



ACW | Adapting Canadian Work and Workplaces
to Respond to Climate Change

Just Green Transitions and Global Labour Organisations

Plus

**Case Study 1:
Social partnership and the transition to a
bioeconomy: sugar beet production in Denmark**

**Case Study 2:
Sustainable forestry in Sweden**

This report presents the findings from two research projects undertaken under the programme *Adapting Canadian Work and Workplaces to Respond to Climate Change: Canada in International Perspective* (<https://adaptingcanadianwork.ca>), based in York University, Ontario, Canada, led by Professor Carla Lipsig-Mummé and supported by a Canadian Social Sciences and Humanities Research Council Partnership Grant (2014-2022).

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A. INTRODUCTION

Global labour organisations play an active role in climate politics and, as representatives of labour, seek to shape climate strategies at the inter-governmental level. Unions' position on the climate crisis is broadly encapsulated in the call for a 'just transition' to a low carbon economy and socially and economically equitable society. After over a decade of campaigning by the International Trade Union Congress (ITUC) at the annual meetings of the United Nations Framework Convention on Climate Change (UNFCCC), just transition was included in the preamble to the Paris Agreement (2015). Working within the International Labour Organisation, the ITUC led the development of the Just Transition Guidelines (ILO, 2015), which provide a framework for managing the transition to a zero-carbon economy and implementing the UN Sustainable Development agenda. In recent years, the global sector unions too have developed proposals calling for action to address the implications of climate change in tandem with existing labour issues, such as employment rights, unionisation, collective bargaining, health and safety, and job security.

Notwithstanding the differences between unions (Clarke and Lipsig-Mummé, 2020), global labour organisations in defining climate change as a problem of the capitalist economy fundamentally challenge purely scientific and technological approaches (Rosemberg, 2013, 2020). Over the last two decades, the original just transition call to protect and compensate workers and communities impacted by climate change has evolved into a vision for a socially and economically fair and environmentally sustainable growth model, combining the two veins of action present in the trade union movement: (i) protecting workers' interests in the workplace and (ii) fighting for an equal distribution of wealth and fair future (Darlington, 2014). Yet, despite their key roles in climate politics and the impact of their interventions, with some exceptions (Felli, 2014; Stevis and Felli, 2015), global labour organisations have received limited attention in the growing academic literature on climate change and just transition. The findings presented in this report draw on two investigations carried out in 2016, and 2019-2020 with the aim of addressing this gap.

The report begins with an outline of the research strategy and methods deployed, followed by a discussion of climate change interventions of each global labour organisation investigated, focusing on the scope of their proposals, the role envisaged for labour and the kind of transformation implied by these practices.

B. RESEARCH STRATEGY AND METHODS

The aim of the research has been to identify and evaluate green transition interventions by European and global union organisations in response to climate change, addressing the following research questions:

1. What have been the interventions of selected global and sectoral European union organisations with respect to climate change and its impacts on work and workplaces?
2. What are their visions/ proposals with respect to green transitions and to just transitions?
3. How do these interventions/proposals compare to each other? Do they point to a common agenda or to contrasting pathways and visions?

Interventions by a range of global labour organisations and - given the important influence these have on the global unions - European-level union organisations are considered, including:

- International Labour Organisation (ILO)
- International Trade Union Confederation (ITUC), European Trade Union Confederation (ETUC) and European Trade Union Institute (ETUI)
- IndustriALL and IndustriALL Europe
- Building Workers International (BWI) and European Federation of Building and Woodworkers (EFBWW)
- International Union of Food, Agricultural, Hotel, Restaurant, Catering, Tobacco and Allied Workers' Associations (IUF) and European Federation of Trade Unions in the Food, Agriculture and Tourism (EFFAT)
- International Transport Workers Federation (ITF) and European Transport Federation (ETF)
- Public Services International (PSI) and European Public Services Union (EPSU)
- Education International (EI)

Data were gathered through:

- (i) A review of documents published by unions, including reports, discussion and position papers and declarations, print and online. Union websites were consulted in 2016, 2019 and again in 2020 for significant updates, and further information available has been included in the analysis.
- (ii) In-depth interviews, in 2019 and 2016, with union officers involved in the development of climate policies. The European federations (ETUI, ETUC, ETF, EPSU, IndustriALL Europe, EFBWW) were initially visited and interviewed in 2016, and their interventions incorporated onto the ACW website's Green Initiatives database¹, whilst EFFAT was interviewed in 2019. These European organisations are included in this study for their significant collaboration with global unions and role in the development of climate interventions. For instance, IUF's proposals are in the process of development, with significant input from EFFAT in a newly formed working group, and EFFAT is also involved in practical sustainability initiatives, regarded as specific enactments of just transition initiatives. BWI worked with the EFBWW in developing its proposals and PSI works closely with EPSU.

C. GLOBAL AND EUROPEAN GOVERNANCE, LABOUR AND JUST TRANSITION

The primary intergovernmental forum for negotiating the global response to climate change is the UNFCCC, established in 1992. Its annual meetings, called the Conference of the Parties (COP), bring together representatives from the signatory countries as well as environmental organisations, business representatives, unions and a host of other non-governmental organisations (NGOs). The two most important agreements to have come out of the UNFCCC process are the Kyoto Protocol and the Paris Agreement. The Kyoto Protocol was adopted in 1997, binding only 36 industrial countries and the European Union (EU) to emissions reduction targets on the understanding that the developed countries bear the greatest responsibility for the rise of greenhouse gas emissions (GHGs). The

¹ <https://adaptingcanadianwork.ca/green-initiatives-database/>

implementation rules, known as the Marrakesh Accords, were adopted in 2001 at COP7 in Morocco and entered into force on 16 February 2005 with two commitment periods, 2008-2012 and 2013-2020.

The measures introduced at Kyoto included market instruments, such as emissions trading, in effect allowing developed countries to continue emitting, offset through ‘green’ investment in developing countries. High emitters such as USA dropped out in 2001 and continued to increase emissions, prompting denouncement from other countries. The Kyoto Protocol was superseded at COP21 in Paris, where all 197 signatory countries committed themselves to reducing emissions, holding the global average temperature increase to well below 2°C above pre-industrial levels and ensuring efforts are pursued to limit the temperature increase to 1.5°C. Nationally Determined Contributions (NDCs) frame each country’s responsibilities towards reaching these commitments, reviewed by verifiable reports that feed into UNFCCC stocktaking exercises.

The UNFCCC COP meetings provide the global climate governance framework within which unions intervene. The ITUC represents the global labour movement at inter-governmental climate negotiations, whilst the ILO puts its efforts into embedding economic and social justice measures into UN Sustainable Development Goals (SDGs). The just transition framework guides their member organisations and the sectoral global unions.

C.1. International Trade Union Confederation

The ITUC is a cross-sector, global confederation of union federations, formed in 2006 with the merger of the International Confederation of Free Trade Unions (ICFTU) and World Confederation of Labour. It represents 207 million workers in 163 countries, through 331 affiliated organisations, has Asia-Pacific (ITUC-AP), African (ITUC-AF) and American (TUCA) regional organisations, and is governed by a General Council, an Executive Bureau, and four-yearly congresses. ITUC seeks: ‘the promotion and defence of workers’ rights and interests, through international cooperation between trade unions, global campaigning and advocacy within major global institutions’². This objective is pursued through activities and campaigns in the areas of union and human rights, equality and non-discrimination, international solidarity and economy, society and the workplace.

The ITUC led the development of the concept of ‘just transition’ into a strategic framework, articulated in the ILO Just Transition Guidelines (ILO, 2015) and incorporated into UNFCCC’s climate strategy at the Paris Conference following over a decade of campaigning. Since its first adoption as a strategic objective in 2006, just transition to a decarbonised economy has become a core part of ITUC’s vision for addressing social and economic inequalities through structural reform to ensure the needs and rights of all.

C.1.1. Development of the just transition framework

At the global level, initially, the call for just transition was mainly about compensating workers in industries impacted by climate action by means of support for re-training or transition to retirement, so ensuring that workers and communities do not pay the cost of industrial transformation. Equally important, it was also seen as a way to bring a social perspective to an agenda dominated by purely scientific discussions and the drive to find technologically oriented solutions to the climate crisis (Rosemberg, 2020). Just transition was

² <https://www.ituc-csi.org/>

first included by the ICTFU, the predecessor of ITUC, in its statement to the Kyoto Conference in 1997. Over the next decade, the emphasis on protecting workers and communities in environmental sustainability transitions evolved into a deeper and more political perspective on the relationship between the world of work and the environment, leading to calls to transform the economy to tackle the climate crisis and move towards an economically and socially just society.

From its founding congress in 2006, climate action has become a key campaign issue for the ITUC, with a pronounced emphasis on the links between labour, environment and sustainable development. At the 2007 General Council, a Task Force on Climate Change was created to raise the profile of the social and economic implications of climate change and the interventions implemented to tackle it. In 2008, in its policy statement to COP14 in Poznan, ITUC presented detailed ideas reframing climate change as a multi-dimensional issue with economic, social and environmental aspects and challenging the jobs versus environment dichotomy as a ‘false choice’ (ITUC, 2008: 5). Instead, it presented climate adaptation as an opportunity to transform economies and society, with just transition representing not only the interests of workers impacted by the environmental transformation but also the vision of labour for the future. The statement emphasised the urgency of climate action and equitable burden sharing and called for comprehensive policies to address the full range of challenges implied, from social protection to poverty reduction and industrial strategy to financing mechanisms. Following this, ITUC was recognised as an ‘official constituency’ and became an active participant at COP meetings alongside business representatives and NGOs.

The proposals for an equitable and planned transition, a government-led comprehensive policy framework and joint governance by social partners were strengthened in ITUC’s statement to COP 15 in Copenhagen (ITUC, 2009a). In relation to the global south, questions of social justice were at the fore, including human rights, whilst the involvement of indigenous communities in just transition plans and the right to union representation were particularly emphasised. In the same year, responding to the financial crisis, the ITUC challenged the agenda of G20 meetings, calling for regulation of the financial sector and a new economic model (ITUC, 2009b). In its second assembly on Labour and Environment in 2012, ITUC deepened its commitment to advocating a social and ecological transformation. As a result of ITUC’s sustained campaigning (ITUC, 2012a, 2012b), the Rio+20 outcome document, *The Future We Want* (UN, 2012), referred to the need to ensure workers and communities are protected in the transition to a green economy. Three years later, just transition was officially included in the preamble to the Paris Agreement, establishing climate justice, equity, employment rights and worker voice as essential elements of the transition to a zero-carbon economy. At the same time, ITUC’s efforts as the labour constituency within ILO translated into detailed guidelines for implementation at global, national and enterprise levels (ILO, 2015). With this, the concept of just transition evolved into a comprehensive policy framework for managing the transition to a zero-carbon economy.

Since 2016, the work of the ITUC on climate change has been co-ordinated by the Just Transition Centre, set up jointly with the ETUC. Within the UNFCCC process, ITUC sets out its vision at the annual COP gathering, seeks to raise emission reduction ambitions in climate action plans, maintains pressure for meeting the Nationally Determined Contribution targets, and continues to campaign for the maintenance and implementation of just transition commitments. It also lobbies national governments and employer representatives to commit to and invest in a just transition based on social dialogue, to lead national, sectoral and

enterprise level transition strategies and to establish the legal, regulatory and institutional structures needed (ITUC, 2015, 2016, 2017a, 2018a, 2019a, 2020).

Capacity building within the labour movement is a significant part of ITUC's strategy. In 2008, a training programme for unionists, Labour and Environment, was launched, coordinated by the Sustainlabour Foundation, providing training through regional organisations (Rosemberg, 2013). The proposals developed by ITUC act as a guide to its member organisations and the labour movement more generally as well as to unions whose members are affected by climate change or adaptation/mitigation strategies. ITUC also supports affiliates to develop concrete just transition plans and respond adequately to climate change-related transformations, ensuring that workers and communities are protected and benefit from new opportunities. To this end, it publicises cases of just transition and documents best practice (ITUC, 2019b), facilitates experience sharing and knowledge exchange, publishes information briefings outlining the science behind climate action, and advocates specific strategies for implementing just transition plans (ITUC, 2017b; 2018b), promoting the ILO (2015) just transition guidelines as a tool for governments, unions and employers.

In advancing its proposals, the ITUC collaborates with civil society organisations, including environmental and social NGOs, local governments, consumer organisations, indigenous leaders and communities. Examples include:

- *Producing a just transition implementation guide for businesses*, in collaboration with the B-Team, a group of global business leaders promoting a better way of doing business whilst looking after the planet and the wellbeing of people (ITUC and the B Team, 2018c)
- *Supporting national or other global sectoral unions*: for example, working with LO in Sweden and IndustriALL to reduce emissions in heavy industry, such as steel, cement and aluminium production (IndustriALL, LO and ITUC, 2019), and with ITF and IUF on marine litter, plastics pollution, toxic waste, hazardous substances and their impact on fishery workers, and plastics in food packaging (ITUC, ITF, IUF, 2019)
- *Climate Proof Our Work 2019 action day*, the first international day of action held in June 2019, involving employees initiating work-place/enterprise-based just transition plans and employers having plans for climate proofing their operations (ITUC, 2019c). Workers have a right to know what their governments/employers are planning, the impact of the transition, and Just Transition guarantees.
- *Climate Action and Jobs initiative*, launched in September 2019 at the UN Climate Action Summit, co-led by Spain and Peru, signed by 40 countries, and developed jointly by the UN, ILO, ITUC and the B-Team, and other members of the Summit's Social and Political Drivers Action Area. The initiative is a call for countries to devise national plans for a Just Transition to decent and green jobs, including measures such as: assessment of the impact of climate action, skills development and upgrading, social protection policies, technology and knowledge transfer to developing countries, enablers for businesses to adopt low carbon production processes, and mechanisms to enable social dialogue (ITUC, 2019b:8).
- *Supports school climate strikes*.
- *Part of a partnership with C40 cities*.

Since its inclusion in the Paris Agreement, just transition has been integrated into ITUC's strategic plans. The ITUC 2018 Congress called for 'all work transformations' to take place in a just transition framework with a particular focus on digitalisation, further evidencing the

ambition to have a say in shaping the future of the economy and society. Working within ILO, it has also led the development of the just transition concept into a policy framework to guide climate action, as elaborated below.

C.2. The International Labour Organisation

The ILO works within the UN system to ensure that just transition is an integral part of the sustainable development agenda. The ILO's position as an UN agency, its tripartite structure and remit are important for understanding its approach to climate action and sustainability transitions. Its core mandate is to advocate: economic and social justice; decent work; employment rights, including health and safe working environment; the right to unionisation and equal treatment; social protection and human rights; social dialogue; and internationally recognised labour standards. From this vantage point, it brings an 'employment lens' onto environmental issues and discussions.

Reviewing ILO's work on the environment, Olsen and Kemter (2013) identify three related strands of activity: addressing the consequences of environmental hazards for occupational health and safety; capacity building for environmental action; advancing the proposal of sustainable economy and society within the international development and environmental protection agenda. The first strand has a long history as the ILO's early involvement in environmental action as far back as the 1970s was informed by concerns about occupational health and safety, highlighting the impact of hazardous production activities on workers and calling for employers to take responsibility for preventing and rectifying ecological and human costs. The second element of capacity building is also evident from efforts to incorporate environmental matters in existing education and training programmes from the 1980s. The Workers' Education and Environment programme by the ILO's Bureau for Workers' Activities (ACTRAV) launched in 1989 represents a significant shift in policy focus on sustainable development and sought to raise awareness of unions and workers. Enhancing the capacity of the labour movement to actively participate in environmental protection and sustainable development continued to be a priority for the ILO's Workers' Education Programmes (Olsen and Kemter, 2013).

In the 1970s, the ILO began collaborating with other UN agencies on environmental programmes of work and through this engagement began to highlight the links between the environment, development and employment and to develop the strategic framework guiding the third strand of its activities. It has been an active participant in all UN environment conferences since Rio (1992), seeking to include employment aspects alongside environmental measures (Olsen and Kemter, 2013; Van der Ree, 2019). Since 2007, the ILO has been involved in the Green Jobs Initiative, developed jointly with the UN Environment Programme (UNEP), the ITUC and the International Organisation of Employers (IOE). This initiative produced the first comprehensive study on the emergence of green jobs, discussing the impact of climate action on workers, profiling existing green jobs, identifying effective policy measures and linking environmental change with just transition (ILO, 2008). In 2009, the ILO launched the global Green Jobs Programme through which environmental sustainability is linked with decent work and which supports sustainable development initiatives across the world.

Significant effort has been put into gathering evidence on the emerging green economy, utilised to dispel the argument that environmental protection and job creation are incompatible (ILO, 2012; 2013; 2016). The 2018 *World Employment and Social Outlook, Greening with Jobs* (ILO 2018a) furthers the evidence base, documenting achievements and projecting further significant potential for sustainable growth and green jobs.

The 102nd conference in 2013 mandated the ILO to mainstream climate action in its future strategy (Olsen and Kemter, 2013). In tandem with ITUC's campaign to have the employment and social justice dimensions of climate strategies recognised, and following the acknowledgement of 'just transition' at the Paris Agreement, the ILO launched the Just Transition Guidelines to inform climate change policies and action. The guidelines also provide a basic framework for facilitating the implementation of UN Sustainable Development Goals (SDGs) (ILO, 2018b).

C.2.1. Just transition: climate, social and economic justice through social dialogue

The just transition guidelines are underpinned by the argument that economic, social and environmental challenges are interconnected and a managed just transition to environmental sustainability can and must also address problems long-targeted by the ILO: decent work, poverty eradication, the creation of decent jobs, social protection, and employment and human rights. This, in a nutshell, is also the perspective that the ITUC pursues under the banner of 'just transition', a vision not only for managing the impact of climate change, but also building a future, ecologically sustainable society where basic human needs and rights are guaranteed. In other words, the guidelines give expression to the objective of achieving a dual mainstreaming to integrate: social and employment aspects into environmental policies so as to ensure decent work in the green economy; and environmental concerns in work and employment so as to engender change in production and consumption practices.

The Guidelines address both the transition *process* and its *outcomes*. The process is to be 'based on a managed transition with meaningful social dialogue at all levels to ensure burden sharing' and the outcome is to be 'decent work for all in an inclusive society with the eradication of poverty' (ILO, 2018b: 2). Based on these principles, the guidelines are broad and comprehensive, covering both the transition process and the post-transition arrangements and addressing governance, macro-economic policies, sustainability in specific industries and sectors, and social measures. Detailed consideration is then given to each of these aspects of the transition and recommendations made, including:

- *Mainstreaming of sustainable development* and the ideals of just transition across all nine policy areas, including: macroeconomic and growth policies, industrial and sectoral policies, enterprise policies, skills development, occupational safety and health, social protection, active labour market policies, employment rights; and social dialogue and tripartism;
- *An inclusive and empowering transition process* and stakeholder participation across all areas and at all levels, based on the principle of social dialogue and facilitated by institutional arrangements;
- *Social protection measures* for job losses/displacement during the transition process.

Altogether, the guidelines constitute a detailed set of recommendations to be adapted to direct actual programmes of action, be these at national, regional or enterprise levels. Further detailed guidance is given on each of these elements separately for governments and social partners. For example, guidelines for macroeconomic and growth policies address the following issues: the integration of just transition principles; the alignment of economic

growth with social and environmental objectives; the adaption of appropriate regulations and instruments for monitoring and evaluation; investment of public funds in greening the economy; and the development of trade and investment policies.

In terms of governance, tripartism is advocated, calling for collaboration between governments, employers and unions:

Strong social consensus on the goal and pathways to sustainability is fundamental.

Social dialogue has to be an integral part of the institutional framework for policy making and implementation at all levels. (ILO, 2015:5).

There is a strong emphasis on working collaboratively ‘to assess opportunities and resolve challenges posed by the transition’ (ILO, 2015: 10) and towards meeting emission reduction targets and sustainability objectives, for instance at the enterprise level.

Given that just transition needs to be centrally and comprehensively planned and funded, central governments are critical for success, especially in putting in place an initial policy, regulatory and institutional framework. Led by their respective governments, the social partners are expected to play a role at all stages (i.e. planning, implementation) and levels (i.e. from national to company levels), particularly industry, local and enterprise: ‘in bringing about social, economic and environmental sustainability with decent work and social inclusion’ (ILO, 2015: 10). More specific recommendations for social partners can also be gleaned from recent publications on the implementation of just transition guidelines (ILO, 2018b: 3):

- *Governments* are called upon to: initiate national plans to achieve the NDCs; measure the impact on workers and communities; develop social protection instruments; develop regional revitalisation plans; plan for skills development; manage labour market transitions with dedicated funds; involve the community impacted; put in place a legal and institutional framework to facilitate social dialogue and monitor the progress of implementation; use public procurement to set labour standards; ensure the benefits of the green economy are fairly shared; and invest pension funds in green industries.
- *Unions are to be* involved at all levels to: ensure that the skills, resources and capabilities needed for the transition are identified and developed; invest in capacity building to ensure effective participation; and build coalitions with other unions, civil society organisations and NGOs to pressure local and central governments and private companies and ensure compliance with the requirements.
- *Employers* are to disclose transition risks and opportunities and the steps to be taken to ensure a just transition for workers and communities; and develop emission reduction plans, also including supply chains, based on social dialogue.

These recommendations also reveal the role anticipated for unions: raising awareness among their members about just transition, sustainable development, decent work and green jobs; promotion of active participation of members in social dialogue; inclusion of environmental provision through collective agreements and bargaining; and influencing public procurement to include labour standards.

C.3. Summary - ITUC and ILO climate interventions and strategy

Since its formation, the ITUC has made climate change a frontline campaign issue, seeking to protect workers impacted by climate change, and influence inter-governmental climate negotiations and strategies. Over the last 15 years, just transition to a sustainable society has become a central thread in ITUC’s political strategy, evolving into a vision for future. ITUC’s climate strategy involves: capacity building within the labour movement; influencing

climate politics in the inter-governmental arena, particularly through participation in UNFCCC summits; developing collaborations with a wide range of stakeholders, including NGOs, employer organisations, governmental bodies and city-led initiatives; and campaigning to keep climate action on the global political agenda. ITUC calls for a comprehensive reform programme addressing environmental, social and economic justice.. The ILO advances this agenda within the UN system to join the policy agendas of environmental protection, economic and social development with that of work and employment by giving support to green development initiatives and progressing the agenda of equitable, inclusive and decent employment outcomes alongside environmentally-sound growth strategies.

This is a vision broad in scope and comprehensive in its treatment of different aspects of the transition, accompanied by detailed guidelines. At the same time, as acknowledged by the ILO, they are abstract and their effectiveness can only be assessed through implementation in different contexts. The exact policies and programmes put in place will and must respond to local circumstances. Similarly, the recommendations do not represent internationally agreed standards or legal requirements and are therefore not binding in any way. The implications are that the parameters of the transformation to be enacted in different localities are yet to be negotiated and agreed and that power relations between the stakeholders are highly significant, though not referred to. Yet, unions' power has been eroded over the last three decades and, even in European countries with established traditions of social partnership, their influence is limited. The guidelines adopt a consensual language, neither apportioning blame for the climate crisis itself nor considering power imbalances between the social partners and the governments called upon to work together.

The just transition guidelines point to the achievement of UN SDGs as the strategic, long-term objective. The significance of these objectives for large segments of the world's population without access to basic employment and human rights and social protections (a reflection of ILO's global remit) cannot be overestimated. However, without challenging the power of capital, such measures can reduce the social justice element of the sustainability transition to employment and social rights, such as equality and fair treatment in the labour market, which, while of crucial importance, do not suggest a transformative vision of sustainability and or the role of labour.

C.4. The European Union level

The relationship between global and European union federations is distinctive in that they work closely together, partly due to the geographical proximity of their head offices and partly because the European union organisations have greater capacity to contribute than is possible other regions. As a result, the European federations have a significant input into the policies of global unions. The European union federations also interpret and implement the guidelines, recommendations and actions promoted by global unions, often in diverse ways in various industries and across different countries.

C.4.1. European Trade Union Confederation

The ETUC is the only body representing the majority of union members across Europe and works with EU institutions as a formal social partner, being financed through the Social Dialogue. It was set up in 1973 to enable unions across Europe to express a united position on behalf of workers and comprises 89 national trade union confederations in 39 countries, plus 10 European trade union federations. The ETUC has a committee on sustainable

development and climate initiatives and another on standardisation, which meet twice a year, producing draft resolutions.

The EU is committed to achieving climate neutrality by 2050 and its policies, including emissions trading and associated economic instruments, are premised on the notion that the system will adapt. The ETUC does not, however, consider the measures enacted as purely market-based as each state determines how they are interpreted and what caps are imposed. In particular, as an instrument of enforcement and in order to recycle financial resources, it has lobbied for a Just Transition Fund (JTF) to provide finance to support EU regions most affected by the transition to a low carbon economy, such as the coalmining areas in Poland. The JTF was proposed to Members of the European Parliament (MEPs) and accepted as part of the €1 trillion European Green Deal on 14 January 2020, with subsequent amendments in the context of recovery from the coronavirus pandemic, to provide core budget resources of over €25 billion in September 2020. While focusing on regions relying mostly on fossil fuels and carbon-intensive industries, and thus those with the biggest transition challenges, funding will be available to all Member States, complemented with resources from cohesion policy funds and national co financing.

Decarbonisation particularly affects employment, but this depends on the region and sector and is difficult to estimate, given the many drivers. There are three types of sectors: 1) some will win, such as construction, transport and services; 2) others will be losers, such as coalmining, oil/petrochemicals; and 3) others need to transform, which will mean losing jobs. It can be difficult to transfer across sectors in order to transition to a low carbon economy (LCE) because locations are not necessarily the same and there may be social aspects, such as age differences, so it is necessary to develop labour market and social instruments for enabling this. ETUC therefore pushes for higher standards and a set of instruments to make the transition positive, whilst accepting a level of competition. Industrial policy is a big issue, involving the development of both a) innovation and international trade policies and b) an ecosystem for manufacturing in the EU, including sectors such as windmills, solar panels etc. ETUC also recognises the importance of public investment and the need for more active policies, following different pathways, for instance in terms of transport and construction.

The ETUC endorses the ambitious and binding targets set by the EU climate framework: a 40% reduction in greenhouse gas emissions by 2030 compared to 1990, with at least 27% renewables as an indicative target for energy efficiency. However, these targets are EU wide, not broken down by member states. At the same time, the ETUC has its own initiatives, including green workplace initiative, pragmatically showing what unions can do in relation to transport, pollution etc., and thus about awareness-raising (e.g. ETUC 2018, 2020a). In terms of collective bargaining, a few studies have been commissioned in the social dialogue context, aimed at collecting best practices, for instance, in Belgium. In 2016 the report *Industrial Regions and Climate Change policies: Trade Union's perspectives* was published (ETUC 2016), assessing the extent to which unions are involved in Just Transition, based on a survey, funded by the European Commission, of union approaches to a LCE in seven regional case studies, each highly organised: Yorkshire and the Humber (UK), North Rhine Westphalia (Germany), Asturias (Spain), Antwerp (Belgium), Norrbotten (Sweden), Stara Zagora (Bulgaria) and Silesia (Poland).

Different regions present different challenges. For instance, the Swedish study relates to iron and steel mining and concerns an ecosystem built around social dialogue, stakeholder involvement, world-leading companies, a university dealing with innovation, and natural

resources. For Bulgaria the case relates to open cast mining, twice the surface of the Brussels region and producing 30% of Bulgarian electricity. In Poland the whole economy is dependent on coal production, on which 80% of electricity depends and which employs 100,000 workers. This is difficult to alter, particularly due to a lack of investment, and Poland is seeking to scrap EU climate policies, so the case well illustrates that decarbonisation cannot occur in a social vacuum. Policy proposals stemming from this study relate to: a) planning to meet targets; b) union involvement; c) the acceleration of low carbon technology; and d) overcoming transition problems because of job fears. The ETUC's aim is not to be prescriptive in terms of what to do in the regions.

The ETUC has three major concerns in relation to the climate dimension of the EU's industrial strategy (ETUC 2020b):

1. ***It should create supply and demand markets for carbon neutral solutions, while protecting EU industry from carbon and investment leakages.*** State aids and public procurement have an important role and public funding should be subject to strong social and environmental criteria. In the private sector, the strategy should promote Responsible Social Business and due diligence to encourage the uptake of sustainable products, including through a carbon border adjustment mechanism
2. ***It should boost the development of climate neutral technologies and investments in infrastructures*** needed, particularly those guaranteeing efficient and reliable public services, prioritising vulnerable regions and sectors and most affected by decarbonisation in order to avoid deepening existing inequalities.
3. ***It should be linked to an ambitious industrial-scale Circular Economy Action Plan*** to overcome raw material scarcity, promote resource efficiency and reduce waste production. This requires a deep transformation of EU industry, a broad range of policies and heavy investment in the areas of standardisation, regulation, taxation, skills and innovation, with specific attention given to ensure appropriate training of workers and good health and safety, work organization, and working conditions and worker and union participation.

C.4.2. European Trade Union Institute

The ETUI is funded by the European Commission and acts as a research centre for the ETUC rather than operating independently as a think tank, not producing strategy but advice and materials. It lies between academia and the trade unions, with research outputs concerned with economic labour policy, the LCE, globalisation, employee participation, digitalisation, etc., and with health and safety forming a separate unit linked to workplace hazards. The ETUI has basic funding and then each year sets priorities in the context of the current situation and prepares project proposals for ETUC acceptance. Research topics in relation to climate change include the implications for employment (ETUI 2012, 2014), public services (ETUI 2017) and trade union issues in Eastern Europe (ETUI 2019a).

ETUI supports ETUC proposals for a JTF linked to an innovation fund and a globalisation adjustment fund and researches on particular targeted industrial areas requiring, for instance, training/retraining if a company has to downsize because of over-capacity and the impact of globalisation, such as OPEL in Bochum. This OPEL example was part of the ETUI's Ruhr study, which was supported by the European Social Fund (ESF) and involved many organisations, from regional and local government to unions. Indeed, the idea for a Ruhr Just Transition study, relating to the phasing out of the coal agreement by 2018 and gradual downscaling, came from, received support and was published by the ILO (Galgóczi, 2014), which was seeking concrete examples of de-industrialisation.

In 2013 the EU issued its climate adaptation strategy (EC 2013) with guidelines for Member States, which are required to prepare, develop and implement their own adaptation strategies. Climate adaptation affects public services policy, mostly related to firefighting, floods and employment, but national Adaptation Plans are heterogeneous with no agreed structure. For instance, for France the role of communities at different levels is important, whilst for Denmark and the Netherlands it is cooperation between regional authorities and economic actors. The project on the carbon-intensive European coal and automobile sectors, with examples from France, Germany, Italy and Poland, is within this context, demonstrating the different roles of trade unions and social dialogue and the different nature and magnitude of the challenge in the transition to a LCE (ETUI 2019b). While decarbonisation is a common objective, particular transitions take place in work environments that are themselves determined by the state of the capital-labour relationship, with inherent conflicts of interest.

C.5. Overall Summary: European Union

Thus, at the lower regional level of Europe, union policies are more focussed on particular regions and industries, as well as specific measures such as the JTF and the Circular Economy Action Plan. However, just as the ITUC to an extent mirrors and at the same time enacts the guidelines, policies and standards set by the ILO and in turn the UN, so does the ETUC, and by implication the ETUI, in relation to EU policy. At the same time, just as the ITUC also pays heed to its member national union confederations and works especially closely with the ETUC, so the ETUC pays heed to its membership as well as to the European sectoral unions. Of overriding importance is the European Union (EU) through the European Commission, in particular in providing funding for the research underpinning different policies of the ETUC and the ETUI. Given the importance of European trade union organisations to supporting the global unions, this does mean that the EU plays a major role in determining issues to be addressed and carving out the global union climate change agenda.

As is evident, these international and European labour organisations share many common policies. All seek to integrate social and employment aspects into environmental policies and to pursue the ILO's Just Transition guidelines in order also to address long targeted problems in terms of decent work, social protection and employment and human rights. All promote tripartism and social dialogue and greater union participation in climate action initiatives. All seek to mainstream Just Transition policy proposals, to dispel the jobs vs environment argument and to bring climate change further up the agenda. And all essentially support a reform programme, through cooperation with employers and governments, whilst also giving particular support to the public sector and public procurement measures.

D. DISPARATE APPROACHES OF SECTORAL GLOBAL UNIONS

Global unions converge around the just transition vision advanced by the ITUC, which puts the interconnectedness of environmental, economic and social dimensions of the transition centre stage. The just transition proposals establish the core principles of labour's perspective on climate action: a planned, managed and government-led transition; social dialogue between governments, employers and workers in the process and beyond; and a comprehensive reform programme including environmental, economic and social measures both to protect workers and communities in the transition and to lay the foundations of future

sustainable and equitable societies. The ILO (2015) just transition guidelines provide a detailed framework for putting these principles into practice.

Proposals by sectoral global unions specify and respond to the sector-specific implications of climate change and propose just transition strategies for addressing the environmental challenge together with existing employment and social justice problems. Thus, global union proposals on climate change have two ambitions and reflect the dual and conflictual role (Darlington, 2014) the unions play: protecting the interests of workers during the ecological modernisation of the economy and therefore acting within the existing system; and at the same time, intervening to re-define the environmental transition as an economic and social justice programme and to present a vision for changing the political and economic system.

This review shows that global unions aspire to embrace both of these positions but, beyond agreeing on the core principles of the idea of just transition, differences are evident and relate to: the nature of the transformation envisaged; the approach to governance and the role of labour in the transition and beyond; the extent to which different sectors will be affected by climate action and whether they are positioned in the private or public sector. Proposals suggest disparities in the conceptualisation of the transformation and strategies for change.

D.1. Consensual approaches to just transition of global and European unions

In the proposals of the ILO, ITUC, IUF and EFFAT, a within-system reform programme is proposed, without mentioning the power imbalance between stakeholders, which suggests that the climate crisis can be resolved without challenging the power of capital. Indeed, the mainly private sector unions organised in industry (IndustriALL), construction (BWI) and agriculture (EFFATT) are also the unions proposing more consensual and within-system solutions involving the private sector, despite identifying the role of capital in creating the climate crisis. Both strategies stop short of promoting public alternatives and their proposals are aligned with the ITUC-ILO-led just transition vision: social reform through dialogue.

D.1.1. IUF-EFFAT (climate policies in development)

The International Union of Food, Agricultural, Hotel, Restaurant, Catering, Tobacco and Allied Workers' Associations (IUF) is an international federation of unions representing workers in agriculture and plantations, the processing and manufacture of food and beverages, hotels, restaurants, tourism and catering services and all stages of tobacco processing. The activities of the IUF, based in Geneva, Switzerland, and with 422 affiliates in 127 countries representing over 10 million workers, focus on global action to defend trade union, democratic and human rights, building solidarity and international organising with transnational companies. IUF's climate proposals were in development at the time of our fieldwork, following a climate change workshop held in May 2019 that resolved to build on a 2013 position paper and set up a working group. The impact of climate change on agriculture in particular and palm oil production as a driver of deforestation are widely recognised within the organisation. Reference is made to sustainability in the 2020-2024 Political Framework agreed at the 5th Congress in Zagreb, in November 2019, but as yet no detailed climate proposals have been published.

Interviews were held with EFFAT, which has a significant role in drawing up proposals as well as involvement in practical initiatives exemplifying the enactment of the just transition framework. EFFAT was founded through the merger of two European trade union federations

ECF-IUF and EFA in 2000 and represents 120 national unions from 35 European countries, covering 22 million workers. EFFAT is a member of ETUC and the European regional organisation of IUF and also leads on a number of sustainability initiatives involving affiliates in EU member states. Two recent projects (2018-2019) concern bioeconomy and sustainability in the sugar beet industry (see Case Study 1), indicative of EFFAT's commitment to social dialogue, support for emerging 'green' technologies and initiatives for their job creation potential, and advocacy for good work and employment conditions in emerging 'green' industries.

D.1.2. Building Workers International

The Building Workers International (BWI) is a global union federation with 350 affiliates, representing 12 million members in 127 countries from the building, building materials, wood, forestry and allied sectors. The BWI was formed in 2005 through the merger of the International Federation of Building and Wood Workers (IFBWW) and the World Federation of Building and Wood Workers (WFBW). Climate change has recently become a campaign issue for BWI whose affiliates work in challenging situations across the world, in sectors rife with breaches of fundamental labour rights. The sectors organised by BWI, particularly through the retrofitting of existing building stock, are expected to gain jobs from green transition measures. Indeed, according to the ILO (2018a) construction is set to experience the highest (absolute) job demand growth of any sector, estimated at 6 million jobs, compared to 0.8 million from the cultivation of vegetables, fruits and nuts and a similar number, 0.8 million, from the production of electricity by solar photovoltaics. BWI's proposals (BWI 2015), discussed in detail below, begin by setting out the scientific evidence on climate change, explaining the idea of just transition and stating BWI's commitment to it as the climate strategy of the global labour movement. The rest of the document is focused on the sector and comprehensive in addressing specific issues, including measures recommended to improve environmental, social and employment standards,

D.1.2.1. The context of the building materials, construction and forestry sectors

According to BWI (2015), with significant variation between regions and countries, some of the major challenges in the construction industry include: poor health and safety record, such as exposure to harmful materials; lack of basic protective equipment; extremely poor living conditions on building sites; exposure to avoidable risks; lack of monitoring/ enforcement of legal standards and regulations guaranteeing a safe working environment; informal employment; low or non-existent unionisation; attacks on union members; resistance to collective agreements; and exploitation of migrant workers. In large parts of the world, construction jobs are found in small firms or in the informal economy and are difficult to monitor.

With regards to building construction, a notable feature is the domination of the same materials, methods and technology from global supply chains, regardless of suitability for the local climate or sustainability and symptomatic of a high degree of standardisation driven by cost cutting. Cement production, for example, is carbon and energy intensive and contributes to CO₂ emissions and is yet the major constituent in the manufacture of a wide range of building materials, such as paving blocks, slabs and mortar. A significant consequence of this standardisation is the decimation of local expertise and materials and buildings that are not responsive to their environmental and social context. Over time, the drop in demand for natural materials such as wood has also become a driver of deforestation as trees are cleared to make way for agricultural land. Added to this is the profit-driven nature of much building

construction, which incentivises new buildings rather than refurbishing, restoring and re-using existing buildings.

In forestry too there are several interconnected pressures. Forests store carbon when sustainably managed but are at risk from deforestation caused by illegal logging and clearance for farming purposes. This process is partly driven by demand for high value agricultural products, such as palm oil and soy, which contains isoflavones or plant estrogens and which some producers now genetically modify. Deforestation, which is the largest source of CO₂ emissions after fossil fuel use, sets off a cycle of soil degradation, destroys a climate friendly resource, increases emissions and dislocates communities dependent on forestry. Forests are also affected by climate change and climate action. For instance, some species of trees can only survive in narrow climate zones and slight changes in temperature can lead to collapse. Examples of climate action include the recent increase in demand for wood as an alternative to concrete and for bio-fuels to replace fossil fuels (see Case Study 2). If not managed, these new demands lead, in turn, to increased tree clearance and have exactly the opposite effect from reducing CO₂ emissions.

BWI puts much effort into establishing the core labour standards in the sector (BWI, 2013a; 2013b) To ensure employment, health, safety and welfare standards for workers everywhere that a company is operational, BWI targets multi-national companies to sign International Framework Agreements (BWI, 2013c; 2013d). Similarly, high profile infrastructure projects, such as football stadiums (e.g. in Qatar) or those funded by Multilateral Development Banks (MDBs), are targeted in high profile campaigns to embed core labour standards and decent work in the sector (BWI, 2017). BWI supports its affiliates in core areas of work, including defending the right to unionisation, and works with employer organisation (International Tropical Timber Organisation, Confederation of International Contractors' Associations), international institutions (ILO, UN Economic and Social Committee with special consultative status, Food and Agricultural Organisation/FAO, World Bank, World Trade Organisation), drawing strength from collaborations with other trade unions (e.g. EFBWW, Nordic Federation of Building and Woodworkers - NFBWW, ITUC) to establish decent employment standards and enforce legal provisions.

D.1.2.2. Climate change proposals

The BWI's 2015 position paper on climate change presented at COP 21 was developed in collaboration with the EFBWW and the NFBWW. The working group on sustainability is led by unions with greater expertise and capacity, such as the Swedish union GS-Facket. The proposals have three elements: (1) setting out the scientific evidence for climate change and assessment of the international response so far; (2) establishing the basic principles of just transition; (3) putting forward proposals for sector specific climate action.

The proposals begin by setting out the scientific evidence for climate change, referring to the role of profit-driven and environmentally irresponsible production processes, neo-liberal market and global trade policies, also with the purpose of providing an educational resource for affiliates and members. Having established the connections between the economic, social and environmental challenges facing the world, the proposals emphasise the urgency of the climate crisis, criticising the slow progress in addressing it, the reliance on market measures and the significance of political will for effective transition strategies.

The core principles of the just transition perspective presented are very much in line with the ITUC's perspective:

- a) An effective response to the climate crisis must involve environmental, social and employment interventions;
- b) The transition needs a comprehensive plan, investment and regulation, led by governments, which can and must leverage their power to require environmental clauses and core labour standards in all lending and public works tenders so as to ensure equity in the new economy.
- c) The imbalance between the global North and the global South must be addressed: countries contributing more to emissions and using more of the natural resources are to contribute more; developing countries are to be supported with investment, knowledge and technology transfer onto a sustainable path responsive to local needs and circumstances; and the basics of health care, shelter, food security, decent work must be part of climate policies.
- d) The process must involve all stakeholders at all stages of policy development and implementation.

Strengthening the role of unions is much needed as many global organisations are weak in their involvement of workers. For example, the UN Forum on Forests produced a non-binding document on sustainable forest management, which contains no references to workers or any of the work involved. The World Bank and the Food and Agricultural Organisation (FAO) fail to engage workers and unions in the decision-making process. And, whilst the International Tropical Timber Agreement (ITTA) reference labour standards, this is only in chapeau.

D.1.2.3. Comprehensive recommendations for a green transition in the sector:

- *Take a holistic approach to the built environment.* Emission reduction strategies rely, so far, on reducing the use of fossil fuels in operating buildings. It is also important to use low carbon building materials and construct buildings that are energy efficient, easy to maintain, adapt, dismantle and re-use.
- *Design and construction of buildings must be responsive to the local environment,* using locally available building materials, methods and skills and creating local employment. Multi-national companies are less likely to build with regard to the local environment and use local materials, resources and knowledge, but rather build with standardised materials and methods. A locally-grounded design and construction process, more sensitive to specific cultural and environmental contexts, would support local economies (skills, businesses) and promote a socially and environmentally sustainable industry.
- *The quality of construction labour needs to be improved through education and training.* Vocational education and training (VET) for building workers is essential and must be available everywhere, not just in the global North.
- *Aim for sustainable forestry.* Forests are sources of fuel, shelter, carbon smart building materials and employment for millions of families. Wood-based building material products are climate smart, environmentally friendly and easier to recycle and reuse, becoming more popular (as a tool of climate action) as cement is targeted as a high carbon product. Sustainable management is essential to ensure the future of forests as a resource. Sustainable forestry practices can include: adaptive forest management to introduce species that are more suitable to the new climatic conditions; and certified management systems of which there are at present two, both of which codify labour standards, achieved through BWI involvement. Core labour standards need to be extended into the full chain of custody and auditors of certification systems to be educated to engage in social audits.

- *Energy efficient building construction and improvements to existing buildings/retrofitting are expected to create jobs, which must be decent jobs.*
- *Action must be taken to prevent further deforestation, which continues even in countries that invest in Forest Law Enforcement Governance and Trade (FLEGT). Reforestation should be pursued to utilise the natural carbon capture capacity of forests and respond to the increasing demand for wood and wood products as a building material.*
- *Forestry can also be embedded within a circular economy, minimising/eliminating waste from the production of wood-based building materials, and contrasting sharply with difficult to recycle and re-use waste from cement-based building materials.*
- *All three sectors (building materials, construction and forestry) will see new technologies and workers will need to adapt. The transition must be planned and involve training for workers in new methods and technologies and social protection measures.*
- *Barriers to women's entry in to building construction must be tackled.*

Further recommendations are put forward by BWI on the roles of governments as the driving force serving a regulatory function, with powers over public procurement as an instrument for setting standards. These include: financing low carbon construction by subsidising companies that adopt a sustainable approach and prioritise energy efficiency; climate change and social security- related investment; providing economic incentives (taxes and subsidies) for the private sector; setting standards for new buildings and infrastructure projects and targets for retrofitting; developing building codes that encourage high energy efficiency standards; using public procurement to require minimum environmental, labour and social standards (e.g. training); and scrutinising investments from climate and sustainability perspectives.

D.1.3. European Federation of Building and Woodworkers

The EFBWW covers the key sectors of construction and wood and forest-based industries, forestry, wooden materials and furniture. The federation has 76 affiliated unions in 34 countries, representing a total of 2,000,000 members, and is a member organisation of the ETUC. As part of the process of creating alliances and coalition building, it is the labour organization represented in Renovate Europe (<https://www.renovate-europe.eu>), which includes producers of insulation material, architects etc. The EFBWW supports the Renovation Wave Strategy (EC, 2020), together with CEI-Bois (the European Confederation of Woodworking Industries), FEP (the European Federation of the Parquet Industry), EOS (the European Organisation of the Sawmill Industry) and EPF (European Panel Federation). For the woodworking industries a refurbished and energy efficient EU building stock has a key role to play in the post covid-19 recovery by creating green jobs, revitalising regenerative growth and paving the way for the decarbonisation of one of the largest energy consuming sectors in Europe, responsible for more than one third of the EU's greenhouse gas emissions (EFBWW 2020a). Wood-based solutions offer a green construction material that is renewable, recyclable and has a low fossil carbon footprint and therefore a good performance in life cycle assessments. Implementation of the renovation principles through NECPs and Long-Term Renovation Strategies will progress the achievement of the European Green Deal objectives. EFBWW sees the transition being shaped in terms of transport and retrofit, as with the German retrofit programme, though there is an antagonism between social justice and progress versus individual workplaces and a need to design financial instruments. EFBWW is also a member of the coalition for energy saving, which has active members in some countries, including Germany, Denmark, Sweden, and Norway.

The EFBWW regards the Paris Agreement goals of reducing greenhouse gas emissions and achieving the energy transition as opening up many job- and activity-related opportunities in the building, forestry, wood and building material sectors, which can play a key role in implementing climate change policies and in being part of the solution to existing challenges (EFBWW 2020a). The Federation's main focus is to participate in – and thereby influence – European initiatives on production innovations, processes and work organisation related to climate change goals and the circular economy and to define best practices and strategic actions for making cities more resilient to evolving environmental conditions. EFBWW seeks to address the needs for sustainable construction, energy renovation of buildings, energy efficiency and affordable housing, and their potential effect on workforce and skills requirements. As well as offering opportunities, energy-reduction and climate policies will seriously impact energy-intensive industries like cement production, which is both dangerous and very carbon intensive, so that construction unions have a potentially very proactive role to play. The EFBWW will continue to champion a sustainable, ambitious EU industrial policy agenda, whilst still envisaging a future for energy-intensive industries in Europe. These industries need more effective measures to better comply with international carbon emission and energy efficiency requirements, accompanied by policies and investment that help bring about a just transition for workers, including the right to retraining and/or mediation towards other jobs or industries, if necessary. The EU should also tackle the phenomenon of carbon leakage, whereby industrial activity and jobs are transferred beyond EU borders to countries with laxer emission constraints.

The EFBWW envisages a key role for the building, wood, furniture, forestry and building materials industries in the transition proposed by the European Green Deal, whose goals the federation fully supports, including the ambition to achieve climate neutrality by 2050 (EFBWW 2020b). Nevertheless, a 'greener' Europe also means a more social Europe and workers and citizens must be assured of their entitlement to decent wages, proper working conditions and training, and adequate social protection. 50 million consumers struggle to keep their homes adequately warm and the annual renovation rate of the building stock, varying from 0.4 to 1.2% in the Member States, has at least to double to reach the EU objectives. Building a green construction industry implies building an inclusive and cohesive society and for the EFBWW it is essential that the transformation of the construction and allied industries involves the social partners.

As with the BWI, the EFBWW places great emphasis on the gigantic potential for carbon storage of woods and forests, which cover 43% of the EU's landmass and also provide the most sustainable raw material. The woodworking industries are a rich source of ever-new applications and wooden products, for housing, infrastructure of diverse types and in numerous other industries, in novel health technologies and in combinations with other types of material. Greening of the economy is strongly dependant on the ability to further innovate processes and product, so that stronger cooperation in science, research and innovation processes becomes a precondition.

During the Covid 19 crisis, the EFBWW has developed joint positions and lobby efforts with the ETUC and the other European trade union federations to tackle different sanitary, social, economic aspects. Its current priorities pertinent to achieving a green economy include:

- *Occupational Health & Safety*: the adaptation of EU occupational safety and health law, especially revision of the biological agents' directive.
- *Democracy at work and social dialogue*: a revised and strengthened European framework for transnational company restructuring and the implementation and enforcement of

existing workers representatives' and union rights; more financial support for the sectoral social dialogue at company, sectoral, national and European level; and the fostering of industrial relations in the construction and wood and furniture industries Central, East and South-East Europe.

- *Economic relaunch of the construction and allied industries*: involving a paradigm shift towards an economic rationality based on sustainable investment for stability and social cohesion rather than precarious work, social abuse and fraud. Workers organisations must be involved in the design and the implementation of new industrial models for all building and wood sectors with the European Green Deal as a starting point for the just transition involving: an ambitious investment plan for new European infrastructure and the updating and maintenance of the existing infrastructure; speeding up the Renovation wave with specific attention to affordable housing and initiatives to combat energy poverty; an ambitious, social European Green Deal designed as a just transition instrument to the benefit of workers; and all public and private recovery measures should create direct employment and stable jobs.
- *Equal treatment – fair mobility for all workers*: a new European framework for decent and high-quality working conditions for all workers with special regard to the protection of migrant workers.
- *Gender equality*: The expected increase of female workers in the building and wood industries demands a transformation of work on construction sites and in companies to improve working conditions for all and realise equal treatment.

The furniture sector has also issued a joint statement on the European Green Deal and new Circular Economy Action Plan (EFBWW and EFIC 2020), which includes the following recommendations:

- *To ensure a successful transition to a more circular economy*, companies, stakeholders and the workforce will need to actively participate in the transition.
- *Special attention should be given to the low skilled workers, women, migrants, young and old workers* and for a Just Transition workers should be provided with retraining possibilities, when necessary, and/or mediation towards other jobs or industries.
- *Basic digital and environmental training* for all workers is recommended and should become an integral part in any VET programme.
- *Special attention should be paid to the health and safety of workers*, especially regarding new manufacturing systems, toxicity, resource processing methods, works with new raw materials and waste.
- *Investments announced under Next Generation EU, the Recovery and Resilience Facility and the European Social Fund Plus* should be used among others to invest in basic automation, digitalisation and green skills training, tailor resources to regional and sector specific needs and provide workers where possible with retraining possibilities.

A number of these priorities have been underpinned by social partner-based research programmes, including *Building a social dialogue for sustainable construction* (BROAD project 2017) and *Inclusive Vocational Education and Training for Low Energy Construction* (Clarke et al 2019). Practical measures taken by EFBWW include attempts to obtain the Opinion of the Economic and Social committee to combine asbestos clearance with retrofitting. The performance gap is also seen as an important issue to take up and link to employment policies in each country as the industry federations are closer to workplaces, in contrast to the ETUC as an umbrella organisation.

D.1.4. Summary: BWI and EFBWW

BWI and EFBWW's proposals demonstrate what a just transition could involve in building materials, construction and forestry and the extensive interventions, including retrofitting, needed to address work and employment conditions. The sector-specific implications of climate change are detailed and the proposals reflect a deep understanding and insights into challenges on the ground. BWI is critical of the market measures adopted to fight climate change and adopts a rather more political language than EFBWW, exhibiting a broad understanding of the causes of climate change, referring explicitly to the profit motive and the resource-hungry, neo-liberal economic model. Similar to the ITUC, governments are afforded a central role in planning and managing the transition and in regulating private companies' control over resources, building production and forest management. Calls for social partnership are coupled with warnings to institutionalise social dialogue to ensure workers' input and reflect the challenges faced by BWI affiliates in many parts of the world. Questions of power inequalities between social partners, however, are not explicitly addressed by BWI, though emphasised by EFBWW. For both organisations just transition means environmentally sustainable practices and materials - including moving away from carbon-intensive cement towards more use of materials such as wood, informed by local knowledge and responsive to local needs and circumstances, side by side with improved work and employment conditions, enhanced government regulation and social dialogue. However, EFBWW places considerably more stress on the need for enhanced VET and retraining programmes for construction and allied industries to become zero carbon.

D.1.5. IndustriAll

IndustriAll is a global union, representing 50 million workers in 140 countries and formed in 2012, bringing together affiliates of the former global union federations: International Metalworkers' Federation (IMF), International Federation of Chemical, Energy, Mine and General Workers Union (ICEM) and International Textiles and Garment and Leather Workers' Federation (ITGLWF). IndustriAll represents workers in mining, energy and manufacturing, covering hugely diverse sectors, many of which are high carbon emitters, mostly in the private sector, including: oil and gas extraction; mining, diamonds and gems; electric power generation and distribution; base metals; shipbuilding and shipbreaking; automotive; aerospace; mechanical engineering; ICT; electrical and electronics; chemicals; rubber; pulp and paper; building materials; and textiles, garments, leather and footwear.

IndustriAll's climate change proposals combine a critique of the extractivist and ecologically damaging capitalist economic system with industry-specific proposals (IndustriALL, 2013). A broad approach is taken to just transition and comprehensive proposals put forward for facilitating this. Critical of private corporations for their role in environmental problems, poor working and employment conditions, IndustriAll nevertheless perceives the private sector as a partner in the transition process and beyond (IndustriALL, 2019). Reflecting the anticipated job losses in some of the sectors it organises, particular emphasis is placed on measures to support the workers affected. The account below is based on an earlier discussion paper on climate change (IndustriALL, 2013) and a more recently published guide for member organisations (IndustriALL, 2019).

D.1.5.1. Climate change proposals: new technology, strong transition plans and sustainable industrial policy

The imperative to take climate action is viewed as part of a broader societal transformation necessary to address the economic and social crises resulting from the 2009 crash, subsequent austerity programmes and the ever-widening gap in wealth distribution. The climate crisis

and ecological degradation are explicitly linked to profit driven production and resource extraction by private corporations and multinational companies. Governments are called upon to put the financial sector in the service of the real economy and introduce a Financial Transaction Tax system. Evasion of responsibility to ensure decent work and respect for fundamental employment rights are explicitly laid at the door of private corporations. In calling for a just transition and sustainable industrial policies based on this general critique of the failures of the capitalist economic system, IndustriALL at the same time adopts the vision advanced by ITUC and ILO for social sustainability.

Thus, as with BWI, IndustriAll begins by establishing the principles of a just transition strategy. The transition to a sustainable economy and industry must be:

- a) planned and benefit everybody not just a minority of corporations;
- b) combined with long-term union demands for social protection programmes, fairness, equity, justice, human rights and decent work and employment;
- c) based on the protection of workers and affected communities, including the right to training, information and retirement as appropriate;
- d) facilitate the full participation of workers at all levels.

In terms of governance, as well as foreseeing a strengthened role for governments and community involvement at the local level, IndustriAll specifies a fully funded and constituted multi-stakeholder Just Transition Task Force to lead the co-ordinated structural plans and operate at all levels through permanent social dialogue structures.

The just transition framework is applied to developing sustainable industrial policies. The key proposals are:

- *Ecological modernisation of industry:* All infrastructure must be upgraded and developed, including: roads, railways, water, energy (renewable, sustainable and taking advantage of low-carbon technologies), telecoms, waste management, lighting, forest and land planning emission regulations, industrial plants, educational facilities. Former mining and industrial sites must be restored and environmentally generated.
 - *Decent work and employment conditions:* Safe and healthy workplaces must be created, with workers' having the right to know about hazards, shut down/refuse unsafe work and to fully participate in the health and safety policies and programmes established. The entire supply and value chain must be considered for labour rights and standards and jobs in new industries must be decent.
 - *Government role:* Governments should drive companies towards re-investing in development and away from financialisation, setting targets for employment, R&D, energy efficiency, carbon emissions reduction, active labour market policies and employment creation, re-training and re-employment, and observance of labour standards. Incentives must be tied to job guarantees and conversion of existing sites to greener production.
 - *MNCs and other corporations* must establish enterprise level sustainability policies.
 - *Communities* must be empowered to develop action plans for the creation of low-carbon industries, renewable energy production and improving energy efficiency.
 - *Supporting displaced workers:* Instead of top-down programmes, worker-focused and individually tailored support plans must offer financially and physically accessible education and training in any area a worker chooses and enable access to decent jobs in new industries guaranteeing wages and employment rights. Early retirement or bridging pensions for older workers must be on the table.
 - *New technologies* should not be used to reduce work to limited, repetitive tasks.
- Reflecting the rapidly increasing utilisation of new technologies, IndustriAll's proposals

for sustainable industrial policy take account of the disruption that is being unleashed by Industry 4.0, the term used to describe a range of technologies such as advanced digitalisation, artificial intelligence, semi-autonomous interconnected machines, advanced robotics, 3-D printing, nanotechnology, advanced biotechnology and platform work.

D.1.6. IndustriAll Europe

Following a merger in 2013 between EMF, Metall and Chemical, IndustriAll European Trade Union represents 7 million manual and non-manual workers in 180 national trade union affiliates in 38 European countries in the metal, chemical, energy, mining, textile, clothing and footwear sectors and related industries and activities. It is a member of the ETUC and acts together with its partner IndustriAll Global Union to better protect and advance the rights of workers in their respective industries and sectors.

IndustriAll Europe closely followed negotiations for the emission trading system (ETS) (EU 2015), introducing limits on greenhouse gas emissions to achieve EU climate targets for 2030, new rules for addressing carbon leakage, and provisions for funding innovation and modernisation in the energy sector. It raised workers' concerns and insisted that EU funding and support be given to sectors most at risk to protect European industrial jobs and provide a Just Transition for all affected. As with ETUC, IndustriAll Europe promoted a Just Transition fund based on ETS income, with resources from auctioning for training/reskilling where coal mining is phased out. Whilst EU 'Innovation Aid' (EC 2014) provides some protection in energy intensive industries such as steel, there is a conflict over whether emissions reduction targets will be met by closures and the globalised market. For instance, the steel industry might become more environmentally friendly whilst suffering from Chinese dumping of cheap steel, with no environment control and involving massive transport. IndustriAll Europe's approach is to develop the knowledge economy and protect, for instance, steel from competitors with the lowest global CO₂ footprint. The ICT dimension is becoming more and more visible in many traditional products such as cars, rather than low price competition.

One concern of IndustriAll Europe is with shipbuilding, where massive economies are necessary, given the emissions from steel; the 200 biggest freighters are 400 metres length with 8000 (sic) containers and emit the same as the worldwide car fleet. The International Maritime authority agrees on standards but these are only met in Europe; there is conflict over national/international waters. Whilst IndustriAll Europe insisted on a Just Transition at the Paris COP meeting, a problem remains of how to transition from coal mining in Poland though the German North Rhineland Westphalia model offers a good example for Poland. In relation to such issues, IndustriAll Europe informs members what is happening and what they need to be aware of, whether through roundtables in Germany, on the future of shipbuilding in France, or the possibilities for the gas sector (EPSU/IndustriAll Europe 2020). For the gas industry, for instance, IndustriAll Europe, whilst seeking integrated carbon-neutral industrial value chains and quality employment, calls for preservation of the industrial base and protection of the most vulnerable parts of society in the most affected regions, and involvement in the alliances on clean hydrogen and low carbon technologies.

D.1.7. Summary: IndustriAll and IndustriAll Europe

IndustriAll's proposals represent a combination of a radical critique of the capitalist economic model as the main cause of the climate crisis and comprehensive sustainability policies framed by the just transition framework. Reflecting the job losses anticipated in the many carbon-intensive industries represented, much attention is given to alternative clean technologies and the labour market programmes needed to support those affected and their

families and communities. This is also apparent from the concerns of IndustriAll Europe, which focus on particular areas, such as steel, gas and coal-mining, the funding available for a Just Transition, and the possibilities of alternative technologies.

D.2. The public sector global and European trade union response

In contrast to IUF, BWI and IndustriAll, the public sector unions EI, PSI and ITF, whilst supporting the efforts of the ITUC and the core principles of the just transition framework, severely criticise the limitations of the inter-governmental process and question the dominance of private sector. These three public sector unions challenge privatisation in public service provision, call for public ownership and are involved in more bottom-up and inclusive approaches to climate action.

D.2.1. Education International

Education International (EI) is a global union federation, representing organisations of teachers and other education employees, and is the largest sectoral union organisation, with more than 32.5 million trade union members in 384 affiliates in 178 countries and territories, the great majority of whom are employed in the public sector. EI's proposals combine calls for a radical transformation of capitalism with sector specific recommendations, emphasising the special role of education in raising awareness and enhancing capacity to take action, particularly as concerns children and young people. The recently published detailed climate strategy forms the basis of the following discussion (EI, 2019).

D.2.1.1. The education sector and developments in climate change education

EI affiliates represent members working in hugely varying circumstances. There are significant variations between countries with respect to education systems, investment in education, employment conditions and unionisation. EI's work has two main dimensions: ensuring good standards in education; and employment rights for teachers. Investment in education is low in many countries, which suggests that SDGs are likely to be missed, a common scenario with international commitments, whereby countries formally subscribe to often voluntary targets but not much is achieved on the ground. In campaigning to improve employment conditions for teachers, EI works with the ILO.

The main implication of climate change for the sector is that education and training programmes need to be reviewed to teach about climate change. EI has been involved in efforts to develop climate change education (CCE) for decades, including in the 1980s as part of initiatives by the United Nations Education Scientific and Cultural Organisation (UNESCO) and later through the UNFCCC COP process. CCE was first mentioned by the UNFCCC at COP1 in 1995, in Article 6 of the convention relating to training and raising public awareness. The emphasis at this point was on developing teaching materials and education and training programmes, with no reference to the training of teachers or other education personnel. The New Delhi Work Programme (2002-2007) for implementation was adapted at COP8 (2002) and covered six areas of intervention: education, training, public awareness, public participation, access to information and international awareness. The initiative to take action was left to individual countries with much expected from NGOs and international organisations. This was followed by the Doha Work Programme at COP18 (2012), which ran to 2020 and has retained the same six areas of action, installed national coordinators and acknowledged stalling of implementation due to resource limitations, particularly in low income countries. Once again, the emphasis was on civil society

organisations and international experts, who were encouraged to establish annual dialogue to share experiences and good practice.

The Global Action Program (GAP) on Education for Sustainable Development (ESD) adopted by UNESCO member states and launched in 2014 scaled up these efforts. Climate Change Education (CCE) is part of the same programme and EI is a partner in this network. In 2014, at COP20, the Lima Ministerial Declaration on Education and Awareness Raising was adopted and, for the first time, the idea of including climate change in national curricula was raised. At COP21, Article 12 of Paris Agreement called for cooperation to take action in the six areas of the earlier programmes. A decision was also made to include an education-themed day in the programme at each annual conference. At COP24, commitments were renewed. Action for Climate Empowerment (ACE) is the new term used by UN to address issues related to climate change education and the aim is to encourage the integration of education and training into all mitigation and adaptation activities. UN SDGs 4, 12 and 13 and specific targets within these goals address the interrelation between education and climate change. The progress indicators associated with these goals are expected to help with monitoring progress, including: the extent to which education for sustainable development, including climate change education, is mainstreamed in (a) national education policies, (b) curricula, (c) teacher education, and (d) student assessment; and whether countries integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula.

However, despite commitments at the strategic level, progress on the ground remains limited. For example, in 2012, only a third of countries indicated that they were required to include Education for Sustainable Development (ESD) concepts in education programmes and climate change education was obligatory in only a quarter; only 7% of countries required that climate change be included in teacher training. The Review of the Doha Programme in 2016 noted lack of resources (technical, financial, institutional and human) to scale up climate change education at all levels, highlighting the need for assistance to strengthen institutional and individual capacities. Lack of dedicated funds for Climate Change Education remains a major issue.

Recent evaluations emphasise the importance of involving stakeholders, such as young people, women and indigenous people as well as international organisations, and call for more coordinated and consistent action. The main problem is that the provision of climate change initiatives continues to rely on the goodwill of the parties. They are simply ‘invited’ or ‘encouraged’ to take action and there are no sanctions and oversight that interventions stretch to embedding CCE into national education programmes and curricula (EI, 2019).

D.2.1.2. Climate change interventions: vision and sector specific recommendations

The EI’s approach to climate change is outlined in a guide prepared to support affiliate organisations and educators, intended to raise awareness among members and act as a training manual (EI, 2019). A substantial part is devoted to the scientific evidence for climate change, international efforts to reduce emissions and the notion of just transition advocated by the ITUC, with reference to examples of the impact of climate change, differences between countries and regions, and actions by NGOs and unions. EI takes an explicitly critical perspective, calling for radical, structural change to the economic system driven by private interests and arguing that the neo-liberal economic model is incompatible with the kind of transformation needed to create sustainable societies. It is also critical of the strategy proposed by international institutions such as the OECD, World Bank and the UN

Environment Agency, insisting that without challenging deregulated capitalism, many of their proposals cannot be implemented. Similarly, EI criticises: inter-governmental climate negotiations; voluntary targets that do not achieve results; lack of commitment to leaving the ‘extractivist’ production model behind; not accounting for emissions that are shifted around; and simply not taking any meaningful action on the structural causes of climate change. The call is for an alternative economic system, prioritising the common good and meeting everyone’s material well-being.

EI defines education as ‘part of the solution’ (EI, 2019: 34) to climate change and calls for CCE to become a curricular priority in every jurisdiction and to be included in teacher training because it can help people to better understand climate change, raise awareness of its urgency, develop skills and the capacity for adaptation and mitigation, and help empower teachers to take action. The features of education systems that undermine the efforts to give CCE a place in the curriculum are also highlighted. These include country rankings based on tests, which encourage countries to focus time and resources on exam subjects and marginalise subjects not assessed, even though these may be about critical issues like sustainable development and climate change. Politicisation of education too poses a challenge to implementing climate change education universally, when, for example, science teachers are encouraged to give voice to climate denial in debating the causes of climate change.

Taking forward the resolutions of the 8th World Congress on education for sustainable development and climate change, EI supports: member unions through knowledge sharing, resource development and capacity building; the training of teachers as part of the ‘Quality Educators for All’ professional development programme that has so far been implemented in Mali, Uganda, Niger and Tanzania; and the creation of online teachers’ networks for sharing information and experiences. Externally, it continues to participate in COP meetings, related events and campaigns such as the COP Education Day, collaborates with the UN and UNESCO on programmes related to sustainability, and lobbies to ensure the fulfilment of commitments by national governments.

D.2.1.3. Summary

EI gives support to broad union demands concerning just transition. The vision set out in the published guide (EI 2019) on climate change reveals a radical perspective that explicitly calls for system change for tackling the climate crisis, although questions around governance and the role of labour are not addressed explicitly. The recognition of just transition by intergovernmental climate organisations is celebrated as an achievement of the labour movement. Recommendations for the education sector are informed by decades-long involvement in international developments and are comprehensive in assessing the inadequacies of the process. EI is critical of the voluntary nature of commitments arising from international agreements and the reliance on civil society organisations and disparate education providers that are distant from local circumstances. Instead, it calls for the complete and comprehensive integration of CCE into curricula at all levels, the training of teachers, and more local collaborative platforms and networks. In other words, it calls for the public education authorities to lead a comprehensive reworking of the curriculum and the empowerment of teachers to educate future generations and build public capacity for effective climate action.

D.2.2. Public Services International and European Public Services Union

Public Services International (PSI) is a global union that represents 20 million public sector workers in 700 affiliate organisations in 163 countries. The great majority of the employers in these sectors are public sector organisations, providing public services such as education, health and water. PSI engages with and responds to international institutions and their policies, for example the privatization policy of the Department for International Development. PSI works closely with the European Public Services Union (EPSU) and shares a common perspective on climate change. EPSU in turn covers four main sectors: social security, national administration, local government, and utilities (electricity and gas) and 49 countries (including Russia), involving 365 unions and 8 million members. The different European social dialogues held include: 1) electricity; 2) gas (particularly problematic due to the enterprises involved); 3) municipal; 4) national administration; and 5) the hospital sector.

D.2.2.1. Public services and climate change

Public services in many European countries have been reduced severely over the past decade of austerity policies and cuts in investment and following a long-term trend of privatization. Climate change has specific implications for the public sector and public services are critical for climate adaptation. All public services are affected by climate change, particularly central and local government, social services, education, healthcare, public utilities, public transport, disaster management and emergency services. It has an impact on public infrastructure and causes disruption to transport, water supply, the urban environment and buildings, energy generation and distribution. EPSU members have been part of the immediate response to extreme weather events through emergency and rescue services in local and regional government. The role of the public sector is central to climate action and includes managing the energy transformation, dealing with flood defences and water management, and disaster risk management (e.g. forest fires, floods; sea level rises, storm surges). All this calls for evidence-based strategies (e.g. European Flood Awareness System), public investment, and institutional structures in place to respond rapidly, taking into account local/regional circumstances and expertise because climate change impacts are manifested locally. However, municipal and city administrations with responsibility for these areas have been weakened by austerity and privatization (EPSU, 2017a).

Our interviewees highlighted the significant differences between regions of the world and the even more challenging conditions for public sector providers and unions in countries outside Europe. In many parts of the world, unions have limited or little influence at the national level and are seen as a threat, especially where the energy sector is concerned, and union action can be violently repressed. Government investment in public services and infrastructure can be minimal, with direct impact on public sector workers' conditions of employment. In many parts of the world, responses to disasters and refugee and emergency services are drastically underfunded, whilst in middle and low-income countries climate is difficult for unions to prioritise against other battles.

D.2.2.2. Climate change interventions of PSI and EPSU

PSI's proposals for climate action are revealed in several publications produced by the Public Services International Research Unit (PSIRU) and online commentaries. Whilst EPSU joins other unions at COPs to promote just transition, both PSI and EPSU highlight the limitations to what can be achieved through this process. Social dialogue is welcomed, but without 'social power' union influence is seen as limited. Discussion on the Just Transition has been most advanced in the electricity sector and, even before COP 21, EPSU was working with the employers in electricity to develop the JTF, also involving members in coal fired power

stations in Poland. The just transition vision advocated by the ITUC is also criticized for not challenging the neo-liberal, pro-growth and pro-profit narrative (Weghmann, 2019:41). For instance, governments often argue that public services are being cut because of budget deficits, but no mention is made of the fact that these occur because capital is not paying tax. Thus, tax justice is relevant to the green transition and climate action. PSI proposes a more radical transformation and advocates public alternatives, and inclusive, local and community-wide transitions:

The solutions to the climate challenge require substantive transformation of the current socio-economic development paradigm, including industrial change. This is not just about some technical changes to energy production and transport systems. What is required is a redefinition of the predominant model of production and consumption. We must give back to the state and public services their role in supporting our communities, and ensure that workers and trade unions are able to participate fully in all steps of this process. (PSI website)

EPSU calls for re-municipalisation and public ownership of utilities, proposing an alternative to the model of liberalization of water, waste and energy sectors, one based on the public service principles of universality, access, equality, solidarity, affordability and cooperation (Lobina et al, 2014; Weghmann 2018, 2019). In this campaign, EPSU collaborates with the ETUC and is actively involved in Trade Unions for Energy Democracy (TUED) in advocating public investment in publicly owned and democratically controlled energy companies, municipal promotion of renewables and a just transition to mitigate the negative impacts of decarbonization policies on workers and local communities. EPSU is also critical of fracking and concerned about the employment consequences of smart meters.

Further detailed proposals, for instance in relation to the circular economy, are developed through in-depth evaluation of specific services, explicating the consequences of relying on private providers and on the work and employment conditions in public services, including in 'green' sectors such as waste management (Weghmann 2020). Progressive targets for a circular economy are seen as possible for the locally-organised waste sector and job growth, as long as health and safety, qualifications and respect for workers are incorporated. EPSU's proposals also promote public ownership in public service provision and champion workers' rights and quality employment. Examples of its approach include:

- *Evaluation of waste services:* Cibrario (2018) highlights the neglect of waste services and workers despite the growing hype around a circular economy and the emphasis placed on waste reduction and resource efficiency. The policy recommendations include: recognizing the value of waste workers; including all stakeholders in drawing up national and local waste management plans; creating quality employment and ending informal employment in the waste sector; investment in waste services; policy coherence across different levels of government; and public ownership (municipalization) of waste services.
- *Study of Public Private Partnerships:* Hall (2014), examines Public Private Partnerships (PPPs), demonstrating their inefficiency, the cost to the public purse, the secretive processes involved in what is effectively the privatisation of the financing of public infrastructure and services, and outlining the 'public alternative'.
- *Energy liberalization:* Weghmann (2019) demonstrates how energy liberalization led to the diversion of profits to shareholders rather than investment in the energy infrastructure, renewable energy production and the lowering of prices. An argument is made for the many benefits of public ownership, decentralized and democratic management,

renationalization and re-municipalisation for ensuring a decarbonized and affordable energy system.

- *TiSA and climate action*: Menotti (2016) discusses the impact of the Trade in Services Agreement (TiSA), covering Energy Related Services (ERS), on EU member states' efforts to implement the Paris Climate Agreement. She argues that TiSA aims to strengthen the market and limit the space for government policy and regulation, so undermining the urgent work required to reduce emissions.
- *Public procurement*: Trade unions have been trying to make procurement greener and more social and a social and green procurement network was initiated and coordinated by EPSU. In 2004 (revised 2014) a directive on this (EU 2014) aimed to make procurement more social by enabling subcontracting issues to be looked at, involving environmental groups and local government.
- *Adaptation policy*: a report analysing the EU adaptation strategy and national adaptation plans that municipalities have to cope with was published in 2017, looking also at strategies at national level (EPSU 2017a).
- *Supporting proactive trade union and local initiative*: There have been a number of local initiatives, for instance by Unison in UK in relation to the waste sector, relating to the waste hierarchy, reusing and recycling. There are also green union representatives in UK and Belgium, and through the European Works Council structure there are environmental representatives who are active in many companies, particularly in the utilities.

Both PSI and EPSU support international and European trade union action for the implementation of the Paris Agreement, though EPSU is more for binding targets than the employers, objecting to a single target driven by the market. Collaborations with other unions and lobbying activities are more targeted, sector specific and result-oriented. Examples of interventions by EPSU include:

- *Negotiating just transition with electricity employers* to address training and quality job creation. At COP 21, in 2015, EPSU issued a joint statement with the electricity employers, Eurelectric, emphasizing that social partners need to work together to address climate change particularly its employment and social impacts. This collaboration continued in the European sector social dialogue. In November 2017, the social partners agreed a joint declaration on just and clean energy transition, focusing on quality job creation, reskilling/upskilling, involvement of social partners/local communities, and specific financial instruments.
- *Campaigns to eradicate energy poverty*. EPSU published a policy paper (EPSU 2017b), together with the European Anti-Poverty Network, demanding the *Right to Energy for all Europeans*. The union then joined forces with other social and green groups to launch the *Right to Energy Coalition*, which campaigns to ban disconnections to protect low-income households and to renovate homes in order to cut emissions and energy bills and put energy in people's hands.

D.2.2.3. Summary

PSI's perspective on climate change is not found in a single document setting out its vision, but is rather implicit in its critique of intergovernmental climate negotiations, the continuing reliance on market measures and non-binding targets that governments and employers do not act upon. Research and campaigns put the spotlight on employment issues in specific sectors at the same time as arguing for better-funded public services and the right to access public support when in need (e.g. for housing and energy for households), drawing attention to the consequences of privatization and the lack of investment in public services. The approach is

one of combining the protection of workers' interests today with that of shaping the future of public services.

D.2.3. International Transport Federation (ITF)

The International Transport Federation (ITF) is a global union, originally founded in London in 1896 as the International Federation of Ship, Dock and River Workers, which became the ITF in 1898 when it expanded to include transport workers in non-maritime industries. It traces its origins to the 1889 London dock strike, led by Ben Tillett and Tom Mann, and to international co-operation, with Charles Lindley of the Swedish seamen's union and with European transport unionists during the 1896-7 dock strikes in Rotterdam and Hamburg. The ITF continues to fight for the transformation of working conditions globally, connecting nearly 700 affiliated unions from 150 countries, covering nearly 20 million workers. It promotes union and human rights, works for peace based on social justice and economic progress, helps affiliated unions defend member interests, provides research and information services and general assistance to transport workers in difficulty. ITF has substantial bargaining and lobbying powers with international bodies and governments and its size and stature mean that it is able to coordinate successful campaigns against multinationals and governments to bring about change. Among global sector unions, it has published the most detailed climate action proposals, which constitute the basis of the following account (ITF, 2010).

D.2.3.1. The transport sector: emissions and employment conditions

Transport based emissions are around 13% of total global emissions, though this is higher in some countries, for example 26% in the US and nearly 19% in the EU. Emissions from transport increased between 2000 and 2008 by 29% and by 120% globally over the past 30 years, rising faster than any other sector. Transport is also the fastest growing consumer of energy, largely due to the rise in the transport of goods across the globe (freight) at relatively low cost, accounting for, on average, 5.9% of the value of imports. There has been an increase in the use of polluting modes of transport, with road transport, which accounts for almost 75% of transport emissions, especially from cars and trucks, increasing at the expense of rail freight. The US transport system emits more CO₂ than the entire economy of any other nation, excluding only China (ITF, 2010). Furthermore, the social and environmental costs of transport are externalized as cheap transport in general, and cheap air travel in particular, are achieved on the back of low pay and employment conditions in the sector and by subsidizing fuel costs and removing government regulation. The number of transport jobs has increased in the last two decades but, in most instances, these are of poor quality in terms of pay, stability and safety, whilst public transport has been subject to liberalisation. Polluters do not contribute to addressing issues of highway maintenance, tackling emission rises, accidents, congestion and the health consequences of diesel particles.

Emission reduction scenarios for transport have been developed by the International Energy Agency and the World Business Council (e.g. IEA, 2020). According to the IPCC, estimates tend to be overly optimistic in their expectations from new technology, such as vehicle fuel and energy efficiency improvements (e.g. electric drive, hydrogen fuel cells, hybrid-electric power trains), as for the next decades, even if they become possible, much transport energy will still come from fossil fuels (IPCC 2014). Another problem is that these plans do not address other transportation problems such as congestion, road safety and public health and safety (ITF, 2010).

D.2.3.2. Climate change interventions: system change for sustainable transport

ITF's vision for sustainable transport was set out at the 42nd Congress in Mexico (2010). The response to climate change and action to create sustainable mobility systems are formulated within a social justice framework, as part of a larger, economy-wide transition strategy. Proposals for the sector are placed within the context of a radical critique of neo-liberal economic policies. Rising CO₂ emissions and climate change are conceived as symptoms of the disharmony between global capitalism and our ecosystems. Thus, the argument is that sustainable transport within an unsustainable economic model is not possible. ITF begins with a vision of the future, one not limited to protecting the interests of members today or in the future, green transport sector, and argues that a sustainable mobility policy cannot be achieved without a challenge to economic policies driven by profit, growth and consumption:

The environmental impact of transport is inseparable from the question of how transport is controlled and organized in today's world, and how transport relates to the entire economy. (ITF, 2010:45).

In a sustainable society, the priority should be tackling social problems and meeting basic needs. Democratic control of the economy, regulation of the market and better working conditions are preconditions for sustainability and achieving an equitable society.

ITF is critical of intergovernmental climate policy making and the green capitalism alternative proposed. Ineffective global institutions and policies, lack of action from sector organisations (such as the International Maritime Organisation and the International Civil Aviation Authority) and the emphasis on technological and market measures mean that progress is inadequate and dangerously slow. Green capitalism means market solutions to climate change (e.g. emissions trading) and technical and social solutions will only be adapted if they are profitable.

Climate change cannot be tackled without fundamental structural changes in our economy and society[ITF's proposal is to] take a whole economy approach to climate change and emissions reduction. It should view the growth in emissions from transport as a reflection of what is going on in today's global economy *in toto*, and recognise that reducing emissions in transportation will require changes across all sectors. Decisions made in power generation industry, buildings and the urban environment, food and agriculture, etc, will have an impact on transportation emissions. (ITF, 2010: 42, 18).

The implication is that, if emissions from transport are to decrease, other major changes in economic growth and travel behaviour are needed to shift the current urban land use structure so that travel demand is reduced and public transport use increased. For sustainable mobility, ITF proposes the Reduce-Shift-Improve (RSI) framework:

Reduce the movement of goods and people

- *Reduce people's need and the desire to travel.* One effective strategy can be compact, mixed land use, as this type of urban planning reduces the need to travel, or reduce the distance by mixing various forms of use such as residential, offices, shops, public services so that residents can meet all their needs without travelling far. Evidence shows this type of development is essential for reducing vehicle kilometres travelled (VKT) and high-density areas reduce energy consumption and emissions. Compact developments also encourage active travel, reduce spending on transport costs, preserve open space, and reduce public money spent on road, water and sewer infrastructure.
- *Reduce the environmentally and socially unsustainable movement of goods,* freight travel. This can be achieved by localisation, that is restructuring of the production and consumption system. The transport system has changed to accompany a trade-based

model of economic growth that is all about the needs of MNCs. Just-in-time production and other strategies to reduce labour and resource costs are deployed at the expense of workers and the environment. Estimates suggest around 25% of all emissions are due to international trade.

Shift from high- to low-carbon modes of transport like public transit and rail freight (S)

- *Shift from private vehicles to public transit* (buses, rail, light rail, metro, underground systems) and non-motorised transport (walking, cycling). Passenger cars emit more than half of global emissions and must be reduced, accompanied by increased availability of low or zero carbon alternatives. Between 1975-2004, the cost of private car ownership declined by 11% while the cost of bus and rail fare increased by 66% and 70% respectively. Public transport must be decarbonised. Public transit systems must be improved and expanded to offer low-cost, convenient and safe options. Research shows that when public transport is quick, affordable, safe and accessible, people prefer it to private vehicles. In the global south, it is the poor that pay the high cost of public transport, while the middle classes rely on private vehicles. The former will therefore benefit more from investment in public transport.
- *Shift from air travel to high-speed rail*: Short haul flights have increased in the last decade; nearly 45% of all flights originating from Europe are short distance. Take-off and landing contribute the most to emissions, a further reason for replacing short flights with rail alternatives, which exist in most cases. High speed rail produces 8-10 times less CO₂, compared to flying.
- *Shift from road to rail freight, shipping, inland waterways*. Road freight accounts for more than 30% of transport emissions and is rising. All other alternatives emit less and are at present underutilised.

Improve the fuel and energy efficiency of vehicles. This is important in the short term as the measures outlined above will take time to implement. Examples include light-duty vehicles, engine efficiency improvements, improvements to rail fuel efficiency, electrification of the rail system, new ship concepts and designs.

These measures are likely to create jobs in public and rail transport, which are already significant job providers. The shift away from private vehicles is likely to result, over several decades, in a decrease in employment in the manufacturing of vehicles as well as road construction and maintenance, but these will be offset by the new jobs created through the expansion of public transport, investment in the public transport infrastructure and commercial developments near new transit hubs, the shift to rail transport and the creation of new railway systems.

The strategy is built and pursued in several ways. Many interventions needed to reduce emissions and establish a sustainable economy fall outside the purview and direct sphere of influence of transport unions. To influence strategies on the economy-wide aspects of the transition, ITF continues to work with the ITUC and other global unions and environmental organisations and leverage its power through members in strategic sectors in global supply chains.

In terms of governance, ITF calls for strategic government interventions, arguing that the climate emergency requires the mobilization of social forces to drive a political change of course:

States must be compelled to take decisive action, both individually and collectively, to reduce emissions and restructure economic life in a way that is equitable, democratic and guided by the need to advance social and environmental priorities. (ITF, 2010: 44)

Governments can intercept business as usual and provide a new vision of sustainable development, taking responsibility for research and development, investment in public and sustainable transport and put in place a regulatory framework.

D.2.4. European Transport Federation: www.etf-europe.org

The European Transport Workers' Federation (ETF) is a pan-European trade union organisation, founded in 1999 though with roots going back 60 years and encompassing transport unions from the EU, the European Economic Area and Central and Eastern European countries. It represents more than 5 million workers from all parts of the transport industry - on land, sea and in the air, from more than 200 transport unions and 41 European countries. ETF covers fisheries, aviation, logistics, inland waterways, rail, ports and docks, road, tourism and maritime.

Given the range of transport covered, the ETF has sought to have an inclusive debate, beginning with a project from 2007-2008 around a common EU transport policy, settling guidelines and sustainable policies (ETF 2008). Market, social, and environmental issues were addressed for each sector and then three common workshops held, followed by a final conference. These activities were supported by an EU trade union programme, without the employers as partners as the aim was that trade union federations put forward a sustainable agenda. The project did not just deal with sustainable transport, rail and road together, but social questions, such as how the better working conditions for road transport impacted on rail considerations. It was seen that the market alone cannot solve such a policy, that rail can never replace road completely, and that European infrastructure investment needs to be seen within an overall common framework. Unions were very involved in this initiative, particularly the French CFDT.

The vision produced on sustainable transport, in particular the key message that 'ecological sustainability and social sustainability are two sides of the same coin' has been carried forward by ETF (ETF 2017). One reason a deregulated transport system with just-in-time production and zero-stock policies is possible is because of downward pressure on working conditions and pay caused by social dumping. There are various ways in which action can be taken to implement the ETF strategy on sustainable transport. In terms of policy and regulation at European level, a framework is provided in regulatory activities to implement the Commission's 2011 White Paper (EC 2011) for the different transport modes and ETF also seeks to influence the EU's decarbonising mobility strategy, infrastructure policy, transport research programmes and the Energy Union. ETF's approach is *avoid – shift – improve*, which includes:

- Stop further liberalisation of transport modes and fight against social dumping in transport and for fair rates
- Promote public transport for healthy and safe urban areas and local quality employment
- Promote modal shift combined with a fair and just transition
- Fair treatment of all transport modes as regards taxes and charges

In response to the European Green New Deal (EC 2019), the ETF stresses the need for a human-centred approach, including Social Partners in the development of transition strategies and policies and supporting the creation of quality jobs. Whilst welcoming the initiative to

boost multimodal transport solutions, it points to the obstacle that a low-cost model in the transport sector poses. Transport costs refer also to labour and are integral to making transport more social. The aim should be for better, and not necessarily more, transport. Fighting social dumping, enforcing regulations, reinforcing collective bargaining need to be seen as part of the strategy and workers should not be made to bear internalisation costs. Public transport is critical to the climate transition, which requires a framework for sustainable public transport systems that provide a reliable service at an acceptable price to every citizen. All investments have to be subject to sustainability proofing that includes not only environmental, but also social criteria, which also cover the labour dimension. In order to develop a pro-active union policy, ETF has also been identifying trends (ETF 2017) in terms of, for instance, transport flows, unregulated Uber drivers, driverless vehicles, and individualised transport, which might raise emissions and pollution.

D.2.5. Summary: ITF and ETF

Both ITF and ETF have therefore over more than a decade developed clear and similar visions for the sustainable transport of the future, and continue to build on and further these in developing their policies and initiatives. Both regard ecological and social sustainability as ‘two sides of the coin’, and associate the often-low pay, poor working and employment conditions and lack of regulation with increases in the use of polluting modes of transport. As evident from the ITF’s vision, transport needs to meet basic needs, be democratically controlled, and have better working conditions. Reducing emissions inevitably means changes in the economic model and in travel behaviour and a reduction in the need to travel and to move goods. This also means a shift to low-carbon modes of transport, in particular public transit and rail, improving the fuel and energy efficiency of vehicles, and moving away from individualized private transport to collective modes. Progress has been far too slow and cannot depend on market solutions; it needs structural change.

E. CONCLUSIONS

Global unions have become active in climate politics in the last two decades, led by the ITUC at the intergovernmental platform of UNFCCC and the ILO within the UN. Considering the range of their interventions, it is apparent that global unions adopt a multi-pronged approach to climate action including:

- capacity building and training for affiliates;
- influencing policy at the inter-governmental level;
- lobbying international employer organisations and multinationals, challenging employment and environmental practices;
- development of detailed proposals for climate action;
- campaigns at global, national, city levels and involvement in practical interventions;
- alliance building, collaborating with other unions, environmental and civil society organisations;
- sectoral initiatives to influence environmental and employment policies;
- engagement with ongoing green transitions, at the sectoral/local level (through member unions);
- advocating for environmental legislation and explicating links with labour law;
- mainstreaming climate action in other areas such as collective bargaining agreements.

All global unions frame climate crisis as a social and political problem and lay the responsibility firmly at the door of capitalism and its growth strategies, exploitative of natural

resources for maximum profit and without regard to environmental protection or future sustainability. Just transition calls are linked with long-term union demands for employment rights, human rights, gender equality, social protection, and equity in wealth distribution, as well as environmental protection, all encompassed in the ILO declaration of 1998, *Fundamental Principles and Rights at Work*.

The ITUC-ILO vision of just transition seeks to bring together the ecological modernisation of production and energy systems with the creation of a socially and economically just society. Just transition is a perspective that offers a socio-political explanation and solution to the climate crisis; a reform of the exploitative capitalist growth model to prioritise the protection of natural resources and meet the basic needs and rights of all. The ILO guidelines provide a detailed and comprehensive framework for implementing this reform agenda. The proposed strategy envisages a long and planned transition process led by national governments, in partnership and dialogue with stakeholders including employer organisations and unions. The goal is to transform all production systems to: reduce reliance on fossil fuels and CO2 emissions; address economic and social injustices; and raise the standard of living for all ensuring adequate shelter, food, decent jobs, employment, human rights and gender equality. What is proposed, then, is a comprehensive social reform programme anchored to the UN sustainable development goals.

Whilst Just Transition is the starting point for all sector-based global unions, their proposals link just transition calls to tackling sector-specific issues so that perspectives vary in relation to:

- post-transition alternatives
- transition strategies and the role attributed to labour
- public or private sector dominance
- the balance between representing the short-term interests of members and long-term societal objectives
- the impact of climate change and climate action on the sector (e.g. job loss/gain)

Employment continue to be a hugely significant issue for all unions who in certain respects ways continue to feel the pressure to fight the jobs versus environment narrative. EFFAT draws attention to the jobs to be created in bio-economy, BWI in major retrofitting schemes, IndustriALL in renewable energy production, and ITF in expanded public transport systems. In relation to the impact of climate action on sectors where job losses are anticipated, for instance in energy production, there is greater emphasis on interventions to protect workers and communities and support for the deployment of new technologies that may transform existing sectors or rapidly create new opportunities.

Sectoral unions have a greater focus (than ITUC) on what climate change means for specific industries and bring an understanding grounded in workers' expertise. For example, BWI argues that the transition to sustainable construction must also challenge the dominance of MNCs in pushing standardised methods and materials to the detriment of local expertise, resources and economies in many parts of the world. The EI underscores the difficulty of embedding climate education within curricula shaped by a 'test' based approach to education that values a small number of core subjects rather than education that develops capacity and imagination for action. All sector unions weave links between climate interventions and existing problems, such as basic employment rights, exploitation of migrant workers, health and safety and unionisation. In this respect, the just transition framework, serves well the

objective of combining environmental transformation with employment rights adopted by all sector unions.

In terms of the role of labour in the transition, public sector unions call for a more active and direct role for workers, for example in the form of public ownership and democratic control of energy and essential public services, whilst also responding to EU or national climate strategies and supporting European federations and the ITUC in endeavours to mainstream just transition in international agreements. The extent to which social dialogue structures allow workers' perspectives to emerge and shape climate strategies in a meaningful way is critical to understanding the difference between consensual and radical approaches to the transition. The co-operative and consensual approach pursued by ITUC and ILO promotes the idea of shared interests and responsibilities, to some extent depoliticising both the causes and the solutions to the climate crisis. This is in sharp contrast with the more conflictual conceptions of the capital-labour relationship and the role of power imbalances in climate governance (Sweeney and Treat, 2018), as also acknowledged by the ILO (ILO 2018b: 2). More radical approaches argue for the question of power to be addressed if the prioritisation of profit and economic growth is to be challenged and replaced with a political-economic system that has ecological survival and human emancipation at its centre, therefore proposing an entirely different vision of just transition.

Sectoral global union proposals, whilst largely shaped by European affiliates, acknowledge the challenging circumstances confronted in other regions, including the difficulty of promoting climate action where basic employment and human rights are under threat and union power is depleted. For all unions, and particularly the sectoral global unions, climate change is a relatively recent issue and not all have published policy proposals or position papers. Climate proposals are developed by the head offices, which are situated in Europe, and global unions work closely with European federations who also contribute more as members and have expertise and capacity for inputting into policy developments. The result is that European affiliates play a major role in shaping climate policies of global unions, though representatives from other regions are involved in designated working groups. Within this European-centric policy development process, proposals may be developed by a small number of officers and there are acknowledged challenges around awareness and capacity within unions. Worker engagement at the grassroots level to contribute to the development of grounded and representative transition alternatives appears limited, a particularly thorny yet important challenge for local implementations of global visions.

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CASE STUDY 1

Social partnership and the transition to a bioeconomy: sugar beet production in Denmark

Introduction

This account is based on an assessment of sustainability initiatives in the development of a bioeconomy in sugar beet production in Denmark and the role of unions and social partnership in this transition. An investigation of this process was carried out as part of ‘Just Green Transitions and Global Union Organisations: Breadth, Depth and Worker Agency’, a research project funded by the international research programme *Adapting Canadian Workplaces – An International Perspective*.

The aims of the research project are:

- to produce a comprehensive overview of global trade union approaches to climate change;
- to evaluate just transition strategies;
- to identify and investigate innovative sectoral and workplace-based initiatives involving unions.

This case study constitutes one example of such an initiative, highlighted by the European Federation of Food, Agriculture and Tourism Trade Unions (EFFAT) as an example of bioeconomy in which the unions have been engaged. The interview with the union officer co-ordinating the bioeconomy initiative at EFFAT took place in June 2019 and the visit to Lolland, Denmark, in November 2019.

Altogether, interviews were conducted with:

- a policy officer from EFFAT
- a policy advisor from the union 3F, responsible for climate change policy, the agricultural and food industries, organic farming and health and safety;
- a 3F shop steward and deputy chairman of 3F in Lolland, with 40 years of experience working in the sugar factory and whose family grew sugar beet in a nearby small farm;
- a sugar beet farmer, implementing sustainability measures on the traditional family farm;
- a representative from the beet sugar manufacturer Nordzucker, employed for six years, first as a (bio) engineer with expertise in nanotechnology, then as production manager.

In the following a brief introduction is given to the bioeconomy in the European Union (EU) and the roles of EFFAT in the development of a strategy for this and in the implementation of bioeconomy plans in beet sugar production. This is followed by a detailed examination of beet farming and sugar production in Denmark and the role of the Danish union 3F in the growth of the bioeconomy and sustainability in the sector.

The EU bioeconomy strategy and the role of unions

The bioeconomy is central to the development of a circular and low-carbon economy and comprises those parts of the economy that use renewable biological resources from land and sea – such as crops, forests, fish, animals and micro-organisms – to produce food, materials and energy. Bioeconomy is already a significant part of the EU economy, contributing €2,259 billion in 2015 and employing 18 million workers (EFFAT, 2019). The EU bioeconomy strategy aims to improve the sustainable use of biological resources and reduce waste by supporting innovation in bio-technology, the development of bio-based products and the utilisation of bio-waste, 40% of which ends up in landfill. Bioeconomy implies changes in established sectors such as agriculture as well as the creation of new sectors that utilise technology to turn byproducts from agriculture and the food production system into high value products such as bioenergy, novel food ingredients and pharma chemicals. The development of bioeconomy and related sustainability measures also help tackle the footprint of agricultural production, responsible for 10% of EU greenhouse gas emissions, and meet the growing demand for food and reduce food waste (EC, 2018). It is estimated that growth in bioeconomy could potentially create one million jobs by 2030 (EFFAT, 2019).

The agriculture and food production sectors, set to be directly affected by bioeconomy, are organised by EFFAT, a federation of 120 national trade unions from 35 countries and representing the interests of 22 million workers. EFFAT campaigns on employment rights, health and safety, skills, equality, and decent work, organises cross-border initiatives targeting multinational companies and promotes

social dialogue at all levels. EFFAT's engagement with bioeconomy has two strands: building knowledge, understanding and capacity to influence policy; and the development of sector-specific and local bioeconomy initiatives to enhance union involvement on the ground.

To develop union capacity and awareness, EFFAT developed a project investigating the implications of the transition to bioeconomy for workers and unions, particularly in terms of job creation, skills development, job quality in emerging industries and decent work. Completed between 2017-2019, in relation to employment the study showed that bioeconomy could potentially be a strong job creator but also, similar to food processing, tends to be highly automated so that the development of bio-based value chains across sectors and industries (e.g. between food and non-food value chains) present greater potential. EFFAT calls for: a socially, economically and environmentally sustainable bioeconomy; a regulatory framework to facilitate the full exploitation of biomass; and for unions to actively engage with EU and national policies and initiatives to promote bioeconomy and ensure workers' rights. The study also provided a platform for capacity building and knowledge exchange between participating countries (Belgium, Croatia, Denmark, France, Germany, Italy, Spain, UK) (EFFAT, 2019). Alongside the EFFAT policy officer, the policy advisor from the 3F union in Denmark was on the steering group for the project, which involved unions from UK (UNITE), Denmark (3F), France (FO), Spain, Bulgaria and Serbia/Montenegro. In the course of the project, two workshops were held in 2018, one in Copenhagen and one in Italy, and a final conference in October, all intended to increase awareness of connections between production sectors. The workshops were very popular, with active participation and follow up from the unions involved. Overall, the project served to raise the profile of unions, as this was an issue they could lead on, concerning what the future looks like and how the sector can be transformed; some even took up the issue with their governments.

The Beet Sugar Sustainability Partnership is an example to the second strand of EFFAT's activities. The social dialogue-based partnership drives the implementation of bioeconomy in the sugar industry, with unions playing a major role with their particular focus on job creation in new sectors, equitable access to opportunities and training, and working and employment conditions enshrining decent work standards in the transition and beyond.

EU sugar industry and the Beet Sugar Sustainability Partnership

Sugar beet is grown in 19 EU countries, supporting rural communities and generating significant employment opportunities. Around 140,000 farms are involved in sugar beet cultivation, 109 factories process sugar beet, 23,700 workers are directly employed in sugar factories and over 338,000 jobs are supported in the wider supply chain. The EU sugar industry's contribution to the economy has been valued at €15.6 billion (BSST, 2017; CEFS, 2019). Work in the factories is highly skilled, discouraging temporary employment and casual migrant labour. The beet sugar industry has been under pressure since quotas were abolished in 2017, impacting on fair trading practices by making sugar importing easier and cheaper, but nevertheless the industry has survived proposals to move production to other countries.

The sugar beet industry in Europe continues to evolve, adapting sustainable practices and creating a circular bioeconomy centred around beet. This has led in recent years to increasing investment in the development of products other than sugar, such as amongst others chemistry products that are replacing petroleum-based materials, renewable ethanol for food and non-food use, and animal feed. Sugar factory byproducts, such as lime, soil and stones, are recycled for use in agriculture, construction, chemical and pharmaceutical sectors. The EU Beet Sugar Sustainability Partnership (BSSP) was established in 2013, with the aims of improving sustainability in beet sugar production and supporting the transition to a circular bioeconomy. The stakeholders are:

- the International Confederation of European Beet Growers (CIBE), representing 300,000 sugar beet growers from 16 EU countries, plus Switzerland and Turkey
- the Association of European Sugar Producers (CEFS) which represents all European beet sugar manufacturers and cane sugar refiners in 21 EU countries, plus Switzerland
- EFFAT.

A three-dimensional sustainability perspective is pursued:

1. Sustainability *in the field* involves: using appropriate seeds and plant varieties to ensure soil fertility; adopting low and no-till techniques for energy efficiency; efficient irrigation to preserve water; prevention of watercourse pollution; and conservation of soil fertility and minimising and re-using post-harvest residues.
2. Sustainability *in the factory* involves: using the water from the beet itself; energy efficient transport; biological treatment of excess water for re-use; minimising dust, noise and odours; and using the by-products and 'waste' such as pulp, molasses, beet tails for other purposes such as animal feed and biogas production.
3. *Social and economic sustainability* refers to: labour standards such as no child labour, no forced labour, and the right to unionise; facilitation of labour-management relations; non-discrimination; occupational health and safety measures; training and education; dialogue with the local community; and monitoring of the supply chain to ensure responsible practices (BSSP, 2019?).

Since 1998, EFFAT and CEFS have also collaborated in social dialogue in the sugar industry, publishing the first corporate social responsibility code of conduct in 2004, setting minimum standards concerning: human rights; vocational education and life-long learning; health and safety; social dialogue; fair pay; working conditions; restructuring; business relations and choice of suppliers. The implementation of the code of conduct is monitored and reviewed annually, with 14 reports published so farⁱ (CEFS and EFFAT, 2004). In 2020, the social partners began another project to further advance the move towards a 'post-petroleum' industry and committed to a just transition, emphasised joint working to tackle the challenges of the Covid 19 pandemic and the market changes expected post-Brexit.ⁱⁱ

Bioeconomy and beet sugar industry in Denmark

Denmark has a growing bioeconomy, with particular strength in the use of biomass from agriculture, comprising 62% of land use in the country, and in biofuel production both from agricultural residues and dedicated oil crops, such as rapeseed, maize, sweet sorghum and sugar beet (Bentsen et al, 2019). In response to the recommendations of the National Bioeconomy Panel, investment is directed to creation of new and high value chains such as protein production. For example, the Danish Marine Protein Factory, which opened in 2019, produces protein from starfish, a species naturally found in abundance in Danish waters (EFFAT, 2019). Sugar beet too lends itself to the extraction of a multitude of food and non-food products other than household sugar and has become the centre of the transition to circular bioeconomy in the sugar industry.

Beet sugar production has a long history in Denmark. The industry has changed significantly due to the changing structure of farming, the sugar industry, EU and national agricultural policies and the lifting of EU quotas, which made it more competitive so that production increased and prices fell, including beet prices. Many small farms have closed, resulting in fewer and bigger farms; compared to 6,000 sugar beet grower ten years ago, today there are only 800. Previously, there were five sugar factories in Denmark owned by Danish Sugar, plus an independent one owned by farmers and another factory making sugar derivatives. In the 1990s, Danish Sugar bought companies in Sweden, Finland, Poland and also in Eastern Germany, where eight very old and run-down factories, employing many, were replaced by a very modern one with a headquarters in Braunschweig. Danish Sugar was then bought by the German company Nordzucker Group in 2009. Currently, there are two sugar factories in Denmark, one in Nakskov and one in Nykobing. Sugar factories too have changed significantly with the installation of computers and digital monitoring of the production process.

Social dialogue in Denmark and the role of 3F in the growth of bioeconomy

Social dialogue is embedded in Danish industrial relations in a tradition dating back to the 1880s, a period of widespread strikes and struggle for recognition by unions. In the 1970s the big discussions about a 37.5 hour week led to a focus on a civil/social pact. Today, employers are bound by legislation that mandates worker consultation. Every workplace in Denmark with more than five employees has a shop steward and is covered by collective agreements. If there are more than ten

workers, then there is a safety representative, though there is not a works council structure but rather shop stewards, whose number is proportional to the number of employees. The union's position is that trust between employers and unions makes sense for both sides; it facilitates problem solving at the local level and employers appreciate it as it means fewer strikes and days lost to industrial action. Most problems are solved at the place of work, locally, probably 85% of cases, which means a great saving for the union as there are no strikes. In Denmark, unemployment benefit is managed by unions, through a 500 Kroner monthly contribution. The main issues for unions at present are job creation, skills, education, and health and safety. In agriculture, health and safety issues arise in working with animals or when away from the workplace. There are many migrant workers in agriculture, some from Ukraine and Romania, rather fewer from Poland as wages and job security continue to improve there, but also from the Baltics. The collective agreement covers agricultural workers, including the sugar beet industry where most are employed full time.

With 270,00 members, 3F is the biggest union in Denmark, with 68 local offices and around 450-500 employees. It organises construction (except for electricians and plumbers), transport, hotel, cleaning, catering, agriculture and forestry with a unionisation rate of around 70%. In the sugar industry, both farmer and factory workers are organised by 3F. The union has well-developed, economy-wide climate change policies and bioeconomy constitutes an important part of its proposals for a green economy, preceded by the promotion of organic farming in 1990s (3F, 2015, 2016). The union has also developed an ethical investment policy, Pension Denmark, which is open to all 3F members and invests its funds in green sectors (e.g. biogas factory in Manchester), seen as more reliable and profitable with a 3-4% pay back. The union notes that in recent years, there has been a sea change with regards to public, political and employer views on climate change. Internally, more union members are calling for climate action. Externally too, with growing public awareness and political commitment to climate action, the union's demands for climate action have ceased to be seen as marginal. Employers have begun consulting their employees (e.g. Carlsberg workers were asked for ideas on reducing energy consumption) and private companies have been calling upon unions' expertise in developing climate initiatives. For instance, a company working on novel enzymes and bioethanol production for cars has asked for political support from 3F for its plans to set up a biorefinery in Jutland, which the union agreed to as it would create jobs. There is more recognition of the facts that planning is essential for the transition to a green economy, alleviating concerns about the impact on workers, and that training is needed for new jobs, both of which can be addressed with accurate information and careful preparation (e.g. with planning and support, ex-miners *can be* deployed in wind turbine production). There is also growing appreciation that the green economy makes business sense, although the politics of the government and union power still influence climate strategies.

Despite growing support for sustainable transitions, unions have limited opportunities to shape policy. At government level, climate-related committees involve employers and NGOs, though often only one seat is allocated to unions. For the past four years, 3F has been on an EU stakeholder panel on the bioeconomy but has only recently been invited to join the Danish government's bioeconomy stakeholder panel. This represents a highly valued opportunity for the union, as policy discussions and decisions at this level cascade down to influence specific sectors, as occurred in the sugar industry, where it prompted the beet sugar sustainability initiative. Whilst there is consensus on the environmental importance of investing in bioeconomy and its potential contribution to economy, there is no guarantee that issues such as training, equity and equality will be prioritised in newly emerging sectors and this is where unions continue to have an essential role. For instance, in 1978 there were campaigns against pesticides across Denmark and only in the mid 1990s did training for spray operators begin. Social dialogue therefore is an important part of the planning for bioeconomy as sustainability policies and action are intertwined with traditional union issues. For example, it is the job of the union to ask if the materials used in wind turbine production have health and safety implications because the glass fibre used in making windmills can be very warm and cause problems with breathing and touching.

3F in Lolland

The union has 4,500 members in Lolland, 200 of whom are unemployed. Membership is low and there are concerns that young people are not joining the union and do not appear to understand that all the rights obtained had to be fought for: sick leave, pensions, holiday pay. Low membership undermines the union's power and, if continuing to fall, makes it difficult to sign collective agreements. For instance, there has been a dispute with one of the companies transporting beet from farms and sugar from the factory, some of which is stored in silos on the site of an old sugar factory as the storage facilities in Nakskov have insufficient capacity. The union has been trying to sign a collective agreement but this company has been resisting, so Nordzucker has just terminated its contract and as a result 3F is expecting that it will come to the negotiating table. In Lolland, the union does not have many members in agriculture and does not organise the 500 plus workers employed in a wind turbine factory. Eastern European workers employed on pig, barley and wheat farms and apple orchards tend not to engage with unions but simply rent a small room on the farm, are transported around by the farmers (who charge for this), and register as agriculture students for work permit purposes. The tunnel construction to Germany will, however, create jobs in construction, which would be covered by 3F.

According to the 3F representative, workers are not particularly engaged with the climate change agenda but rather with doing a good job and are likely to comply with any changes to production.

Sugar beet farming and working with Nordzucker

A third-generation farmer exemplifies sustainability in beet farming in Lolland, where the heavy, clay soil is particularly suited. The farm is 420 hectares, considered an average size for full-time farms. Our interviewee learnt everything from his father and, when he took over the farm, it was crop based, including sugar beet and rapeseed. He now produces sugar beet, wheat, barley, and rapeseed in rotation; catch crops are used to absorb nitrogen. The growth cycle is hoeing in spring, picking out rocks and any hard soil, then sowing and fertilising, followed by ploughing in the autumn, spraying twice and then cutting off tops that go to seed, and finally harvesting between October and December. Currently, about one third of the farm is allocated to sugar beet, one third to wheat, and one third alternating between beet and barley. Beet is a relatively easy crop to grow and profitable with the sugar factory right next door. A lot of sugar beet farming is automated, with the seeding and pesticide spraying machines using GPS. The machinery is very expensive; tractors cost 1 million krone each and the sowing machine, 1.8 million. In addition, the farmer has about 9,000 pigs per year, fed by barley and wheat grown on the farm; rapeseed pulp, after oil extraction, is also used as feed. He has one employee to look after the pigs. The farm runs with machines (see Photo 1), with food pumped to the pigs in the pen. Pigs come when they are twelve weeks old, are kept for twelve weeks and then sent for slaughter.

Photo 1: Some of the machinery used on the farm



For the farmer, beet production has changed significantly from, for instance, forty years ago, when beet was transported by steam engines. The type and quality of seeds changed with beets becoming bigger, containing more sugar and not covered by so much dirt. With the increased awareness of environmental protection and sustainability, nothing is wasted. For the farm, the importance of taking care of the quality of the soil by rotating crops, planting catch crops in between sugar beet cycles, and regulating pesticide use has always been evident and extensive restrictions are in place on pesticide use, type and amount, application time and method - all measures also supported by 3F. For example, spraying is done very early in the morning (4-9 am) and using GPS, with blades divided into 3 metre sections so that only the targeted area is sprayed. Now more attention is paid to how to create a full circle of production that minimises waste, from crops to animals, and to utilise all possible resources, including generating energy on site. For example, straw from the farm is used in district heating, whereas previously it was burnt and left in the field, and the farmhouse is heated with biogas from pigs. The economy of the farm has thus become more circular.

The farmer has a contract with Nordzucker, which determines how much land is allocated to sugar beet every year, negotiated collectively by the farmers' association. On average, he sells 3,000 tonnes of beet and the amount of sugar beet supplied determines the unit price received. For example, in 2019, the farm earned 250 kroner per tonne, assuming 60% was turned into sugar. Nordzucker arranges transportation through contractors, who have better machines to gather and load the beet without damage and can do so cheaper.

The farmer also invests in renewable energy generation such as wind energy and biogas from pig manure. There are six wind turbines, producing seven million kilowatts of energy a year but now twenty years old, so will be taken down soon. Together with four other farmers, three new 150 metre-high ones have been installed generating 37 million kilowatts of energy a year, which is sold to the grid. New wind turbines are bigger and more efficient but installation is expensive – it cost 95 million kroner, a big investment. The first seven years is subsidised and the return is 15 per cent, reducing to about 7-8% after that. Together with seven other farmers, the farmer is also considering using 150 hectares of land to install solar panels and expects such opportunities in the area to grow – Copenhagen authorities are planning to build many windmills in Lolland to help fulfil plans for Copenhagen to become the first zero carbon city. However currently the grid is not big enough to store all the electricity produced.

The farmer is also expecting demand for biogas to increase. After 2021, sugar factories will not be able to use coal or heavy fuel and Nordzucker is already exploring biogas plant and pipe installation, which would involve a big infrastructure project. If implemented, this would create a market for the biogas he can produce from pig manure on the farm and also the final residue from sugar beet. Even after biogas extraction, what is left from pig manure can be turned into fertiliser so absolutely nothing is wasted. There are companies interested in investing in this scheme, and 40 pig farmers organised, but no concrete plans have yet been made though the Lolland municipality has a progressive attitude to investing in green energy.

Nordzucker factory in Nakskov

Nordzucker Group operates in Germany, Denmark, Estonia, Slovakia, Finland, Lithuania, Poland. The factory in Nakskov was established in 1882, and now consumes 1.5m tonnes of beet per annum, producing 230,000 tonnes of sugar, 70,000 tonnes of sugar pellets, and 41,000 tonnes of molasses (used for yeast). It has 143 employees including blacksmiths, electricians, technicians, mechanical engineers, and draughtsmen. Operators generally need to be skilled and employees include: 15 apprentices, 50 smiths, 35 unskilled, 114 blue collar, 3 in 'automation'. White collar workers include: 6 engineers, 9 engineer 'Meisters', 3 in 'automation', 7 technical employees, and 4 administrative staff, totalling 29. Of the blue collar workers, 100% are unionised. Any migrant workers employed need to have good Danish comprehension to be able to learn and carry out the job safely.

The employment pattern is seven days on, two days off, with three 8-hour shifts per day. Relations with the employer are generally good, there is a long tradition of social dialogue and workers in

Nordzucker are organised by three unions: 3F, Danish Metal and Danish Electric. New operators in the factory are paired with experienced workers. Learning on the job is important as new recruits need to experience the whole cycle and understand the sensitive evaluations that take place at different stages of production. There are health and safety problems and some accidents, though effort is put into education and there is good health and safety training.

Photo 2: Nordic Sugar Factory



Photo 3: Transforming beet into sugar



All machines are computer operated. Before computerisation, boiler operators needed to constantly check and adjust valves, running from one to the other. Now, the sugar extraction process, though a very noisy, hot and smelly one, is automated. As everyday some machine maintenance is needed, some workers go around but most monitor everything remotely from the control room, sitting before 14 screens. The ‘campaign’ season, when the beet is turned into sugar lasts for four months, from September to January, and in between the factory is taken apart and all the 18-19 machines are cleaned. Workers could be operating the machines during the campaign and undertake maintenance afterwards, preparing for the next season. So, when the sugar is ready, there are about three months holiday and then training and cleaning. Some temporary labour is taken on just for the campaign, about 80 people, then about 70 are got rid of and for cleaning just about 20 are employed. The beet needs to be in the cold as in the warm the filters get stuck.

Sugar beet is transported from farms by subcontractors. During the campaign season, delivery is from 6am-10pm and the factory works, 24 hours a day; stopping is not an option as that would mean cleaning out the entire system and starting again. The factory is supplied by 489 farmers, an average distance of 25kms away. Beet is covered with soil so it needs to be washed and cleaned first. A sample is taken from each truck to test for sugar intensity. The water treatment produces gas which is used for running the factory. Beet is then passed through three stages to evaporate the water. Sugar content in the syrup is first 17-18%, then increases to 70-80%. Even at the crystallisation stage some water is left. At the final evaporation, pure sugar is separated and extracted. The reason for extracting sugar in stages is that viscosity reaches a level so high that no more sugar can be extracted. So, it needs to be stopped and started again, and again. The temperature is kept down so the sugar remains white. Per hour 560 tonnes of beet are sliced, producing 85-105 tonnes of sugar, 15 tonnes of molasses, 25 tonnes of beet pulp and 17 tonnes of beet leaves. Currently, 3.5 tonnes of coal, 6 tonnes of oil and 0.6 of biogas are needed for sugar production per hour.

Nordzucker approach to sustainability and energy efficiency measures in the Nakskov factory

Nordzucker’s Code of Conduct sets out its approach to ethical business, managing the environment, people and relations with society. Guidance on business integrity covers the supplier code of conduct. People policies address diversity, fair treatment, labour standards, human rights, privacy, harassment and discrimination, and health and safety. In the wider community and society, the company is committed to working with beet suppliers to improve sustainable farming, high quality food and feed safety standards, engaging in dialogue with stakeholders and contributing to scientific endeavours relating to sugarⁱⁱⁱ. With reference to environmental sustainability, the company strategy is to end coal dependency by 2030 and become carbon neutral by 2030. The Corporate Social Responsibility policy is agreed at the board level, without the involvement of employees or the local union reps. At present,

the production process is designed to minimise waste and the company reports, compared to 1990, a 40% reduction in energy use and 60% reduction in CO₂ emissions.

In Lolland, in 2013, the company invested in a huge steam dryer, which reduces coal consumption by 150 tonnes per day. Water evaporated from sugar beet is directed back into the system. This means that no fresh water is used to operate the factory, which also makes economic sense. The pulp from sugar beet is turned into animal feed. After the third stage of sugar extraction, the remaining syrup is refined and sold as molasses. Next year, a new plant is to be installed to enable the use of liquified natural gas, which has quite a high % of hydrogen, so reducing carbon content. The main energy consumption is by boilers and this is the main issue the company needs to address in the next few years. It is investing 100 million Krone in reducing energy use. Denmark is determined to eliminate coal and so legislation is making it impossible to operate using coal, which means the energy supply system needs to be transformed very rapidly. One option being considered is to use biogas, which needs a biogas plant and pipes to transport it, so the company is trying to convince politicians to build a pipe-line to Lolland, so that it would then rely 10% on biogas. Boilers are the main energy consumers in the factory. There are also the issues with the current use of plastic as opposed to paper bags, plus the gradual reduction in impurities in the sugar.

Discussion- conclusions

Bioeconomy is a growing part of the ‘green economy’ in Europe, with the potential to create jobs as well as green products that can replace high emission food and non-food items. The beet sugar industry has been engaged in a sustainability drive that intensified over the past decade. These developments are prompted by the general climate change policies of the EU and supported by the bioeconomy strategy. Denmark has been at the forefront of this drive, promoting investment in novel, bio-based products.

At the European level, union involvement in bioeconomy and sustainability in the sugar industry is led by EFFAT, which has been active in social dialogue in sugar, working with the employer representative organisation CEFS. Taking part in stakeholder committees set up by the EU, EFFAT seeks to influence the bioeconomy strategy and policies affecting the sugar industry. The social dialogue structures also enable 3F to have a say in policy development and implementation at the national level. Both EFFAT and 3F lead initiatives in bioeconomy and sustainability in beet sugar production, motivated by the potential of job creation in emerging sectors and the need to ensure decent work and employment as well as a just transition to bioeconomy.

The policy framework in place both at the EU and national (Danish) level therefore supports the emergence and growth of a circular bioeconomy centred around sugar beet, with core and by-products including sugar products, fermentation products, animal feed, bioethanol, biogas, district heating, electricity, soil and compost, lime fertiliser and construction materials.

At the local level, apart from the 3F political adviser, none of the interviewees in Lolland were aware of the EU Beet Sugar Sustainability Partnership. Though it is not clear how long some of the farming practices have been in place, the farmer himself exhibits and applies considerable knowledge of the circular economy, sustainability and the incorporation of renewable energy production into the operation of the farm, both as a business opportunity and to meeting the farm’s energy needs. In this respect, whilst legislation is key for initiating action, the business case for sustainability is important for both the farmer and the sugar manufacture.

Energy efficiency measures by Nordic Sugar have been spurred by legislation and the national promotion of a green economy, though the detail in the company’s sustainability policies may also have been influenced by its membership of the CEFS. In the factory, water evaporation and waste minimisation may not be particularly ‘new’ green initiatives. The interviewee was not involved in making strategic plans, and these would in any case be led by the head office of Nordzucker Group (which operates in Germany, Denmark, Estonia, Slovakia, Finland, Lithuania, Poland). Likewise, awareness within the local union and among workers in the factory appears quite limited.

The case does, however, cover the social dimensions of sustainability, including unionisation, collective agreements, health and safety, training and education for workers, and direct employment. Above all, it shows just how integrated such a bioeconomy is and how Lolland is succeeding in producing surplus renewable energy to export to, for instance, Copenhagen.

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CASE STUDY 2: Sustainable Forestry in Sweden

Introduction

This report is based on an assessment of sustainability initiatives in forestry in Sweden and the role of unions and social partnership in securing a just transition. An investigation of this process was carried out as part of ‘Just Green Transitions and Global Union Organisations: Breadth, Depth and Worker Agency’, a research project funded by the international research programme *Adapting Canadian Workplaces – An International Perspective*. The aims of the research project are:

- to produce a comprehensive overview of global trade union approaches to climate change;
- to evaluate just transition strategies;
- to identify and investigate innovative sectoral and workplace-based initiatives involving unions.

This case study constitutes one such initiative, highlighted by Building Workers International (BWI) as an example of sustainable forestry in which the unions have been engaged. The interview with BWI took place in April 2019 and the visit to Sweden in February 2020. Investigations in Sweden involved a visit to a logging site in Vasteras and interviews with:

- four officers from the head office of GS (*Facket för skogs-, trä-och grafisk bransch*), the sector union for the forestry, woodworking and graphic industries, including: the general secretary, national negotiating officer, international officer, and the union representative on the Swedish National Forestry Board;
- two local union representatives in Vasteras;
- a representative of the Swedish Wood Building Council (*Trabyggnadskansliet*);
- two employees on the logging site of Sveaskog, the state-owned forest company;
- co-directors of ARVET, a private company promoting wood construction.

This report draws extensively on these interviews as well as documentation provided by the interviewees.

The context of silviculture in Sweden

Sweden is a highly forested country, with 70-80% of land covered by trees and lakes, the lakes being protected by forests. Of the 70% covered by forests, 80% is cultivated forest. A hundred years ago, forests were seriously depleted. The 1903 Swedish Forestry Act sought to secure the future of forests and ensure future wood supply by requiring that for every tree that is felled, a new one should be planted. Sweden, alongside Canada and Finland, is one of the largest wood producers in the world and leading on wood and paper for export. Much timber is for export, with UK the biggest market, then Germany and Japan, and more recently China. The 1993 Forestry Act put more emphasis on sustainability, giving environmental and nature conservation goals equal importance to production goals and increasing the ratio of trees to be planted to replace those felled to 2:1.

The emphasis on conservation resulted in a lively and ongoing debate with environmentalists about how much of the forest to use for wood production, how to balance this with the imperative to protect other species of plants and habitats for animals, and whether selective cutting is better than clear cut felling. To some extent, this debate reflects the multiple functions and positions of forests, at the intersection of several policies, including climate mitigation, the rural economy, biodiversity, sustainability in agriculture and the circular economy. The environmental movement has always been strong in Sweden and already today a trend reversal is seen for some species, including forest-nesting birds, as nature conservation initiatives are adapted to the habitat requirements of different species. A renowned Swedish bird is the capercaillie, the old forest's own symbol, whose numbers have increased by 4% per year since the 1990s. The government initiates sustainability policies, which are ahead of European Union (EU) policies and supported by employers, union and the government, albeit their reasons may differ.

In Sweden, climate change is definitely affecting weather, resulting in higher temperatures, which translate into more growth, 20% more forest every year, more trees and more work. With increasing temperatures, bugs are becoming a big problem and they are spreading North. There were also huge forest fires in the hot summers of 2014 and 2018 and 15,000 hectares were lost. The fire started from a forwarder machine due to the friction between metal, dry leaves and stone, so there is more caution now about using chains when it is hot and dry. These fires led the Swedish authorities to initiate fire protection measures for public safety, which are now in more places, resulting in the moose hopping around and the prohibition of metal chains on rocks. The Swedish 'right to roam' or right of public access gives people opportunities to camp, hike and pick berries and most owners keep their roads open to the public to allow access to the forests. Moose hunting is regulated with 300,00 hunters registered and about 80,000 moose killed per year. There are also bears in the south. Those employed in the forestry have permission to hunt.

The focus of Swedish silviculture on long-term sustainable production well illustrates the positive relationship between sustainable forest management and CO₂ uptake (Sveaskog, 2015 a and b). Silviculture is defined as the art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands to meet the diverse needs and values of society on a sustainable basis. Due to their absorption of CO₂, forests are generally regarded as CO₂ sinks and over the last 100 years the volume of Swedish forests has almost doubled and carbon stocks in forests and forest soil have quadrupled. At the same time, more than 4 billion cubic metres of timber have been felled and delivered to the forestry industry. When a forest is felled, while the carbon is stored in the wood, the CO₂ uptake is interrupted and instead CO₂ is released for the following ten years. It takes up to 30 years before a newly replanted forest can store as much CO₂ as was released in the years after felling, so that it is a major problem for the climate if an entire forest is felled. However, only 0.8% of Swedish forests are felled annually, while the remaining 99.2% continue to absorb CO₂ and the CO₂ released at felling is absorbed by surrounding forests (Sveasag (2015a). When the forest gets old it grows less and absorbs less CO₂ and might even start to decay, so resulting in a carbon sink saturation. In Sweden, however, most of the standing forest in different landscapes has good growth due to earlier sustainable management and therefore absorbs considerably more CO₂ than would be possible in the old undisturbed forests. Nevertheless, the trees and small biotopes left after felling mean that the numbers of large old trees and deadwood will increase in the next forest generation.

Forestry requires long-term planning as the trees have to be of a minimum age before any clear cutting can be done. In the south of the country, it takes about 50-60 years for them to be ready (this provides 40 % of production in Sweden), 100-120 years in the North, where they are smaller. For comparison, for instance in Brazil, it takes seven years from planting to sawmill; it is difficult to compete with this global market. Spruce, used particularly for housing, and pine, more for furniture, are better for sawmills and can be felled about 80 years after planting, whilst trees for paper mills are felled a minimum 30 years after planting. In between planting and felling, maintenance is required. Forest reports are produced on, for instance, how much needs brushing and thinning before clear cutting. In the south, it is mainly spruce and pine; every 8-10 years with spruce the birches and other leaves around the tree are cleared so the spruce grows and every 25-30 years thinning takes place. using a smaller harvester machine. For pulp and paper there can be a second thinning and then cutting, at the earliest after 50 years (was 60).

Wood products from forests continue to act as significant carbon stores in society and extend the carbon sink until the day the product decays or is burned. In this way an increased use of wood helps to counteract the CO₂ released at felling. By replacing materials such as concrete, metal or those derived from fossil fuels by wood products wherever possible – for example in building, furniture making, packaging – even greater carbon gains can be achieved. Managing forests and replacing fossil material with renewable biomass leads to a lasting reduction in emissions. In Swedish forestry, on average, every cubic metre of timber harvested for use as a wood product, eliminates 470 kg of CO₂ emissions, with the building of wooden houses constituting perhaps the most effective use

(Sveasag (2015a). But only a certain proportion of a tree can be used for timber and Swedish forest management seeks to use different parts of the tree as far as possible.

There are about 5,000 forestry workers (blue collar), with a unionisation rate of 50-60%. Some are becoming self-employed as companies do not want to employ directly, in which case they cannot be members. However, investment in machinery is very expensive and there are a lot of heavily indebted self-employed workers. As a result, companies are changing to direct employment again. Health and safety are not such big issues as everyone is safer on machines, though there can be problems digging snow and breathing problems. In the past, logging was with horses, but no longer. There are very few women working on logging sites; out of about 5-6,000 workers, only 30-50 are women. The number of women in sawmills, pulp mills and offices is higher, where they make up about 20% of the workforce. There are also more women employed in nurseries. Recruiting young people into the industry is a challenge; companies do not invest and prefer employing migrants on the cheap. The industry is not particularly attractive to young people, with salaries just above the average.

The Swedish Forestry Board (SFB) regulates but in 1993 the law changed and not all forest owners are licensed. There is a market for people to speculate on the forest but the SFB cannot fine. About 50% of the forest is owned by small farmers, 20% by private companies and 20% by local communities and the church. The small farmers have associations of their own representative organisation and sign collective agreements. If they want to sell their wood, all companies need to be certified by the Forest Stewardship Council (FSC), which sets high standards to make sure that forestry is practised in an environmentally responsible and socially beneficial manner, and this is conditional on signing a collective agreement. The last forestry strike was in 1975 and lasted 1-2 months.

Sveaskog

The forest visited was managed by Sveaskog, which is a state-owned limited company owning 14% of productive forest land across the country, or approximately 3 million hectares of forest - an area the size of Belgium - and hence the biggest forest owner in Sweden (Sveasag, 2015b). Sveaskog is dedicated to the conservation of the forest ecosystem, including biodiversity, and has established its own guidelines for biomass harvesting (Sveasag, 2016). From its forests, the company supplies sawlogs to sawmills, pulpwood to pulp and paper mills and biofuel to energy companies, produces and sells tree seedlings, and provides silvicultural services. It has 846 employees throughout Sweden, as well as engaging contractors who each year carry out work corresponding to 1,600 FTEs (full-time equivalents), generating about 2,400 employment opportunities per year. The proportion of women employed is 24% and of women managers 27%, whilst in group management, the proportion is 40% (Sveasag, 2018).

Transport accounts for nearly two-thirds of the carbon dioxide emissions generated by the company. Due to a better fuel mix with a higher proportion of renewable vehicle fuel, total CO₂ emissions in 2017 continued to fall despite increased transport work. A wide range of sawlogs in terms of volume, species, grades and dimensions is offered and the trend is towards increased specialisation at the sawmills which makes demands on deciding already at felling to which customer the tree is to be delivered and on improving delivery precision through digitalisation. There are 17 different sawmills in Sweden, catering for different types of trees and sizes, and the firm delivers to more than half the these. The biggest volumes of pulpwood, consisting of trees and tree parts that cannot be used by the sawmills, come from thinning and regeneration felling. The firm has some 20 pulpwood customers in Sweden manufacturing paper pulp for export or for use in Sweden for packaging and printing papers. The pulp is also used in hygiene products such as nappies, kitchen paper and toilet paper. Pulpwood from Swedish forests has qualities that make it especially suitable for packaging with high requirements such as for milk and juice cartons. Biofuel comes from branches and tops, known as forest residues, as well as tree parts from thinning and regeneration felling (Sveasag, 2015c). It is environmentally friendly as the CO₂ released at combustion is the same amount as the tree absorbed while growing. The firm has some 50 customers, primarily heating plants, CHP (combined heat and power) plants and pulp and paper mills. The firm also owns six nurseries, a seed processing unit and

about 110 seed plantations, accounting for 60% of seed production in Sweden and producing a half billion seeds annually, 95% of which are spruce or pine seeds.

Whilst Sveaskog has a general consideration for nature in the production forests, it is developing 37 ecoparks, where nature conservation takes precedence over commercial interests and which combined correspond to 5% of the productive forest land, or a total of 156,000 hectares, two-thirds being protected through legally binding agreements with the Swedish Forest Agency (Sveasag, 2016)^{iv}.

Union concerns and the logging process

The union GS Fackett organises workers in forestry, modular production factories and graphical (packaging, printing, newspaper) industries. There are fifteen separate subsectors, including graphical, forestry, wood (which became one union) and pulp and paper. This means 15 separate collective agreements, forestry workers being the largest group covered. In terms of procedures, employment disputes should be resolved locally; only if this fails, does head office take them up and legal action is the last resort. For the union, there are some issues, including the health and safety risks associated with planting. The trees are usually dipped in chemicals and workers are also exposed to ticks that carry diseases. The union has, however, been arguing against chemical use and this has achieved results, with glue and sand beginning to be used instead. Another health and safety issue is working time as logging sites can be far away so the journey time can be long and is not paid for; the drive back home after a late shift can be particularly stressful and tiring. The Akkord piecework system is no longer critical to union finance and about ten years ago unemployment insurance was separated from union membership.

One of the key issues for the union in the past few years has been the employment of migrant workers. A 2008 law passed by a right-wing government allowed employers to employ anyone from any country. As a result, the union estimates that every summer around 10,000 migrant workers are employed in the plantation of new trees, some staying through the winter and living in Sweden permanently. Previously, this work was undertaken by women and students. The employment of migrant workers happened in unexpectedly large numbers and, according to the union, they were 'caught unprepared'; it was 'like the wild west' at first, this being the same time as the Laval dispute, in which a Latvian company posted construction workers to Sweden and sought to pay them at Latvian rates in seeming contravention of the European Posted Workers Directive. The Posted Workers Directive applies to forestry, but this does not mean that it is implemented.

The forestry migrant workers are not permanent employees so it is difficult to build relations. They are brought over by employment agencies and are on low wages, with poor working and employment conditions, not much training, and living in inadequate, temporary accommodation (e.g. barns). Following the union's effort to ensure they have legal status, new legislation requires a contract with the agency, and the employing company has to sign an agreement with the union. The union will not accept anyone to work outside the collective agreement, below the minimum rate, without covering tax and national insurance or paying into a pension scheme for migrant workers. However, it spends a lot of time chasing employers to implement collective agreements. The Swedish migrant authority issues permits to migrants, but they are spread across a huge area and move around between May and October. Employers need to be monitored to ensure that collective agreements are followed for migrant workers but it is impossible to monitor them all. Unionising temporary workers is a challenge; they are not necessarily joining unions and yet come to the union if there is a problem. Ukrainians are the biggest group now; it was Polish. Migrant workers tend to work in plantation and the 4-5,000 people doing the planting also do the brushing, which is done manually, mostly by migrants who are shown what to do. Planters are paid by piece/the number of trees planted and, though they have a right to minimum wage and working hours restrictions apply, employers do not tell them about this and they work 10-12 hours per day, extra hours. Improved conditions are needed for migrant workers.

On the question of job loss with technology, there are fewer forestry jobs due to the utilisation of machinery. However, the issue for the union is to make sure that workers have the support they need

to retrain. There is transferability, for instance from forestry to construction. The knowledge and skills required include:

- Computer;
- Trees, which trees to pick, the size of timber for particular products, the quality of timber and the destination of the end product;
- Machines and maintenance;
- Communication of difficulties and problems;
- Constant decision making;
- Driving, including across rocks.

The logging site visited has one harvester, which fells the trees (Photos 1 and 2), and one forwarder which transports logs to the side of the road. A third machine picks up from the road. This is a typical arrangement. And on a logging site, usually two teams work, doing two shifts over 16 hours. A separate group of workers measures and sort the logs into different piles, which are labelled so their origins can be traced through the sawmill processing them (Photo 3). There are 6 sawmills in the area and every sawmill has its own idea about logging.



Photos 1 and 2: On the harvester

Photo 3: The sorting of the logs

On this site, the trees are being harvested for a private forest owner who sells the trees to Sveaskog. A current challenge is the huge increase in bug infestation, which is due to higher temperatures and impossible to control except to cut the trees. Unusually for early February, there is no snow on the ground. The bugs attack tree barks and plants and are of two kinds, the smaller ones attacking small plants and the larger attacking bigger trees. The best way to deal with the infestation is to burn down the trees. Some infested trees have been sold to a company in Germany, then exported to Canada and used in furniture production.

The logger interviewed had been working in the industry since 1980, following a two-year education, aged 16-18, and is a Sveaskog employee and a member of the union. He has witnessed some significant changes during his working life, including use of machinery, changes in forest maintenance rules and increased emphasis on conservation. Training is now 3 years and all forestry workers attend the same course; for logging it is necessary to have 4-5 years' experience with machines, knowing where to drive and to log. Continuing education involves attending courses every year, for example one day on environmental protection and on the computer. The union argues that training and pay need to reflect the increasing complexity of work and the qualifications required. All forestry workers know about the role of forests in climate change and there is a debate about how much to protect and how much to cut down, clear cut or a bit at a time. The union supports clear cut. They replant in May.

In the 1980s they still used chain saws but since 1990s the harvester machine led to a decrease in the number of workers employed. Though improving health and safety in physical terms, there is now more pressure to produce, which is stressful (see Photo 4). The harvester driver is expected to cut 60-80 trees per hour, which is about 30 cubic metres. Over the year, this comes to 80,000 cubic metres.

On this site, it is not so easy because of stones and hills. The computerised system means that what exactly he is doing on the logging site can be remotely monitored. For example, the system logs when the harvester machine is idle, how long it is active for, how many trees are cut, etc. The job has changed to include sorting the trees felled, in readiness for transportation to different mills/customers (e.g. spruce is for house construction, pine is for furniture) and to cut trees in required sizes (Photo 3). Felling itself is also planned in more detail so the foresters need to understand and plan their daily activities accordingly, putting up blue ribbons where to drive. They have also learned to operate the machinery and the computerised system installed within it. The logging machine is Finnish and costs 5 million Krone; it is changed every 4 years. The driver of the forwarder machine, who receives similar training, comes to clear the logs and branches and to carry the logs away (Photo 5).



Photo 4: The complexity of the cabin controls



Photo 5: The forwarder machine

GS Union

The Swedish industrial relations system is generally structured along sectoral/industry lines and is essentially bi-partite, with a strong contractual tradition based on powerful social partners who enjoy considerable autonomy from the public authorities and play a crucial role in regulating the labour market (ILO, 2017). The high coverage rate of collective bargaining is related to well-established employers' organizations and the strong presence of trade unions at the firm/organization level rather than to legal provisions. Despite the tendency to decentralization of wage determination, the bargaining system remains centralized, coordinated and two-tier, taking place first at industry/sectoral level and then at company/organization level. Central agreements on initial vocational training have been signed in a number of industries, including for sawmills (Swedish Forest Industries Association and GS Swedish Union of Forestry, Wood and Graphical Workers).

GS was established on June 1st 2009 through the merging of the Swedish Forest and Wood Workers' Union (55,000) and the Swedish Graphic Workers' Union (23,000 members). The combined GS union now has a membership of 65,000 and organizes workers in the forestry, woodworking and graphic industries. Union education is one of the core tasks of the union, there is a national education board for each section, one for wood and one for forestry, and union training is offered to all members – from new members to those who need advanced training so that representatives have the knowledge and skills needed to represent the members in an effective way.

LO, the Swedish Trade Union Confederation inputs into the development of climate policy, whilst GS is engaged more in articulating its sectoral relevance. Of the two union officials interviewed, one is the national negotiating officer, whilst the other has international responsibilities, so travelling a lot, especially as there are lots of Swedish international companies so that he is concerned with European Works Councils and transnational framework agreements (TFAs), which include sustainability clauses. Companies that have signed TFAs include: IKEA on wood, SCA paper tissue producer (negotiated by IndustrAll), Tetrapak (paper and packaging – India, Mexico) and STORAE NSO (forestry, pulp and paper). TETRAPAK signed a global framework agreement, though TFAs can be local. They need to be renewed, as is currently the case with IKEA, and also cover suppliers. One of the other interviewees represents the union on the SFB (Swedish Forestry Board), which links

different interests including unions, employers and environmentalists, such as Greenpeace and the World Wildlife Fund (WWF), and is concerned with, for instance, climate change and biodiversity. The national forestry programme responds to the long-term government strategic plan.

Unions have long been involved in the development of sustainable forestry in Sweden and are always consulted by the government. Indeed, the forest is seen as ‘for everyone’ and everyone has something to say about forestry; it is about the relation between labour and nature. The social dialogue model means that unions are inevitably involved in climate change policies and GS has particular subgroups on this. Unions always had an influence, for instance, after a two-day seminar on the national forest, there was a successful motion to stop the use of chemicals on the SFU (public sector) forest. However, the union’s position is difficult as protecting jobs is priority and it cannot and does not side with employers all the time, otherwise it would have no credibility. The union tries to keep the dialogue open both with employers and environmentalists but can find itself stuck in between. For example, environmentalists are against clear cut felling and want key habitats to be protected whereas the employers want to protect production. There is ongoing negotiation between these three groups. One of the most difficult sustainability issues is key habitats, such as rare mushrooms. Due to employer pressure, supported by unions, inventories of key habitats were stopped.

The unions wanted ideas about sustainable jobs and conducted a survey, which suggested that within the union climate change is not the most important topic. Indeed, it can be difficult to raise and discuss the different issues with members, who need to be motivated, including about how wooden housing affects them. The union also finds itself on the side of employers in the matter of wood construction, which has been successfully marketed. The wood industry only took small steps in this but thanks to union influence, demand for wood is being created and hence more jobs. Municipalities are setting their own targets, to build 25% of housing in wood. The cement industry campaigned against building in wood initially but is beginning to see that cement production will have to change eventually and views wood construction as an opportunity. Historically, construction in wood was widespread. However, following fires, wood construction above three storeys was banned. Today the situation has changed as there are no longer open fires in homes. The union is also trying to get politicians to look upstream and down-stream, to consider the whole life cycle of buildings.

Building with wood

The *Swedish Wood Council*, founded by industry in 2005 and with government backing, supports the Swedish furniture industry and wood building, including by modular housing companies using panels for higher building. It includes the Timber Trade Federation, Wood for Good, the Confederation of Timber Industries (including the woodworking federation) and the wood windows alliance. UK is the biggest market (40% of all that is cut) for timber and Sweden the most important supplier (not including pulp); STA is the structural timber association in the UK. Sweden is also exporting this expertise alongside its timber, promoting wood in California and with contacts in Scotland, working together with researchers into off-site construction. This growing interest in wood construction, including from government, local authorities and within the EU generally, is good for Swedish sawmills and the furniture building industries, and Swedish industrial construction and modular housing are growing. All this means more job opportunities. Modular production companies are in rural regions and there are now 15 producers of timber building systems. Martinsons built the first factory in Skellefteå in 2001, employing 500 and with a sawmill in the middle of the forest. There are now five such factories in Sweden, four producing panels measuring 16x3-4 metres, and demand is exploding. Building the factories in the North created jobs.

Wood and industrialised production are both more climate friendly, helping to move away from fossil fuel-based building materials and, as a light material easier to transport, for instance, in flat packs. Wood is promoted as the oldest construction material and is a renewable resource. Cedar shingle is good cladding wood, lasting 1,000 years without any treatment. Indeed, there are old churches that have lasted 1,000 years in Sweden, their roofs made of wood. The Swedish King’s castle is 300 years old, timber frame plastered. Prefabricated wood pavilions were built in 1830 and the 1887 exhibition featured a very tall wood building. However, following the 1888 Sundsvall fire – buildings taller than

two stories were banned; in Gothenburg one storey stone and then two storeys wood were permitted. A new strategy developed with entry to the EU in 1995, associated with function rather than the material, including fire and energy efficiency. A wood building network, 'Building with Wood', was formed and strong regional clusters created, conducting research into fire resistance, wood based building parts, improving off-site production and standardisation. Wood construction can now be ever higher (even up to 20 stories), for different uses (e.g. the concert hall in the North) and holds 11.5% of market share. Wood can also be used to build on existing concrete buildings. Single family homes can be built off site and wind turbines can be made in wood (instead of steel). There are three lines of development:

1. Light weight prefabrication
2. Volume elements, off-site building
3. Laminated

Initially large environmental NGOs in Sweden were critical and took out adverts against wood construction, calling for the protection of forests. But cement-based construction is very CO₂ emission heavy and 80% of this is produced in the construction stage, only 20% after. Legislation is about energy use post-completion. 1,000 trees are needed to produce a house, 1,200 cubic metres of timber; it takes 44 seconds in Sweden to grow this as Swedish forests grow by 15% a year, with 120m cubic metres of timber produced in the forest per annum. Without touching any resources, 25,000 dwellings can be built a year. In addition, on some islands in Sweden it is not possible to build in concrete as it is too heavy and sinks; timber is lighter and more suitable. The cement industry also digs out sand to make concrete and massively disturbs oceans. China says there is only enough for 30 years. All the big contractors in Sweden claim to be working towards a fossil free environment, but continue to use concrete, only promoting ash as a more environmentally friendly material.

The wood construction process is also more efficient than the traditional one. With concrete construction, 25% of materials are taken away and there is a lot of time wasting with, for instance, concrete pours. Energy efficiency regulations are not for wood buildings as wood has very good energy performance, not far from passive house and requiring no insulation. In the wood housing scheme visited (Photo 6), it was required to insulate to meet regulations, and so the scheme also needs ventilation, but it is arguable whether either is needed. Passive House also has plastic sealing which will not last. There is the fear too that, particularly in high rise, fire will spread through ventilation. But wood is not necessarily less fire resistant than concrete and steel-based construction. Wood building construction also makes for a better workplace for building workers. It is cleaner, quieter, warmer, with no bad smells, no dirt to breathe in, and less tiring. It was the union that pushed for something to be done; previously timber was just being sent, not products. Modular construction needs brain power; it is less manual. Factories also employ more women.



Photo 6: ARVET wood construction project in Stockholm

The company *ARVET*, which designed the scheme in Photo 6 promotes wood construction, how to design and build in wood. It was in a partnership with another project developer (with pension funds), which as a building company was both a developer and a builder, with its own carpenters. They developed 18 new houses in the centre of Stockholm as a joint venture, which attracted 20,000 visitors from 150 countries. One of the partners was employed by Skanska in the 1990s and tried

unsuccessfully to persuade the firm to build in wood, even building some houses, but they were not interested. So, he left Skanska and went to work for another company in 2002, promoting the health and environmental benefits of wood construction. Having acquired some land in 2006, it took four years to develop the scheme, which was granted a building permit in 2012. The construction project was finished in seven months and was up to 90% prefabricated, with windows already installed. Carpenters came from the north and had experience and knowledge of forestry. ARVET was also invited by UN Habitat to build a pavilion in Kenya, on which young women aged 18-40 were also employed and African timber used, and in a tree planting project. There is awareness and interest in some developing countries, for example, the Environmental Minister of Costa Rica led a huge tree planting programme.

Conclusion

Sustainable forestry has a long history in Sweden, though climate change is increasingly affecting forest management – bug infestations, forest fires, growth periods (in the long run). Even so, since the 1990s, conservation and environmental protection have become prominent concerns with related changes in forest management, creating some tensions between environmentalists and employers. The union is trying to balance conservation and production objectives and maintain good relations with environmentalists and employers. There is an ongoing process of dialogue between stakeholders, negotiating sustainable forestry policies and practices, including with government, which leads on sustainability in forestry.

The growing interest in wood construction is viewed positively by the union as it creates jobs in forestry and wood and modular building construction. Wood construction is a sustainable and worker-friendly (in terms of health and safety and the overall work environment) alternative to cement and steel-based construction, including in terms of meeting energy performance requirements. Nevertheless, conservation measures impact on both forest management and the workers. There are considerable changes in forestry and wood construction associated with technology, including highly sophisticated machines for logging and digitalisation in forestry. In addition, many migrant workers are now employed in forestry, in particular in planting and brushing, and their employment and working conditions require improvement.

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ⁱ See <https://sugardialogue.eu/> for further information about social dialogue in the sugar industry.

ⁱⁱ CEFS and EFFAT joint statement (9 October 2020), 'The EU Sugar Industry: facing challenges, supporting a just transition'. <https://sugardialogue.eu/wp-content/uploads/2020/10/20.10.09-CEFS-EFFAT-Joint-Statement-9-Oct-meeting-.pdf>

ⁱⁱⁱ See this for Nordzucker's CSR Code of Conduct: https://www.nordzucker.com/en/wp-content/uploads/2020/08/Code_of_Conduct_EN.pdf

^{iv} For further information on approach to sustainability, see <https://www.sveaskog.se/en/>