even though there is still a lack of specific social dialogue processes and structures in RES, trade unionists and employers' representatives could support

6. According to Pinderhuges, "green-collar jobs" represent an important new category of workforce opportunities because they are relatively high-quality jobs, with relatively low barriers to entry, in sectors that are poised for dramatic growth. The combination of these three features means that cultivating green-collar jobs for people with barriers to employment can be an effective strategy to provide low-income men and women with access to good jobs, i.e. jobs that provide workers with meaningful, community-serving work, living wages, benefits, and advancement opportunities (Pinderhuges, 2007, p. 1).

7. Major obstacles to research advancement are a lack of gender-disaggregated data and of EU-wide indicators on women and the environment.

women's access to RES in different ways. Although it is part and parcel of the overall energy sector, the renewable energy sector needs to be addressed with proper instruments, owing to its expanding production capacity. This also means that trade unionists and employers' representatives should be trained to cope with the problems related to the emergence of new jobs and to offer a range of viable solutions.

Firstly, a way to lower access barriers would be to promote education, training and skills development opportunities for women, who would otherwise face a lack of the qualifications, skills and expertise necessary to benefit from green jobs opportunities. OECD data show that women are still underrepresented among graduates in science, technology, engineering and mathematics, while vocational training programmes continue to be considered as male-oriented options. Qualitative interviews, conducted within the scope of WiRES, suggested that occupational requirements in renewable energy jobs (e.g. international mobility and experience in the electricity sector) tend to exclude women. Skill needs analysis and forecasting, as well as higher and updated qualifications[8] are required to increase and adapt the current and future vocational skills of the workforce, thereby contributing to close the current skills gap.

Secondly, social dialogue can tackle organizational hurdles, in terms of working hours, childcare services and the culture of organization (EMCEF, Eurelectric and FSESP, 2007), that today cause women's scant interest in this sector. In particular, if long working hours or shift turns are requested (e.g. for PV cells manufacturing), some measures and innovative working arrangements are needed so as not to disadvantage working parents. Women with childcare responsibilities usually face significant difficulties in combining work and family life and this is often a barrier to their career progression. As a consequence of the unequal care burden and the inability to prioritize income commitment within the family, women will search for shorter and more flexible working hours. The frequent result is their reluctance to accept occupations with high or irregular working hours and workload, with a consequent re-segregation into occupational niches that tend to be more hour-friendly. In some cases, the need for shorter working hours leads to part-time work, which, however, is likely to further restrict the choice of occupation. Moreover, formal childcare services are often unavailable, unaffordable or of dubious quality. Thirdly, social partners can work towards reducing the gender pay gap; mandatory pay audits could be introduced through collective bargaining, in order to inject transparency in relation to pay systems, thus enabling employees and unions to engage in deliberative learning processes with employers over narrowing the pay gap.

8. This would allow skills development to tie in directly with policies and investments, as reflected by the experiences reported by Ecorys (2008) concerning the identification of skills analysis methodologies.

Fourthly, the WiRES study also pinpointed the challenges ahead for social dialogue.[9] A decade of discussion and debate on the transition to a low-carbon economy and its impact on the labour market has increased awareness about the importance of accompanying these processes through social dialogue and social partnership.[10] Building on previous knowledge, WiRES argues that social partners are expected to play three complementary roles in easing and somehow shaping the ecological conversion of the economy:

1. Social partners can be key players in influencing climate change and environment-related policy-making, and in supporting more sustainable production processes.[11]
2. In order to make the shift to a low-carbon and sustainable society as fair as possible, social partners are called to promote the conditions for decent jobs, primarily in terms of health and safety, fair wages, greener workplaces, gender equality and work–life balance.
3. While guaranteeing equal opportunities and overall labour rights in green jobs, social partners are expected to take action in governing the green labour market, at the local level. They have the opportunity to create the conditions to support human capital development and to facilitate labour demand and supply matching, acting as a source of information about the potential – but also the risks – of green jobs. In this connection, social

9. The present paragraph is the result of the joint work of Lisa Rustico and Paolo Tomassetti, within the scope of the WiRES project.

10. One of the latest Commission staff working documents on the functioning and potential of European sectoral social dialogue (EC, 2010a) reaffirms social dialogue as "one of the pillars of the European social model, and as a tool of social cohesion and resilience".

11. Remarkably, the electricity sector has played a major role in supporting the shift to the production of clean energy, in the field of renewable energies. For instance, Eurelectric, the European social partner for the electricity industry, published the *Eurelectric Environmental Guidelines* in 2003 and, in 2004, launched the Roadmap for Sustainable Development, an initiative aimed at providing its members and staff with an approach to the core sustainable development values that should guide the organization's strategic choices, the commitment to resources, activities and publications. Most recently, Eurelectric issued its *4th Environment and Sustainable Development Report* (Eurelectric, 2010), which shows trends in environmental performance and the significant emission reductions made by the electricity industry during the last two decades. The report contains a special feature on Power Choices, a project that sets out Eurelectric's vision on how to establish pathways to carbon-neutral electricity generation in Europe by 2050 (idem, 2009). As for the gas sector, Eurogas has so far issued as many as 12 papers on the role natural gas plays in a sustainable energy market, such as Eurogas Views (S/EUR)/87/806) on the Commission strategy paper for reducing methane emissions (COM(96)557), the Eurogas Comments (S/EUR/97/924) on the Commission communication on the energy dimension of climate change (COM(97)196), *Climate change – The road to Kyoto* (COM(97)481) issued in 2007 and the 2008 Position Paper on the role of natural gas in a sustainable energy market. On the union side, for instance, in its 2006 energy policy the European Mine, Chemical and Energy Workers' Federation (EMCEF) underlines the need to promote renewable energies as they are essential to guarantee supply security in Europe.

partners can take initiatives for workforce training and development programmes, as well as for dealing with future occupational, training and professional needs.

Despite the positive future prospects and the possible room for manoeuvre brought about through social dialogue, WiRES recorded that sustainable energies remain at an early stage of development, especially in comparison to the energy sector as a whole. The renewable energy sector, in fact, is still playing a secondary role within the overall energy sector, which continues to be characterized by higher investments in non-renewable energies. This entails the following effects at a national level:

1. In European countries, there are no agreements in place to cover this sector as such.
2. It is rare to find specific social dialogue experiences in the field of alternative energies.
3. Proper gender-oriented initiatives have not yet been implemented, thus undermining the creation of a gender-friendly sector as described above.

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These are the reasons why the role of social dialogue is considered to be vital in preventing gender discrimination from spilling over into the renewable energy sub-sector.

The energy sector is currently covered by four European Sectoral Social Dialogue Committees, namely chemical industry, electricity, extractive industry and gas.[12] The European Sectoral Social Partners have made steps forward to promote a "fair" energy market, although proper social dialogue initiatives for the renewable energy sector have not yet been put in place. In fact, social partners are mostly inclined to discuss cross-sectoral issues like demographic changes, restructuring, corporate social responsibility, health and safety, gender equality and work–life balance. This should be considered an efficient way to make their national affiliates familiar with the European policies and, at the same time, to facilitate the implementation process of those cross-industry social policies developed by cross-sectoral European social partners, such as the agreements and framework of actions on Lifelong Development of Competencies and Qualifications (2002), Work Related Stress (2004), Gender Equality (2005) and Harassment and Violence at Work (2007).

Looking at the EU Member States, the renewable energies landscape at a national level refers to four industrial fields included in the overall energy sector, namely the chemical industry, gas, electricity and water, the exception

12. The WiRES research did not take into account social dialogue within the extractive industry, which has not been considered representative of the renewable energy context.

being the extractive industry. Renewable energies are therefore covered by at least two different collective agreements, i.e. the Collective agreement for the chemical industry, as chemical products are used in many green technologies, and the Collective agreement for utilities or, where applicable, services (gas, electricity and water). Moreover, several companies operating in the field of renewable energies fall within the Metalworkers' collective agreement, as a result of their particular activities. As a consequence of its wide scope, the renewable energy sector is subject to different regulations. Indeed, it could be defined as a cross-industry sector. Consequently, the lack of a delimited sector regarding alternative energies leads to the absence of dedicated social dialogue initiatives. This can be seen as a paradox, since the renewable energy sector does exist but it is not managed with the proper tools.

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According to the European Commission (EC, 2011), social partners at a national level mainly engage in unilateral lobbying actions towards public authorities. Employers are concerned with the opportunity costs of different energy policies; they also require investments to export green technologies and incentives to adopt sustainable energetic policies at firm level. Unions, for their part, have expressed their concerns about the following topics: new skills for new jobs, investments for the creation of new jobs and infrastructures, membership in new sectors. Joint actions are rare, the only exceptions being recorded in Austria, where social partners expressed their views on the Action Plan on Environment and Economy, and in Germany, where social partners played an active and synergetic role in the debate that has led to the abandonment of nuclear power. The Commission also reports the paucity of social dialogue tripartite structures that have addressed the issue of employment impact of the green economy. Among the latter, one finds the Dutch Social and Economic Council, the Belgian Central Business Council and National Labour Council and the Spanish Table on Climate Change.

A third observation relates to the scarcity of experiences on firm-level bargaining regarding green jobs and, more generally, climate change. Spain is an exception, as energy efficiency has been included in the guidelines for secondary bargaining. Belgium stands out as well for the 2009 agreement on "ecocheques". Nevertheless, the number of supplementary company level agreements in the field of environmental and energetic policies is increasing.[13] Fourthly, European social partners at the cross-sector level have included climate change in the joint action plan for 2009–2010 and they have also promoted a joint study on the occupational dimension of policies for climate change. Meanwhile, at a sectoral level, the green economy is debated in eight

13. The European Commission reports two best practices: the Italian national collective labour agreement of chemicals, which broadens the competences of worker's representatives in charge of health and safety to environment; the British Trade Union Congress, which, in 2010, introduced the so called "green reps", company level unionists in charge of monitoring the implementation of energetic policies and support programs to shift to a greener economy.

of the 40 Committees for European Sectoral Social Dialogue (agriculture, chemicals, electricity, mining industry, iron, wood).

The 2009 report issued by the Dublin Foundation (Eurofound, 2009) shows a number of results. Firstly, there are a lot of examples of tripartite structures dealing with green issues, ranging from the Environmental Councils and ad hoc Committees established in Denmark and Finland, to the Romanian National Standing Committee on Sustainable Development and the Slovenian Council for Sustainable Development. Elsewhere, in Spain, social dialogue on green issues is carried out within the framework of the country's standard tripartite social dialogue structures and is linked to the debate on the modernisation of the economy. The report also shows recent development in France where a range of ad hoc working groups have been created and the Economic and Social Council *(Conseil économique et social)* has now become the Economic, Social and Environmental Council *(Conseil économique, social et environnemental)*. Secondly, there are a number of examples of bilateral dialogue on green issues between management and labour. In Denmark, for instance, a bilateral initiative called the Energy Camp brings together social partners and businesses associations to develop practical initiatives and identify common goals on environmental and climate change issues. In Norway, the trade union confederation (LO) and the Confederation of Norwegian Enterprise (*Næringsli ets Ho edorganisasjon*, NHO) published a joint statement encouraging their members to join green campaigns and highlighting the importance of challenges related to climate change. Thirdly, both employers and trade unions have been active in raising awareness of the major green issues among their members, also by means of information and training programmes for their members on green issues (see Annex 1). On the employers' side, activities focus on issues related to compliance with environmental legislation, reducing emissions, enhancing competitiveness in the green economy, and making the most of the business opportunities presented by the new green economy. Among other things, the following examples have been reported: the Malta Chamber of Small and Medium-sized Enterprises (GRTU) has organized a number of public meetings to explain the obligations and opportunities arising from the EU Directive on waste management and the Directive on waste collection of packaging to its members; in the United Kingdom, the Confederation of British Industry (CBI) holds regular events on issues related to climate change for its members; an innovative competition organized by the Association of Building Entrepreneurs of the Czech Republic (*Svazvpodnikatelů e stavebnictví ČR*, SPS ČR) aims to inform the Czech public about construction projects that are environmentally friendly, but also modern and affordable. For their part, trade unions encourage social dialogue, negotiation, seminars and overall dissemination of good practices within companies or public organisations on the subject of environment, as well as promoting the use of renewable energy. In this framework, this paper highlights, among other things, the following good practices: the German

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trade union federation (DGB) is providing experts to give information and assistance to local authorities wishing to carry out the energy-efficient refurbishment of buildings; the Trades Union Congress (TUC) in the United Kingdom has issued a guide for trade union representatives and members who are interested in becoming involved in green issues at the workplace. Nonetheless, the Eurofound report confirms that no formal social dialogue is yet in place that deals specifically and only with the renewable energy sector.

The role of social partners seems, therefore, to be restricted within the wider area of environmental and sustainable development. They are key stakeholders in implementing the "green agenda", although they have failed to create formal structures of social dialogue for the renewable energy sector. This means that the second role that they are expected to play – i.e. addressing the existing mismatch between skills supply and demand in the green economy, anticipating future skills needs, as well as ensuring fair working conditions for green jobs – has been overshadowed.

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As far as gender issues are concerned, a good practice originates from the European social partners representing the electricity industry. Eurelectric, EPSU and EMCEF published, in March 2007, the *Equal opportunities and diversity toolkit. Best practices guide*, which aims to promote understanding and awareness of the management of equality and diversity in the workplace. The toolkit suggests relevant policies, practices and procedures with regard to recruitment and selection, dignity at work, sexual harassment, harassment and bullying, equal pay for work of equal value, and other issues. Furthermore, the toolkit offers examples of how to promote workplace equality and a culture of diversity by providing training for staff and managers, and supporting the move of women into senior and leadership positions and into occupations in which they are under-represented, as well as mentoring, buddy and other support systems.

Besides this sector's good practices, understanding that public policy, strategic management and investments are probably not enough to support the shift to greening workplaces and productions, participatory industrial relations are needed to involve all workers in better use of energetic resources and waste reduction. Along with the information and vocational training initiatives promoted by European employers' and workers' representative associations (see Annex 1), environmental targets have become a bargaining chip in collective agreements. In this connection, another gender-neutral practice to boost all workers' participation and performance, also in traditional industries, is the "green salary", namely incentive pay measures linked to green targets such as energy efficiency and energy conservation (see Annex 2).

Despite good practices, a lot remains to be done, especially with regard to gender equality challenges outside companies' boundaries, mainly in access to the labour market, job placement and the replacement of older women workers. Generalized gender policies in the specific renewable energy context do indeed remain limited and are, at best, tackled at the company level. So

far, energy companies[14] have mostly been (at least from a quantitative point of view) smaller independent ones (Sustainlabour, 2010; Ires, Filctem Cgil, 2010), which probably have no agreements with the trade unions, especially the new generation businesses and in countries where company or territorial social dialogue is not fully developed. In these contexts, experiences of social dialogue are likely to be limited to the core issues of employment law, while gender equality is not addressed in any systematic way.

Conclusions and policy recommendations

According to the WiRES project, social dialogue in the renewable energy sector is still weak. The renewable energy sector is definitely part and parcel of the overall energy sector. However, it requires proper social dialogue support to fully develop its dynamism and employment potential. A number of conclusions flow from the fact that the traditional energy and the renewable energy sectors are represented by the same social partners, both at the national and international levels. This, perhaps, could also explain some considerations pointed out by Eurofound (Eurofound, 2009):

1. In some countries, employers still fear that transition to a greener economy will increase costs and therefore reduce competitiveness.
2. While in some countries trade unions see the emergence of new green industries as a recruitment opportunity, in other countries they fear the decline of more traditional industries with strong trade union membership and recognize that it may be harder to recruit members in new green industries.

Therefore, there seems to be a sort of competition between the two sectors, which the national and European environmental policies contribute to amplify. This is likely an important reason behind the scant development of social dialogue in the renewable energy sector.

The roadmap for change in this area should move from this basic consideration: although the energy sector continues to be characterized by higher investments in non-renewable energies, the production capacity of alternative energies is increasing. This is expected to produce two effects:

14. Energy companies that operate in the EU market can be divided into two groups. The first group includes traditional big energy companies (e.g. Shell, Eni, Total, Statoil, etc.), which are developing their capacity to take advantage of the opportunities offered by the renewables sector. These companies continue to invest in non-renewable energies, in order to face the need to modernize the transmission and distribution grids as well as investing in the construction of new low-carbon generation power stations. The second group includes new generation businesses specifically set up in the field of renewable energies. All these companies interact with a universe of smaller enterprises, encouraging development in the green economy.

1. The increasing relevance of the renewable energy sector within the overall energy sector. Social partners in the renewable energy sector will have more opportunities to make their voice heard within the energy landscape in the years ahead.
2. Self-determination of social partners within the field of renewable energies. Collective bargaining, as well as new distinct national social dialogue structures, strictly relevant to the emerging employment issues related to the green economy, will start to be arranged in the coming years. This will allow new social partner organizations or sub-sections of existing organisations to fully accomplish their role, widely described in this article, within companies and, notably, in the labour market.

In order to make the sector more accessible and more attractive to women, social partners are called upon to support, first of all, vocational education and training (VET) in parallel with the anticipation and forecasting of future skills needs for WiRES. Secondly, they are called to play a key role in promoting gender mainstreaming for policies to make the renewable energy sector more women friendly by guaranteeing a better reconciliation between work and private life. Thirdly, awareness and information about the opportunities offered by a green career might help fighting stereotypes.

Taking into consideration the results of the research, the WiRES team proposed a set of policy recommendations for social partners to make the renewable energy sector more gender-friendly and improve the general working conditions not only for women but also for men employed in RES.

Devising ad hoc social dialogue processes and structures for RES

Ad hoc social dialogue processes and structures covering the renewable energy sector as such might be a first step to making the transition towards a green economy an opportunity for women workers as well, for two main reasons. Firstly, they would help to overcome the conflicts of interest faced by employers and trade unions in the traditional energy sector when coping with issues related to the greening of the industry (Eurofound, 2009). Secondly, they are needed considering that new markets (renewables) require different and proper employment policies compared to those already set up for existing labour markets (traditional energy). New actors could promote direct actions and tools, such as sectoral specific committees, ad hoc lobbying towards relevant institutions, joint projects, bilateral bodies, to negotiate on gender issues and female employment, without having to compromise with the claims of the traditional energy sector representatives, while also being able to focus on the specific new sectoral needs. This would not limit the focus on women in the traditional energy sector, as the parallel creation of new actors

and processes would limit the competitiveness among social partners. In any case, gender mainstreaming should inform all policies in all sectors, without forgetting that gender issues (e.g. work–life balance) concerns men as well as women. At the same time, we should bear in mind that participative and bilateral bodies (more than collective bargaining) are likely and prone to address gender issues, due to their dynamic nature and function, contrasting with the conflicting nature of collective bargaining negotiators.

Promoting education, training and skills development

Social partners could play an important role in decreasing the mismatch between labour supply and demand in the renewable energy sector and, in general, in the green economy. The requirements for some of the most widespread occupations in renewable energy tend to exclude women, as they often lack the skills and expertise needed for these jobs. Endeavours to close the current skills gap and anticipate future needs are essential for a transition to a low-carbon economy. Given this scenario, social partners could support educational institutions in VET curriculum design, as well as in organizing multidisciplinary learning environments within companies in RES. This underpins a lifelong learning perspective, which is essential in shifting towards a green economy. Good practices are reported in Annex 1.

Addressing specific gender-related issues such as work–life balance, the gender pay gap, occupational segregation and the glass ceiling

Among the existing barriers for female participation in the labour market, a relevant role is played by flexible working hours, childcare needs and the culture of an organization. Therefore, social partners are requested to promote gender mainstreaming for policies in RES. These policies could be integrated by the promotion of a more environmental friendly behaviour within companies.

Removing stereotypes

The results show that the renewable energy sector has a highly masculine image, which deters women. Moreover, it is reported that there is a stereotypical view that women are not technologists and that they are not capable (even when provided with appropriate support) of building, operating and maintaining sophisticated technologies. Social partners should play an active role in erasing these stereotypical views by means of information, training, mentoring and coaching, including psychological support services.

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Annex 1
Initiatives by the social partners at European level in the field of vocational training and retraining in the green economy

Country	Practices
Austria	National and local governments have launched a joint initiative, known as Masterplan Environmental Technology, which aims to set up a joint strategy for policy-makers, business and relevant research institutions to improve the competitiveness of the Austrian environmental technology industry. The government is looking at reforming the country's vocational training scheme, in order to meet increasing business demand for skilled workers in the environmental technology sector. On the employer side, courses are being run by the Austrian Federal Economic Chamber to help members reduce energy consumption.
Belgium	Regional plans: research and training in green technologies. National social dialogue structures – namely, the National Labour Council and the Central Economic Council – are currently active in environmental issues, and are preparing a joint statement on green jobs. An innovative scheme exists in Belgium, whereby long-term jobseekers are trained to carry out energy assessments and help with advice on energy-saving measures. These people are called "energy trimmers" and help to implement energy-saving measures in buildings through "energy trimming companies", which are not-for-profit organisations. The schemes exist in all regions of the country.
Denmark	Environmental Economic Council – economic advisory body, established by law in 2007: 24 members representing trade unions, employers, non-governmental organisations (NGOs), independent experts and the Danish government.
Estonia	Much effort has been invested in raising public and consumer awareness of green issues through a variety of means – including the development of a network of local environmental education centres, the provision of training days and seminars, and the holding of national and international conferences.
Finland	The National Commission on Sustainable Development acts as an important tripartite forum where different stakeholders can present their ideas, goals and programmes, and also engage in a broad debate about ecological sustainability. The employer organization EK has published a guide on corporate responsibility, which contains tools for self-evaluation and development for companies. The construction industry branch and the biotechnology industry association Finnish Bioindustries have also published their own principles on corporate social responsibility, business ethics and sustainable development.
Germany	The Confederation of German Trade Unions and affiliates participate in two working groups – one on energy and the other on the environment – within the country's tripartite "Alliance for jobs, training and competitiveness" initiative. A joint body has been established to provide information and training to works councils on environmental protection issues. The trade union confederation, the DGB, in cooperation with the educational institution DGB Bildungswerk and the German Ministry for the Environment, Nature Conservation and Nuclear Safety, runs a project entitled "Resource efficiency in firms". The project trains works council members and employees in detecting und implementing ways to improve energy efficiency. The training is part of a programme that leads to a certified degree as an "efficiency expert". The metalworking trade union, IG Metall, cooperates with the employer association of the aluminium industry in implementing this project at workplace level.
Hungary	Regional operational programmes, provisions for setting up regional crisis-management funds to help in cases of company restructuring and to support vulnerable enterprises by providing exemptions from payroll taxes to enable companies to maintain their workforce.

Country	Practices
Ireland	The employers' confederation, IBEC, provides environmental training for members; this includes a Foundation Course in Environmental Management for managers wishing to get up to speed on current environmental performance trends, standards legislation and solutions.
Italy	The government has set up a fund to finance research projects on energy efficiency and the use of renewable energy sources in urban areas. The trade fair SolarExpo and the employment agency Adecco have developed training and retraining courses for technicians in the solar panel and wind farm industry. Under this scheme, skills that are particularly relevant to these industries are taught. The Association of Energy Producers from Renewable Sources organises company training and information courses on European and national regulations in the energy and environment sector.
Luxembourg	A conference to debate climate protection and economic and employment prospects was organized by government ministries and the Chamber of Employees in February 2009.
Norway	The Norwegian Association of Local and Regional Authorities, along with the Confederation of Unions for Professionals and the Norwegian Union of Municipal and General Employees, have organized a conference for safety representatives and trade union representatives, in order to develop their knowledge and expertise in relation to green issues. The trade union confederation, LO, and its member unions have set up courses on climate change for shop stewards.
Poland	The celebration of Earth Day, 22 April 2009, included information campaigns, educational initiatives and workshops. Government training courses are offered, in order to train technicians in environmental management, as well as in health, safety and the environment at the workplace.
Portugal	The General Workers' Union is preparing to introduce environmental issues into its training activities for collective agreement negotiators.
Slovenia	Seminars have been held for business representatives to help them prepare for legislative changes related to the green economy.
Spain	Social dialogue on green issues is carried out within the framework of the country's standard tripartite social dialogue structures and is linked to the debate on the modernisation of the economy.
United Kingdom	The employer organization, the Confederation of British Industry (CBI), highlights that skills are needed in areas such as science, technology, engineering and maths, technical competencies and a range of new business skills. The CBI makes a range of recommendations on how to increase the number of workers with these skills: these include encouraging a greater focus on such skills in schools and proposing ways to encourage education providers to work with business to meet the demand for these types of skills. The CBI has been running regular events on issues related to climate change for its members. For example, in 2009, it ran a series of three breakfast seminars on the subject of environmental legislation for people involved in property management and leasing. The TUC operates a range of courses for trade union representatives, helping them to address the following issues: identify environmental changes that affect the workplace; research and identify appropriate environmental legislation, policies and information; and identify environmental problems and opportunities for trade union action.

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Annex 2
Variable pay and ecological conversion of working environments

Energy saving and energy efficiency targets have become a subject matter of collective bargaining as they can be linked to the variable part of the salary. The *green salary* represents a strategic solution as it enables, on the one hand, businesses to involve their workforce in fulfilling energy saving and energy efficiency targets in an effective way; on the other hand, it enables employees to gain economic advantage by adopting sustainable practices (Tomassetti, 2011, 2012).

The potential of this solution, for which company-level bargaining plays a key role, has been pointed out also by an Opinion of the European Economic and Social Committee, stating: "New awareness of the need for more restrained consumption will free up resources, which can then be used for other things. Trade union agreements on measurable targets and distribution of profits among businesses and workers could be a useful way of raising widespread awareness of the importance of saving energy" (EESC, 2011).

A benchmarking research on performance pay in collective bargaining over a sample of 200 company collective agreements in Italy points out that 10 per cent of the agreements subordinate the performance bonus to the fulfilment or confirmation of environmental certifications (of products or production processes), such as IS014000[15] and Ecolabel.[16] In general, all indicators that refer to environmental sustainability targets can be integrated in the performance bonus or in other of variable pay schemes (box 1). In Italy, a bilateral agreement on energy efficiency signed in November 2011 by the major employers' association of industry and the three main trade union confederations, expresses hopes that variable pay linked to environmental targets and workers' performance to achieve them will be included in decentralised level collective bargaining agreements (Confindustria, Cgil, Cisl, Uil, 2011).

Together with traditional indicators of performance pay schemes (such as profits, productivity and quality of work), an incentive salary system linked to the energy saving targets has been recently introduced in the company agreement of Heineken in Spain, covering more than 2,000 employees. The achievement of foreseen eco-targets, including the reduction of water consumption and waste, and limiting greenhouse gas emissions produced by plants and administrative offices, awards 20 per cent of the performance bonus.

15. IS014000 is a rule issued by the International Organization for Standardization which provides the standards requirements for the implementation of an environmental management system and for the attainment of the respective certification.

16. Ecolabel is the European mark for ecological quality which awards those products and services that respect the ecological criteria established at a European level and which have a low environmental impact during their entire life cycle, from their production to their use and final disposal.

Box 1. Sample review of the indicators of the results bonus connected to environmental sustainability targets

- Level of water, electric energy and gas consumption
- Ability of a specific plant unit to differentiate waste
- Level of "riffraff" generated during the whole production cycle
- Level of use of those products with high environmental impact
- Level of sound pollution
- Ranking level in the Dow Jones Sustainability Index
- Attainment of ISO certification
- Attainment of Ecolabel mark
- Number of emissions quotas produced within the ETS system

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Among other international experiences, it is possible to observe some cases of companies that, in order to determine the performance bonus or the managerial bonus, use independent indicators – such as the Dow Jones Sustainability Index (DJSI)[17] – for measuring the environmental sustainability targets. This is the case of AkzoNobel, a Dutch multinational company specialized in the production of paints and other chemical products, which links 50 per cent of its senior managers' bonuses to the ranking of the company in the first three positions of the DJSI list of the relevant sector.

17. Independent index including 342 businesses in the world, selected among 2.500 for their sustainability. Thirty per cent of the index refers to environmental sustainability. www.sustainability-index.com.