



GREEN TRANSITIONS IN THE BUILT ENVIRONMENT:

Europe

Linda Clarke
Melahat Sahin-Dikmen
Colin Gleeson



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

WORKING PAPER # 107

GREEN TRANSITIONS IN THE BUILT ENVIRONMENT: EUROPE

The role of trade unions in the transition to low carbon construction: examples from Denmark, Germany, Italy and UK/Scotland

Linda Clarke

Professor, University of Westminster
Centre for the Study of the Production of the Built Environment (ProBE)
l.m.clarke@westminster.ac.uk

Melahat Sahin-Dikmen

Research Fellow, University of Westminster
Centre for the Study of the Production of the Built Environment (ProBE)

Colin Gleeson

Reader, University of Westminster
Centre for the Study of the Production of the Built Environment (ProBE)

Please do not quote without authors' consent.

Comments invited.

Acknowledgements

The author appreciates the financial support received for this project from the Social Sciences and Humanities Research Council of Canada (SSHRC) Partnership Program.

This report is published by “Adapting Canadian Work and Workplaces to Respond to Climate Change: Canada in International Perspective,” (ACW) a Social Sciences & Humanities Research Council of Canada (SSHRC) Partnership Program-funded project, based at York University, Faculty of Liberal Arts & Professional Studies.

The project investigates how Canada’s diverse workplaces can best adapt to mitigate greenhouse gases, and explores the changes needed in law and policy, work design, and business models for industry and services, to assist the “greening” of workplaces and work. ACW membership includes 56 individual researchers and 25 partner organizations in 7 countries.

Adapting Canadian Work and Workplaces to Respond to Climate Change: Canada in International Perspective (ACW). 2018

For more information, contact:

Adapting Canadian Work and Workplaces

York University - Ross N819

4700 Keele Street, Toronto, ON. M3J 1P3

(416) 736-5895 | acwinfo@yorku.ca | adaptingcanadianwork.ca

Introduction: The European Policy Context

This report presents findings from an investigation into the role of trade unions in the transition to low energy construction (LEC) in Denmark, Germany, Italy and Scotland/UK. The study addresses the aims of the Built Environment Working Group, leading the construction strand of the ACW research programme. The key objective is to research the role of workers in the transition to low carbon construction by identifying and examining trade union involvement, whether this takes the form of policies, proposals or practical action. This report concerns the European part of the investigation.

The research has taken place in the context of an European Union (EU)-driven green transition strategy in the built environment. The EU2020 development plans set out in 2010 identified climate change as one of five areas to be targeted in the following decade. The energy policy stipulated by the EU2020 strategy aims to reduce CO₂ emissions by 20% compared to 1990 levels and increase the share of renewable energy and energy efficiency by 20%. The built environment is responsible for 40 per cent of end-use emissions in the EU and is identified as a major area of transformation. Article 9(1) of the Energy Performance of Buildings Directive (EPBD/2010/31/EU - recast from 2002/91/EC) - requires Member States to take measures to ensure that by 31 December 2018 all new buildings owned and used by public authorities, and by 31 December 2020 all new buildings, are nearly zero energy building(nZEB). The EPBD sets out the general definition of nZEB and the requirements of the law. Member states are tasked with transposing the Directive into national law and with regulation and implementation by the deadlines indicated, submitting regular updates to the European Commission (EC) on progress¹. Whilst EU legislation provides an overarching framework, the actual implementation of the policy varies between Member States both in terms of the definition of nZEB and the policy instruments developed to facilitate the implementation of EPBD. Accordingly, the interpretation of nZEB and progress in its implementation to date varies across EU states, reflecting a range of national political and economic dynamics and circumstances².

The EU strategy to improve the energy performance of buildings has major implications for the training of the construction workforce as meeting the stringent energy efficiency requirements of nZEB depends on an adequately trained workforce. Although the actual changes to vocational education and training (VET) to date vary across Member States and it is too early to evaluate fully their adequacy and effectiveness across the EU, substantial investment and effort have been put into developing and delivering VET in low energy construction (LEC). The Build Up Skills project (2010-2017), in particular, developed under the Intelligent Energy Europe programme, was launched with the aim of increasing the number of workers qualified in energy efficiency measures and the installation of renewable energy systems. The aim of Pillar I (2010-2012) of the project was to identify the training needs of the workforce in each of the 30 European countries covered and to develop a road map for upgrading the respective VET systems to reflect LEC requirements³.

¹ <https://ec.europa.eu/energy/en/topics/energy-efficiency/buildings>

² http://publications.jrc.ec.europa.eu/repository/bitstream/JRC97408/reqno_jrc97408_online%20nzeb%20report%281%29.pdf

³ https://ec.europa.eu/easme/sites/easme-site/files/bus_evaluation_executive_summary.pdf

The analyses indicate that all Member States need, on the one hand, to upgrade existing initial VET in order to integrate LEC elements and, on the other, to provide continuing VET for the existing workforce. However, the scale of what is required and the measures needed to equip the workforce with the necessary LEC knowledge, skills and competences vary greatly between EU countries. The challenge is compounded by structural barriers, such as weak governance and regulatory systems, labour market conditions and lack of a coherent and strong lead by governments.

Build Up Skills Pillar II (2014-2017) involved EU-funded initiatives that aimed to address some of the problems identified in the National Status Quo reports, representing projects developed by organisations in 22 Member States in response to calls made between 2013 and 2015. Pillar II projects varied in objectives and target groups and included, for example, initiatives to develop trainer capacity, the development of training materials and setting up training courses for the existing workforce⁴. The drive to improve VET4LEC provision continues and several on-going projects are now funded as part of Horizon 2020, another EU initiative. Examples include the development of regional training centres⁵ and training for construction professionals, such as architects and engineers as well as other stakeholders in the construction chain⁶.

The EU2020 strategic aim to reduce the energy footprint of buildings not only has major implications for VET, it is also expected to: generate, particularly through retrofitting of the existing stock, a growth in construction employment; lead to changes in the occupational scope of existing jobs; and create new, more technical jobs particularly in the installation of renewable energy systems. In other words, with less than two years to go before the nZEB implementation deadline, the construction sector in Europe is potentially heading for major changes in construction methods and materials. At the same time, the sector faces a severe recruitment crisis and increasingly relies on labour mobility between EU countries. Efforts to increase the number of workers trained in LEC are undermined by the generally low level of formal training among the existing workforce (with the exception of Germany, France, Benelux and Scandinavian countries), disparate VET systems and approaches to developing LEC training, not to mention the varying interpretations and implementations of nZEB. Furthermore, extensive sub-contracting chains, the dominance of small firms and self-employment, and the fragmented organisation of the construction process on site present further challenges to achieving the integrated and collaborative working required for LEC (Clarke, Gleeson, Winch, 2016). There is some evidence to suggest that divergent approaches to meeting green construction objectives are emerging. At one extreme, there is reliance on increased supervision, streamlined and narrow jobs, and off-site production that may introduce environmental inefficiency further down the production chain through the materials used. And, at the other extreme, emphasis is on increasing the occupational capacity of workers through VET, greater autonomy, integrated teams and low carbon production materials⁷ (Ramioul, M. Benders, J. and Peteghem J., 2016).

Despite the variation in actual progress and the divergent approaches of Member States, the EU's green transition strategy for the built environment is in the process of implementation and has

⁴ http://www.buildup.eu/sites/default/files/content/bus-d4.4finareport_on_assessment_april_2018_0.pdf

⁵ <http://www.train-to-nzeb.com>

⁶ <http://profrac.eu/open-training-platform-for-nzeb-professionals.html>

⁷ This is also supported by evidence from an ongoing, 10 country EU project that the authors are involved in. This project involves studying case studies of low energy construction projects. For further information - <https://www.westminster.ac.uk/probe/projects/vet4lec-inclusive-vocational-education-and-training-for-low-energy-construction>

major implications for the sector and for construction workers. This transition to green construction in the EU is a long and challenging process and, as shown in this report, varies between countries, driven by strategies formulated, interpreted and implemented in very different ways. One group whose voice is missing in this debate is the construction workforce. As representatives of construction workers, the involvement of trade unions in the development and implementation of the EU's green construction strategy also varies between Member States. While the nature of their involvement and influence is shaped primarily by the existing industrial relations context, their responses to the EU strategy and their actual proposals and activities are less known.

Trade Unions and the Green Transition in the Built Environment in Europe

Despite the broadening scope of research into green transitions to include sectors other than those concerned with energy production (e.g. phasing out coal mines, investment in renewable energy sources), the greening of the built environment and the role of construction sector unions in this process remain relatively under examined (Rathzel & Uzzell, 2013; Lipsig-Mumme, 2013; Lipsig-Mumme & McBride, 2015). Trade unions and climate change policies in Europe were examined in the ACW project, *Green Transitions in US and Europe – Breadth, Depth and Worker Agency*⁸, which evaluated the policies of US and European level trade union confederations, including those covering particular sectors, and sought to map different trade union actions, national and supranational in Europe and the US. The findings for Europe suggest that trade union responses to climate change can be proactive, seeking to shape or influence the transition, or simply reactive, responding to its consequences for workers, or involve a combination of the two. 'While 'just transition' is the underpinning narrative of trade union perspectives, their proposals suggest a predominantly 'eco-modernist' approach to climate change, one that emphasises job creation and the protection of workers affected by the transition. The study nevertheless found differences between unions according to sector and that their responses are constrained by more immediate concerns as well as by the national and regional political and economic context.

In developing our research, this ACW investigation provided a helpful guide to the landscape of trade union approaches to climate change in Europe, revealing the types of response and identifying some important lines of differentiation. The typology developed on the basis of the perspectives put forward mainly at European level provides a useful framework for analysing practices at national level by sector unions. The proposals articulated by European sectorial union confederations also represent the views of member unions, though they tend to focus on general debates about 'just' transition and be concerned primarily with the transition in energy production. Where the construction sector is considered, this tends to be limited to the job-creation potential of retrofitting and lack the detailed understanding that a national sector union brings to the debate. Our focus in this research is on the views and actions of national, regional or locally-based construction sector trade unions on climate change and particularly their response to the EU led transition to low energy construction.

⁸ See forthcoming research report by Fred Steward and Linda Clarke.

Research Strategy and Activities

This study takes a case study approach and investigates the role of construction trade unions in different political and economic contexts. Denmark, Germany, Italy and Scotland/UK were selected as representative of particular social partnership arrangements and VET systems, both factors having a defining influence on the implementation of EPBD and the involvement of trade unions in the process:

- *Denmark* represents a Scandinavian, corporate/two-partite model of social partnership and a well-developed and nationally-funded VET system
- *Germany* represents a Germanic tri-partite model of social partnership and a well-developed and nationally-funded Dual VET system
- *Italy* has limited social partnership nationally, very little in the construction sector, and a regionally-funded and organised, though restricted, VET system
- *Scotland/UK* represents an Anglo-Saxon model, with little social partnership and a fragmented and demand-led VET provision, part funded by state and employers.

We pay special attention to identifying examples of practical actions by trade unions. As part of our investigation, we aimed to interview the construction social partners and other key stakeholders and to visit a VET centre and a low energy building scheme in each case study country. The purpose was to contextualise and evaluate trade union activities salient to the transition to LEC, in particular those related to meeting nZEB requirements and the development of VET4LEC. We also sought, where possible, to investigate the implementation of LEC in practice and on site, though we did not succeed in gaining access to sites in Germany or Italy.

Discussions with two key informants in the UK, from the construction sector trade union and from an architectural practice and both with experience of involvement in LEC and expert insight into its implications for VET and site organisation, helped to inform the research strategy and the interview schedules.

The research was conducted between October 2016 and April 2018. Research activities include:

- A review of sector trade union policies and other written declarations on green construction
- A review of Build Up skills investigations for each country
- Interviews with representatives from construction sector unions
- Interviews with VET providers, especially those concerned with low energy construction
- Site visits to building schemes and other green construction related projects involving trade union input and representation

ONLINE SEARCHES

In the process of researching trade union policies and activities, we undertook an online search to identify policy documents and proposals by the individual construction sector trade unions, rather than those drawn up by trade union confederations. One important focus was upgrading

existing VET, re-training the construction workforce for LEC, and tackling site-related challenges to achieving energy efficiency requirements; we sought to identify any proposals and activities targeting these issues. For Denmark, Germany and Italy, we also sought to identify, through interviews, any relevant publications not available in English. The few written proposals identified are discussed below together with insights gained from interviews.

INTERVIEWS WITH TRADE UNIONS, VET PROVIDERS AND LEC CONTRACTORS

An interview guide was developed to facilitate a detailed and open discussion. The topic guide is included in the Appendix I. The key issues addressed in each interview are as follows:

- interviews with trade union representatives explored policies and practical initiatives, and how and why these were developed, the barriers to engaging with the green construction agenda, awareness of building energy efficiency within the union, understanding of the implications of the transition to LEC for the training of workers, collaborations with other organisations, and broader construction labour market dynamics and employment problems and issues;
- interviews with VET providers explored current VET4LEC provision in both initial and continuing VET, the structure, content and delivery of courses, demand and student recruitment, awareness of the need for re-training among the workforce, and the barriers to developing and delivering VET4LEC
- interviews with contractors and site visits covered technical specifications, contractual arrangements, site and work organisation, workforce qualifications and training, employment patterns and unionisation

In the remainder of this report, we describe our investigations in each country, present our findings and identify the issues and questions raised for green construction, VET4LEC and the implementation of EPBD. In the concluding section, we evaluate the approaches of sector trade unions to climate change as revealed in our visits and their responses to the EU-led green transition strategy in construction. These visits provide examples, or cases, of actions in relation to the transition to LEC and are, therefore, not necessarily reflective of the position taken by construction unions in each of the countries. They rather represent vignettes, which are important in so far that they were considered as worth showing and discussing with us and illustrate a wide variety of strategies and actions that might be adopted.

Denmark

The Danish case illustrates the ways in which the main construction union is involved in LEC in a country where social partnership is firmly embedded, LEC elements are already mainstreamed into the VET curricula, and nZEB has long been accepted though taking different forms. The field trip to Denmark took place on 15-17 February 2017 and included the following activities:

- interview with a representative from BYGUDD, the *Advisory Board for Education and Training for the Building and Construction Industry*,
- visit to Roskilde Technical school and interview with a teacher of low energy construction
- interviews with representatives from 3F (United Federation of Danish Workers) and BAT Kartellet
- visit to Niels Bohr Science Park, University of Copenhagen, a large building scheme by MTHøjgaard and interview with a trade union representative on site
- visit to Breathable House, by Egen Vinding and Datter, a green construction scheme, and interviews with company directors

DANISH CONSTRUCTION TRADE UNIONS AND THE GREEN TRANSITION IN THE BUILT ENVIRONMENT

Construction workers in Denmark are organised in seven trade unions:

1. Danish Union of Plumbers and Sheetmetal workers (Danmark Blik-og Rorarbejderforbundet)
2. Danish Union of Electricians (Dansk El-Forbund)
3. Danish Union of Painters (Malerforbundet i Danmark)
4. United Federation of Danish Workers (3F - Faglig Fælles Forbund).
5. Danish Union of Metalworkers (Dansk Metalarbejderforbund)
6. HK/Privat
7. The Danish Association of Professional Technicians (TL- Technical Landsforbund)

The first four represent blue-collar workers in the construction and wood sectors, while the latter three are manufacturing and industry-based and represent mainly white-collar workers. 3F was formed in 2004 through the merger of the Kvindeligt Arbejderforbund i Danmark, KAD (National Union of Women Workers) and the Specialarbejderforbundet i Danmark, SID (Danish General Workers' Union). The Danish Confederation of Trade Unions (LO, Landsorganisationen i Danmark) is a confederation of 18 mainly 'blue-collar' trade unions, including the first four construction sector unions on the list above, 3F being the largest. LO coordinates collective bargaining and influences labour market policy, legislation and implementation. All seven construction sector unions are also affiliated to BAT Kartellet, which acts as a lobbying body and is more likely than LO to be active in developing policy. Union density in construction is estimated to be 80-90%, higher than the average unionisation rate for Denmark (67%)⁹.

⁹ <https://www.worker-participation.eu/>

POLICIES ON CLIMATE CHANGE AND ENERGY STRATEGY

Our investigation suggests that 3F¹⁰ leads the way in Denmark¹¹ in articulating a policy perspective on climate change and the green transition, including on green construction, to achieve a sustainable economic future for labour.

3F's engagement with climate change dates back to the 1990s, originally through an interest in organic farming, which then shifted to renewable energy, particularly the wind turbine industry. In 2011, 3F set out its vision for green economic development, articulated in the publication *Green Roads to Growth – ideas that create jobs and growth*. In 2015, these proposals were further developed and turned into a more comprehensive green transition strategy incorporating bio-economy, increased use of renewable energy and the renovation of the building stock. These ideas are outlined in detail in the following publications:

1. *The Fundamentals of Bioeconomy – The Biobased Society* (December 2016), by Lene Lange and Jane Lindedam.
2. *Green Transitions – the road for new jobs and better climate* (2015)
3. *Geographical employment potentials from bioeconomy* (2015), by Helge Sigurd Naess-Schmidt, Jossi Steen-Knudsen, David von Below.
4. *Energy Strategy in Enterprises – based on worker involvement* (No date.)

The main objectives of the proposals are: (i) to secure sustainable and geographically balanced economic growth; (ii) to reach energy self-sufficiency by increasing the use of renewable energy sources and establishing a circular economy that avoids waste; and (iii) to create secure and long-term jobs through investment in green industries. Proposals for a green construction sector aim to reduce energy consumption and CO₂ emissions and to create jobs, particularly in building renovations and related industries.

On renewable energy, 3F calls for increasing the amount of renewable energy derived from biomass, wind and water to end dependency on fossil fuels and to achieve self-sufficiency in energy. Recommendations include investment in bio-refineries, waste recycling facilities, onshore and offshore wind energy and water technologies. The proposals also target the job divide between urban and rural parts of the country and aim to achieve a balanced geographical spread of job creation. For example, the building of new bio-refineries is recommended for rural areas with high unemployment, and projections suggest that 80% of the 23,700 jobs created could be based in the countryside.

Proposals on the green transition in the built environment have two targets: (i) incentivising and expanding the energy renovation of existing buildings as new buildings constitute less than one per cent of Denmark's building stock, and (ii) increased and more effective use of the district-heating network. The economic costs and benefits of such renovation, including job creation and meeting the training needs of the construction workforce, are also considered. The Danish Building Research Institute (SBI) estimates that renovating building envelopes and installations of all residential dwellings and buildings, farmhouses, terraced houses and commercial buildings would cost DK 200 billion,

¹⁰ <https://www.3f.dk/english>

¹¹ Through online searches we were able to identify a LO policy document on climate change that briefly discusses the roles of energy efficient construction and technology in reducing energy consumption of buildings. However, this document dates back to 2008 and does not appear to have been updated since.

whilst upgrading the building stock to high energy efficiency standards would save 35% on energy consumption. Adding new technology and products on top of this could result in energy savings of up to 45%, and create thousands of jobs in the construction sector and related industries.

The greener HomeJob Plan proposes a scheme that is based on a differentiated use of subsidies and deductions to promote and incentivise energy renovation in privately owned homes, rented accommodation and social housing. Proposals include:

- Incentives to respond to different situations including new house purchase, energy renovation in social housing and installation of heat pumps in rural areas
- Energy subsidies to be granted according to energy class, with the highest subsidies for the lowest category
- Local authorities to map and reduce their energy consumption and renovation opportunities
- Energy companies/local authorities to provide free energy consultation to home-owners
- A solution to be found to the owner-tenant paradox incentivising both parties

The proposals also address the training and education needs of the construction workforce and site practices that undermine efforts to meet energy efficiency specifications. Actions proposed include a review of further education to expand training opportunities to enable the workforce to continuously upgrade skills in response to changing demand and with particular attention to the needs of large energy renovation projects. A more collaborative and holistic approach to the building process is advocated as a means of rendering the construction process effective and also more professional.

Energy renovation plans for the building stock are to be supplemented with an extensive district-heating network operated by municipal subsidiaries (companies owned by municipalities) and supplying heat to 65% of Danish households. The system uses waste heat from electricity production, waste incineration and industrial combined heat and power (CHP), and is the most extensive in Europe. However, it is estimated that around 750,000 oil or gas boilers need to be replaced with heat pumps by 2035. 3F calls for a consortium of state agencies and private companies to lead this major programme of works that would not only increase energy efficiency but also create jobs.

3F's Involvement in other 'green' transition activities and initiatives

3F also collaborates with civil society organisations and supports initiatives that promote the protection of the environment. Some examples include:

- Certification systems that promote environmentally sustainable and socially responsible production practices (e.g. in forestry, the Forestry Stewardship Council (FSC) standard is preferred to PEFC (Endorsed National Forest Certification) as the latter does not include social rights in its certification system)
- Environmentally responsible financial practices (e.g. investment of union pension funds in renewable energy)
- Involvement in *Inobyg*, a government led initiative that funds innovative projects in sustainability, including research.

Interviews with 3F indicated that only a few union officials drive the green economy

agenda. The development of the policies discussed above was achieved by setting up a Green Thinktank, which was operational for a year with the sole purpose of developing 3F's perspective for a sustainable economy. Our interviewees suggested that engagement with questions of climate change or sustainable construction and joint collaboration between unions on this was restricted because the limited resources available are devoted to collective bargaining, employee rights, jobs and health & safety, which may be seen as more pressing problems. The building service occupations are also represented by different unions, just as there is a separate organisation of VET for building services from traditional building occupations.

3F's proposals for a sustainable economy are the most detailed we came across in calling for the greening of energy systems and for sustainability to become an integral part of industrial policy. The recommendations rely on the development of new energy production systems (e.g. renewable energy) and combine environmental protection with measures to prepare workers and communities for jobs in new industries (e.g. training opportunities).

VISIT TO ROSKILDE TECHNICAL SCHOOL

There is an established and comprehensive VET system in Denmark, jointly governed by the social partners, and the trade unions are actively involved in its development and monitoring through representation on the following committees:

- *Council for Vocational Training*: advisory role, providing guidance on the structure, the content framework and assessment
- *Trade/Technical committees*: lay down the detailed content of training programmes, including objectives, assessment, and balance of school-based and practical teaching, and also develop new VET programmes based on labour market needs
- *Local Education Committees*: operate at college level, advising on planning and cooperation with local trade and industry to obtain placements.

For example, the Advisory Board for Education and Training for the Building and Construction Industry (Bygudd) is responsible for setting competency outcomes in 300 construction-related courses, which are discussed and approved by employer and trade union representatives on the relevant trade committees. Technical colleges then turn these into teaching units/courses and ensure that the recommended competencies are developed. Our interview with Bygudd suggests these discussions are generally constructive and collaborative.

Topics related to energy efficiency and renewable energy sources had been introduced prior to the Build Up skills investigation and short courses in energy optimisation were available. In relation to training provision for the so-called 'craft' occupations, the Build Up Skills National Roadmap (2013) recommended that in Upper Secondary Vocational Education new competence outcomes in energy topics should be introduced in both the school- and company-based parts of training, VET programmes should be reviewed to ensure sufficient content regarding energy, and recruitment to VET should be improved. According to information provided by our interviewees (on carpenters, bricklayers and concrete workers) and to a review of course outlines for some construction occupations (plumbers, electricians), LEC-related knowledge, skills and competencies have now

been integrated into existing VET. With respect to continuing and further education, the Roadmap recommended that short-cycle academy level modules in energy topics, with improved flexibility and funding in provision, should be introduced, and better information should be provided to those in 'craft' occupations and firms to increase awareness of the value of energy efficiency training.

Roskilde Technical School provided an insight into the development of energy efficiency-related further education (or CVET, Continuing Vocational Education and Training) courses for adults already working in construction. The school aims to become a national centre of excellence for the construction of energy efficient buildings and to develop best practice models for the sector. The centre visited also acts as a short-term apprenticeship provider for VET students without a permanent placement, and runs ad-hoc training schemes for refugees. It has two types of energy efficiency training available: (a) courses in LEC, one for those in 'craft' occupations, in particular carpenters and bricklayers, and another for designers; and (b) an introduction to sustainable construction for manufacturers. The courses are introductory and hands-on, with learning put into practice in the workshop and on a model house. The two-day course introduces energy efficiency, air tightness and insulation in retrofitting, covering roof, internal wall and cavity insulation, and air pressurisation testing. The three-day course covers, in addition to the above, breathability. Another two-day course is being developed to teach about interfaces in the building envelope and how to avoid gaps in insulation.

Training is free to participants who are also compensated for loss of earnings. The courses also target unemployed workers, both skilled and unskilled, and are provided as part of the Labour Market Training and Education Programme. Course take-up is a major issue, which our interviewee attributed to lack of demand for LEC skills and lack of awareness that nZEB will become the norm by the end of 2020. Demand for LEC training was often prompted by problems on site or the requirements of a new project. This resonates with the findings of the Build Up skills investigation and the situation in the other case study countries. One of the problems raised by our visit to the two construction projects also related to CVET; our observations indicate that workers operating in different segments of the construction sector may have varying experiences of LEC and that training may simply take place on site.



Two building schemes visited highlighted different sets of issues in relation to training and the construction labour market. **The Niels Bohr Science Park** is an extension to the University of Copenhagen, consisting of two buildings, on either side of a busy road, connected by a tunnel and a bridge. The main contractor is a large Danish company, MTHojgaard, which sub-contracted: concrete works to Oslef, a Polish company; mechanical and electrical works to Ajos, a Spanish company; and internal finishing and decoration to another Danish company. Both foreign companies brought their own workers. At the time of our visit, the work on site had stopped due to a dispute with the Spanish company, which had subsequently lost the contract. The dispute arose from irregularities in wage payments identified by the trade union during routine audits and of employment contracts and wages. The trade union representative on site referred to problems around quality standards and difficulties in communication and collaboration between sub-contractors. Such concerns are relevant to LEC, which calls for greater collaborative working on site, much improved communication and higher levels of training and education in the construction workforce than are evident on sites such as this. The case highlights the reliance of large companies in particular on posted workers who are trained under a different VET system.

The second scheme, **the Breathable House**, situated in Ringsted, is a prototype, built with government funding, through the Ministry of Environment's Environmental Technology Programme, by the private developer Egen Vinding and Datter, a well-known specialist in environmentally friendly housing design and building material production. The firm prioritises working with natural products to achieve naturally insulated and ventilated houses with low demand for energy and to eliminate the hazardous effects of artificial materials on the environment and occupants' health. It operates in a niche market, building houses for private individuals, and is dependent on clients interested in and able to afford the kind of design and construction offered. The company draws on a pool of 20-30 skilled workers and three architects who are not direct employees. The company directors explained that workers are trained on site, often needing to 'unlearn' some of their established practices, become used to working with new materials, understand the significance and principles of building low carbon houses and the whole building process, and work in a less specialised way.

Breathable House presents a contrasting example to the large university building, being a house built by a small company operating in a niche market, to high and exclusive standards, for a particular group of clients. Considering the two building schemes together, it is apparent that existing divisions within the construction sector (whether by building size, building type or client and budget limitations), including the degree of subcontracting, may mediate and be reproduced in the transition to LEC. Whilst all buildings need to meet at least the minimum energy efficiency requirements, achieving higher energy standards is contingent on the types of materials used, clients, budgets, the training and qualification level of workers, and the ways in which the site and the labour process are organised and managed.



The account given by the directors of the organisation of work and the relations on site suggests that small and well-funded projects are more likely to facilitate collaborative working and communication between the different occupations and to offer less specialised roles for the workers. They are able to provide in-house, high quality and tailor made training to their small-scale, regular and local sub-contractors, and seek to build a long-term relationship with them, akin to working with an in-house, directly employed team.

Visits to the VET centre and the two building projects indicate the challenges of preparing the construction workforce for a fundamental change in building construction methods and indicate that with nZEB implementation deadlines approaching, large segments of the workforce may end up being trained on site. This may have consequences for quality standards and potentially require an increase in site supervision to meet energy performance requirements, raising questions about how challenges are to be met with different types and sizes of building projects.

DENMARK SUMMARY

Danish trade unions operate in a context where the EU-led green transition in construction is an actively pursued government policy and, as social partners, they have a voice in its centrally managed and funded implementation, including the preparation of the workforce through training opportunities. 3F's proposals on the green transition in construction are part of a broader, proactively developed strategic vision for a sustainable economy, one which calls for an end to dependency on fossil fuels and for the creation of jobs where they are needed, addressing other imbalances in the economy. Specific proposals aim to improve the uptake of retrofitting involving an increased role for local authorities and financial incentives by the national government. In addition, 3F also supports other environmental initiatives and collaborates with organisations working to combat climate change. Overall, the Danish construction sector unions are supportive of EU energy policy and, through the model of social partnership, workers' representatives contribute to the debate and to

the policy making process. The unions thus offer well-developed ideas and the opportunity for the wider membership and by other unions in the sector to be involved in the shaping of green transition policies at national and local levels.

Investigations into VET4LEC developments highlight the difficulty of re-training the existing workforce, even in a context like Denmark where initial VET is of a comparatively high level and taking part in further training does not involve any cost to workers. Site visits highlighted a division in the current green construction sector as different approaches to meeting energy efficiency requirements emerge, with varying consequences for the organisation of construction process, the on-site division of labour and LEC-related training provision. The union's proposals are concerned more with training for LEC than with site and employment practices. However, the different ways of implementing nZEB and issues around the employment of posted workers illustrate the relevance of these practices to quality standards, as well as to workers' welfare.

Germany

The German case, while based on social partnership, is, in contrast to Denmark, set in the context of a heavily depleted union membership. Though VET organisations seek to implement EU energy policies, the worker engagement needed for them to be most effective is weak. The field trip to Germany took place on 19-20 October 2017 and included the following activities:

- interview at IG BAU, the construction sector trade union
- interview at the Passive House Institute, Darmstadt
- interview at BiW Bildungswerk BAU Training Centre

The German construction unions and the green transition in the built environment Construction workers in Germany are organised in IG BAU (Bauen-Agrar-Umwelt) and IG Metall. IG BAU represents workers in construction, building materials, building cleaning, facility management, gardening, forestry and agriculture. It is affiliated to the German Confederation of Trade Unions (DGB). Among construction workers, those considered to be *Handwerk* (building 'craft') specialists, are represented by IG BAU, while those in services such as plumbing and electricians are represented by IG Metall, which mainly covers blue-collar workers in automobile manufacturing and steel production, wood, plastics, textiles and clothing, as well as white collar works in engineering and information systems.

IG BAU does not have a written policy on the green transition in the built environment but it has developed responses to issues arising in the process. Proposals address retrofitting, the effects of LEC on the housing market and recycling and call for

1. increased funding for the national refurbishment programme
2. managing the rental and owner-occupier market for energy efficient housing to control price increases
3. growing the recycling market by including roads and insulation materials.

IG BAU is, however, involved in formulating policy proposals of the global Building Workers International (BWI), whose Deputy President, Dietmar Schäfers, is also President of the European Federation of Building and Woodworkers (EFBWW) and Deputy Federal Chairman of IGBAU. In 2015, BWI launched *Towards a framework to combat climate change in the construction, building materials, and forestry and wood sectors: a workers' perspective*. The report's recommendations include that:

- Workers need to receive adequate vocational training to use carbon abatement technologies;
- All public sector tenders include requirements for calculating carbon reduction options;
- Uniform building codes and standards include carbon abatement and emission reduction targets;
- Existing buildings be retrofitted as quickly as possible;
- Public procurement systems, as well as all firms receiving public funds, should mandate that all wood fibre products are sourced from sustainably managed forests;
- Carbon calculations must be developed that take into consideration where the products or services are consumed as well as where they are produced, and the share of carbon emissions allocated accordingly.

On the national energy refurbishment programme, IG BAU argues that the policy objective to improve the energy efficiency of two per cent of the housing stock every year is not being met due to insufficient funding. In 2016, less than 0.8 per cent of the housing stock was refurbished to required standards, well below the target. The union argues that the amount of 2 billion Euros provided through loans and subsidies via KfW should be increased to 5 billion Euros. There is also a need to increase the production of new housing as energy efficient houses are popular. IG BAU is part of an alliance with tenant associations and employers and campaigns for increased funding for retrofitting and more new energy efficient houses.

The second demand of the union (2 above) draws attention to the impact of energy efficient construction on the housing market, both rental and to buy. There is increased demand for energy efficient houses in the German housing market but energy efficient refurbishment can increase the rent or the price of a dwelling. There is greater public awareness of the importance of quality in energy efficient refurbishment and the financial savings for occupants. It is becoming common practice for buyers/renters to check how and by which company the refurbishment was carried out, as well as the quality and type of materials used, as risks associated with poor quality work are becoming common knowledge. In the rental market, the savings achieved by refurbishment can be offset by higher increases in rent. The German Trade Union Confederation's (*Deutscher Gewerkschaftsbund*) demand is for rent control to ensure that rent increases are not higher than the savings achieved. Energy efficient houses are also more expensive to build and their spread in the market is resulting in an increase in house prices. This could mean that, if energy standards increase, targets of the affordable housing programme may not be met.

IG BAU calls for investment to increase road recycling and for more facilities for the

safe recycling of insulation materials. It is argued that this would result in CO₂ emission savings, particularly in comparison to the high emission alternative of depositing these in landfills. It is, however, difficult for the union to keep the issue of energy efficiency in buildings and climate change alive and the union tends, as in Denmark, to depend on the expertise of one or two individuals. Generally, the priority of the union remains to safeguard jobs and the fear is that it cannot be proven that a sustainable economy necessarily creates jobs. The union's capacity to respond to climate change is restricted due to the long-term decline in membership; currently, only 20% of building workers are in the union, which is half the membership rate of the 1980s. As in the rest of Europe, the sector is dominated by small companies (the average number of employees is eight), which operate as sub-contractors on short-term projects and are generally difficult to unionise. Workers in the newly emerging 'green jobs', such as in photovoltaics, tend to be based in small companies and, likewise, tend not to join the union. This contrasts sharply with IG Metall whose members tend to be employed in larger companies and have more stable employment.

VISIT TO BILDUNGSWERK BAU (BIW) HESSEN-THURINGEN

BiW is a training centre covering two federal regions, Hessen and Thuringia and jointly governed by the social partners, though currently the great majority of associates - 500 out of 581 - are employers, and only 10 are from IG BAU. Trade unions are also represented on the works council of the training centre. Employers contribute 2.1-2.3% of payroll as training levy and this covers the training centre, travel costs and food for trainees. The pay of the trainees is set by the collective agreement, which applies to all building firms. Currently, the Centre employs 35 staff, including 8 masters. There are 130 first year students, an increase from 95 last year, and only two are women. There is also a 3-6 month training programme for refugees.

As with Denmark, Germany has a comprehensive, nationally-regulated and federally-organised, VET system. Following the Build Up skills investigation, VET programmes were updated to include LEC-related knowledge, skills and competencies. Energy efficiency training is provided to all occupations trained at the Centre, including carpenters and bricklayers, though energy efficiency is of limited relevance to infrastructure works such as roads and public drains, which the Centre covers.



VISIT TO THE PASSIVE HOUSE INSTITUTE, DARMSTADT

The Passive House Institute (PHI)¹² developed the Passive House concept that has become an international LEC standard, and also informed the development of the nZEB standard set by the EU. Over the last 25 years, the PHI has expanded and developed a training and certification scheme for designers and builders. It also tests and certifies building components, develops and supplies planning tools and software, such as the Passive House Planning Package, and develops quality assurance systems. The Passive House concept has been successfully applied to residential and non-residential projects as well as used in retrofitting of existing buildings.

The PHI institute provides two types of training, which lead to the qualifications of Certified Passive House Designer and Certified Passive House Tradesperson. Here, we focus on training for builders. The course involves completing 6 interdisciplinary modules and 2 specific modules, which are either for building envelope (e.g. thermal/window insulation) or building services professionals (heat supply/ventilation). Each module is 2-2.5 hours in duration and the whole course involves 16-20 hours of study in total. Participants are also required to pass a written exam to be accredited as a Passive House Certified Tradesperson. This certificate needs to be renewed every five years by providing evidence of participation in a certified Passive House building scheme. The course and the examination are organised by course providers accredited by the PHI. Those completing the course are included on the list of certified Passive House Tradespersons, on which there are currently 3,000 builders.

On the training of both builders and architects, two issues were particularly stressed: the importance of understanding both the building as a system and the whole process of construction; and the knowledge and understanding of the principles of LEC and passive house design. In relation to work and site organisation, the importance of closing the gap between designers and trades people as well as the intermediate occupations such as technicians, was emphasised. Communication and collaboration on site can be achieved if all parties are well trained and have a good understanding of LEC. The emphasis on knowledge-based and inter-disciplinary training and improving cross-occupational communication and collaboration resonates with the recommendations of the Build Up skills investigation. However, the challenge of bridging these occupational divides remains as efforts are undermined by the fragmented nature of the building construction process through extensive sub-contracting.

GERMANY SUMMARY

As in Denmark, German trade unions operate in a system of social partnership and are involved in policy development and implementation. IGBAU's demands imply that the union supports the EPBD and the prioritisation of environmental concerns, and its efforts are concentrated on managing implementation. The union's proposals call for increased funding for refurbishment, expansion of the recycling industry and measures for managing the impact of a growing green construction sector on the housing market. VET provision has been upgraded to incorporate and

¹² <http://www.passivehouse.com/index.html>

mainstream LEC training, in a process fully supported and funded by the government and with the active input of the social partners. Furthermore, the German VET system is comprehensive rather than fragmented, resting on principles of broad occupational profiles, or *Berufe*, and leading to high level and integrated qualifications, so alleviating concerns about the quality of LEC achieved. Consequently, the training of workers for newly emerging activities in such a changing sector, often a key call for action by trade unions in response to the imperatives of the green transition, is being addressed in Germany and, if there are concerns, there are channels and platforms open to trade unions to voice these. Overall, IGBAU supports the transition to LEC and calls for further intervention and regulation by the government to manage its consequences, though climate change and the contribution of the built environment to it are not high on the union's agenda.

Italy

Italy provides yet a further contrasting example of union activity in relation to LEC, in particular the case focussed on in the Rome region. Here unions seek to situate their policies in the context of climate change and the urgent need to address this and reduce carbon intensity. Rather than only seeking for a just transition concerned with the protection and creation of jobs in partnership with employers, the main construction union perceives the need for a radical transformation, which emphasises inclusivity and enhanced social dialogue.

- The visit to Italy took place on 17-18 October 2017 and included the following activities: Interview at the Italian Confederation of Labour (CGIL)
- Interview at FORMEDIL (*Ente per la Formazione e l'addestramento professionale nell'edilizia*), national training body
- Interview at CEFME CTP (*Organismo paritetico per la formazione e la sicurezza in edilizia di Roma e provinciale*) training centre

THE ITALIAN CONSTRUCTION UNIONS AND THE GREEN TRANSITION IN THE BUILT ENVIRONMENT

Construction sector workers in Italy are organised in three unions:

1. FILLEA-CGIL (*Federazione italiana lavoratori legno ed affini*, affiliated to the European Federation of Building and Woodworkers - EFBWWW)
2. FILCA-CISL (*Federazione Italiana Lavoratori Costruzioni e Affini*, part of *Confederazione Italiana Sindacati Lavoratori*)
3. FENEAL-UIL (*Federazione Nazionale Lavoratori Edili Affini e del Legno*, attached to *Unione Italiana dei Lavoratori* and affiliated to the European Trade Union Confederation - ETUC and the International Trade Union Confederation - ITUC).

As in Denmark and Germany, building service occupations (plumbers and electricians) are unionised separately from traditional building 'trades' (bricklayers, carpenters) and are also covered

by separate collective agreements. Our findings on construction unions in Italy are based on interviews at the largest one, CGIL, which is actively involved in the climate change debates. The Union has called for construction site agreements for all workers employed on a project, which would bridge the divide between service and craft occupations to some extent, but this has faced resistance from employers. Within the Union, there are regional differences, with the North having historically higher membership and therefore more resources, though the union is everywhere facing a rapid decline in membership. Currently, 30% of the members of Casa Edili, the employer financed social fund, are members of the union. Along with high levels of unregistered employment and increasing numbers of migrant workers, who tend not to engage with unions, the construction sector is still recovering from the 2008 crash and was described by the interviewees as “at a standstill”.

CGIL has had climate change on its agenda for the last five years, being involved in alliances and action on sustainability, environmental protection and climate change. However, as in the other case study countries, awareness of energy efficiency in buildings and climate change is reportedly low among members.

We were not able to identify any written policies or proposals by the construction sector unions, apart from the strategic commitment by FILLEA-CGIL, *An end to the building of new homes, zero-soil consumption and a reduction in building on greenfield sites*, agreed at a special congress in 2014. This calls for the use of cement to be reduced by 50% by 2020 and eventually replaced by low emission and environmentally friendly materials, such as hemp and lime, and for the protection of the environment from the spread of concrete based building construction and unnecessary urbanisation. CGIL calls for this requirement to be included in public tenders, a demand that has faced resistance from the cement industry and politicians. The full statement, translated from Italian, is included in Appendix II.

Other activities by CGIL

CGIL, along with all other trade unions in Italy, is part of a network called *Legambiente*, which is a broad alliance of Italian trade unions, professional associations and other organisations active in environmental protection and climate change action. Legambiente is the largest environmental organisation in Italy with 20 regional branches and develops policies to reduce impact detrimental to the environment¹³.

Participation in EU-led initiatives and projects comprise an important part of CGIL’s environmental activities. These include initiatives such as Build Up Skills and research projects such as VET4LEC, funded by the EU and led by the social partners, the European Construction Industry Federation (FIEC) and the EFBWW, which enable CGIL to take part as a social partner and represent construction workers. Through these two projects, CGIL has been involved in the development of VET for LEC at European level. The Build Up skills project led to the development of LEC training by the national training body FORMEDIL, also jointly led by employers and trade unions. CGIL supports the call by FORMEDIL for mandatory minimum energy efficiency training to be included in the National Collective Agreement.

¹³ <https://www.legambiente.it/>

BROAD¹⁴ is another recently completed EU initiative and has direct relevance in its aim to develop social dialogue in relation to green construction. The two-year project was completed in December 2017, with the participation of Italy (lead), Belgium, Germany, Poland and Slovenia, and involved exchange activities with a wide range of stakeholders, including representatives of employer and worker associations, civil society organisations and other green building experts. Recommendations for improving social dialogue at the national and European levels target the regulatory framework and call for the establishment of permanent, tri-partite social partnership institutions operative at national and European levels. The call to include clauses on sustainable development and green building in the European Works Councils (EWCs) and in International Framework Agreements (IFAs) recognises the significance of formal commitments and the role of worker representatives as active agents in the transition to sustainable construction.

The recommendations formulate the implications and the impact of the transition to sustainable construction for employment and workers, seen as a key area of action for social dialogue. These identify the transformation implied in the building construction process, employment relations in the sector and VET, specifying that the European social dialogue address:

- the promotion of employment and organisational policies aimed at respecting decent work and increasing the quality of work (opposing illegal employment practices, health and safety protection, job creation and environmentally friendly occupations, etc);
- the impact on working conditions due to transformations, the reorganisation of production chains, production processes and the introduction of new technologies;
- issues related to migrant workers, and their full inclusion;
- the lack of qualified workers and, in the other direction, support for workers for the purposes of their qualification, retraining and specialisation;
- the definition and harmonisation of professional profiles at a European level;
- a closer link between public incentives (direct, indirect, fiscal) and respect for national collective labour contracts and regular national insurance contributions
- the integration of sustainability issues and contents related to changes in the field of sustainable building (taking into account new technologies and digitalisation processes) in the curricula of vocational, continuing and tertiary (university and non-university) education of the sector;
- the promotion of vocational and continuous training for both high- and low-skilled professions in sustainable construction, paying special attention to the inclusion of young people and women.

These recommendations constitute the most detailed and informed analysis of the implications of the transition to sustainable construction for construction labour and the construction sector, and contrast with the more general proposals generally to be found in policies of national and European confederations. (Steward and Clarke 2018, forthcoming)

VISIT TO FORMEDIL TRAINING CENTRE, ROME

The distinctive characteristic of VET provision in Italy is its regional structure. This is also

¹⁴ <http://www.broadproject.eu/>

replicated in the provision of LEC training whereby different regional authorities autonomously develop and deliver courses without much national coordination. Accreditation is similarly subject to Regional Qualification Frameworks. The training provided is not standard across the country and its content, level, duration and target occupations vary between regions. Currently, a National Qualification Framework, aligned with the European Qualifications Framework (EQF), is being developed. This is accompanied by a move towards uniformity in building regulations, some of which are national and some regional.

FORMEDIL¹⁵, established in 1980, is the national association for training in the building sector, jointly led by employers and trade unions. Through this partnership, CGIL is involved, though to a limited extent, in the development and governance of VET. FORMEDIL's national centre is in Rome and it has branches in every city, totalling 104 training centres across Italy. It develops training for construction occupations and provides the mandatory health and safety training (16 hours) that all construction workers are required to complete before entering a site. The organisation aims to promote life-long learning and provide initial VET training, continuous education courses/refresher training and apprenticeships. Schools may also organise courses in response to regional demand. FORMEDIL is also involved in developing certification schemes for the mutual recognition of EQF and EQAVET (European Quality Assurance Reference Framework). Casa Edile, the social fund, funds FORMEDIL and all training provided is free. Training for renewable energy occupations is developed by ENEA (The National Agency for New Technologies, Energy and Sustainable Economic Development) and for electricians is provided by Network of Services for Training and Work, ENAIP, and ASSISTAL (*Nazionale Costruttori di Impianti*). The separate organisation of training for skilled building occupations and building service occupations parallels a division in Belgium and Germany. FORMEDIL also seeks to undertake research and development activities, lead innovative approaches and influence policy. It is part of REFORME, the network for VET in the construction sector in Europe¹⁶.

FORMEDIL led the Build Up Skills Pillar II project I-Town, which lasted three years and had two elements. The first was Train the Trainers, which sought to develop the competence levels of teachers. The second was introductory level energy efficiency training, which targeted traditional construction occupations, including bricklayers, carpenters and ironworkers. The objective to roll out training for construction occupations is to be discussed at the National Congress of Training Centres. Support from the social partners and the demand for training from workers and employers are seen as crucial for a national roll out. FORMEDIL and CGIL have also called for 16 hours energy efficiency training to become a requirement included in National Collective Agreements.

Our interviewee highlighted the training provided by the manufacturers of energy efficient products and systems, for example insulation manufacturers. At FORMEDIL centres, bricklayers' training covers the rationale for insulation, whereas those trained by manufacturers in the application of their products may only learn how to install the insulation.

¹⁵ <http://www.formedil.it/>

¹⁶ <http://www.reforme.org/>

VISIT TO CEFME-CTP TRAINING CENTRE

Due to reductions in employer contributions and a drastic drop in income, from 6 million Euros in 2012 to 2 million Euros in 2017, CEFME and CTP merged in 2012 to form a single training centre. The economic crisis had a dramatic effect on the construction sector with activity and investment coming to a halt and the demand for workers and training dropping to unprecedented low levels. Due to the drop in student numbers, fewer and fewer courses are being run, and CEFME training centres started specialising in one or two areas, such as health and safety, or providing training for certain groups such as the unemployed. CEFME traditionally trained all the building trades, including bricklayers and carpenters, as well as plumbers and electricians. Later, training in restoration and LEC was also added. CTP brought its expertise in mandatory health and safety training, which the centre continues to provide. More recently, training for refugees is being developed, such as in Building and Landscape Maintenance and Urban Public Area Maintenance, jointly funded by the EU and the Lazio region. Courses include classroom-based learning, work placement and introduction to language and culture.

CEFME has a long and deep engagement with LEC, with training provided for all construction occupations. For instance, insulation is covered in the training for bricklayers, while solar panel installation and building automation is part of the curriculum for electricians. The Centre itself had solar panels installed in 2004 that serve as teaching tools and save on electricity bills. An area of the garden is dedicated to experimenting with biomass. The Centre will also collaborate with the University of Sapienza in 2018, supporting its bid for the Solar Decathlon Europe, which involves constructing an energy efficient house on the grounds of the training centre and testing it over a period of several months before taking it apart and reassembling in Dubai for the final exhibition.



In line with FILLEA-CGIL's LEC strategy, the Centre has also been proactive in using more natural materials such as hemp based insulation and hemp-lime mixture as a cement replacement and in developing techniques or reviving traditional methods to find solutions suited to historical buildings, such as silicon-based insulation that can be sprayed onto walls without obstructing the historical and aesthetic features of the building and can provide an alternative to standard cladding. Our discussions highlighted energy efficient renovation of historical buildings as a major issue for retrofitting in Italy.

ITALY SUMMARY

In contrast to Denmark and Germany, in Italy, social partnership is limited and there are fewer 'official' channels open for shaping policy. The unions are in a weaker position legislatively and seek to form a power base and exercise their voice through national and European alliances. Although unions in Denmark and Germany also collaborate with environmental and civil society organisations, strengthening their position through alliances constitutes in Italy an important part of the union's activities. Similarly, EU-led projects provide a platform for CGIL to develop its national presence and build up EU wide networks. CGIL's views on climate change and green construction are articulated through its participation in national and European alliances and also by European and international confederations such as the EFBWW and the Building Workers International (BWI). The proposal to end cement use contrasts with the concerns of Danish and German trade unions, which represent a more reactive response to EU policies. Even though Italy has adapted the EU legislation, FILLEA-CGIL proactively targets cement as a high carbon emission product and challenges urbanisation as building for building's sake and the spread of speculative, profit driven concrete building as fundamentally damaging to the balance of the earth's ecology. This is, therefore, based on a more profound proposition, that how we live and build should be in harmony with nature.

The case of Italy illustrates the challenges of implementing large-scale refurbishment programmes, on which successfully meeting EU2020 targets rests. Historical buildings comprise a large part of the building stock and the common methods of retrofitting, such as cladding, are not suited to preserving the aesthetic features of buildings, which takes priority. Furthermore, as large swathes of the country are earthquake zones, refurbishment programmes need to be combined with improving earthquake resistance. The implication is that nZEB, and especially its retrofitting aspect, needs to be adapted to the existing built environment. The needs to work with different materials and to adopt different methods to reach energy efficiency targets are reflected in the training provided, as exemplified by CEFME, which promotes the use of natural materials and techniques that do not interfere with the architectural and historical characteristics of buildings. There is perhaps also an alternative here to the drive to meet energy efficiency specifications at any cost and by any means.

Scotland/UK

In contrast to the radical policies proposed in Italy by FILLEA-CGIL, Scotland provides an example of the complex network of organisations, including the unions as representative of the construction workforce, required to effectively achieve LEC to the benefit of the wider community, whilst at the same time providing comprehensive VET and long-term, inclusive employment opportunities.

The field trips to Scotland took place on 22-23 May 2017 and on 30 April 2018 and included the following:

- Interviews with representatives from the UNITE trade union
- Interviews with representatives from City Building Glasgow, a local authority housing provider and joint builder with a social housing association
- Visit to Liddlesdale low energy housing development
- Visit to RSBi, City Building's manufacturing division
- Interviews with apprentices and trainees and a tour of the Training centre
- Visit to a district heating scheme.

THE CONSTRUCTION SECTOR UNIONS IN SCOTLAND/ UK

Construction workers in the UK are organised in two trade unions, GMB and UNITE, following the merger in January 2017 of UCATT (Union of Construction and Allied Technical Trades) and UNITE to form the section UNITE Construction. UCATT in Scotland historically had higher rates of membership than England and covers both public and the private sector. Currently, 13% of the UK construction workforce is estimated to belong to a union (140,000 members).

POLICIES AND ACTIVITIES OF CONSTRUCTION SECTOR UNIONS IN THE UK

UNITE's current policies on climate change and the transition to a green economy were developed at a policy conference in 2016, building on UNITE's support for the 2015 Paris Agreement and the call for a 'just transition', as articulated by the ETUC and ITUC. UNITE's environmental policies express continued support for the campaign to turn the Paris Agreement into concrete action and calls for a balanced energy policy, combined with reiteration of the Union's commitment to protecting jobs and workers' interests in both the old and the new energy sectors¹⁷.

On energy production, UNITE supports increased use of renewable energy sources such as solar, tidal and wind in addition to coal fired power stations and gas, though it does not rule out nuclear power. It also calls for the use of clean coal technology and carbon capture systems. The energy policy is combined with calls for good terms and conditions of employment for workers in all energy sectors, training and redeployment opportunities for union members affected by changing technology, and union representation for workers in green energy industries. In transport, it calls for

¹⁷ <http://www.uniteunion.org/unite-at-work/unitepolicies/>

increased investment in public transport and the manufacturing of electric vehicles.

Brief references to green transition in construction are found in an earlier document from 2015, *Meeting the Climate Challenge: balanced energy, a 'just transition' and climate jobs*, which refers to the retrofitting of homes to tackle fuel poverty and reduce energy consumption. Retrofitting is also promoted for its potential to create 'green' jobs.¹⁸

ACTIVITIES AND INITIATIVES BY UNITE SCOTLAND

The union in Scotland has been involved in the development and delivery of training, some related to green construction, including:

Qualification to become a Green Deal approved installer of windows and doors. The programme was developed in partnership with employers, whilst STUC's (Scottish Trade Union Congress) Union Learning Fund engaged directly with Skills Development Scotland to obtain funding. The aim was to develop existing skill sets and provides a higher quality service. To become a Green Deal approved installer, 18 workers completed Levels 2 and 3 SVQs (Scottish Vocational Qualifications) over a six-month period of assessment in 'fenestration installation and surveying' and the organisation had to ensure rigorous quality assurance processes were in place. The union also worked with local Further Education (FE) colleges in organising this course.

Training in waste efficiency was organised in partnership with Zero Waste Scotland. The introduction to waste management legislation and Wastesmart foundation course for 21 workers were delivered by Albion Environmental. The course covered areas such as duty of care, classifying waste through EWC (European Waste Catalogue) codes, the regulations around special waste, the waste hierarchy and the environmental impact of waste. The union pursued the course as it provided a way to recognise the highly skilled and dangerous work they were doing and certified existing skills.

According to our interviewees, the union considered running an energy efficiency training course and Green Rep training but neither was popular; the former was seen to duplicate what the employers already provided. One such provider, Historic Scotland, which has a union representative on the board and where staff are directly employed, prioritises LEC training as the old houses they manage do not meet the governments' energy efficiency targets. There is also some recognition of the significance of LEC training as an alternative opportunity for workers who may be affected by the downturn in gas production. However, funding for training is reported to be very limited and awareness of energy efficiency in buildings and climate change low among members.

VISIT TO CITY BUILDING AND ITS MANUFACTURING DIVISION RSBI, AND LIDDESDALE LOW ENERGY SOCIAL HOUSING DEVELOPMENT

City Building is a highly unionized low energy social housing non-for-profit building organisation with an in-house training centre and directly employed workforce. We visited

¹⁸ <http://www.uniteunion.org/how-we-help/list-of-sectors/energy-and-utilities/meeting-the-climate-change-challenge/>

the organisation to examine the different training and employment model it presents in a sector dominated in the UK by sub-contracting, self-employment, agency labour, and a highly fragmented VET system. The visit involved interviews with: representatives of the Joint Trade Union Council; staff at the Queenslie Training Centre, including apprentices, trainers and the apprenticeship scheme manager; City Building staff involved in the development and management of renewable energy and energy efficiency construction programme; and the Head of Business support. In addition visits took place to: the Liddesdale site, a low energy social housing scheme by City Building; City Building's manufacturing division RSBi; the Queenslie Training Centre; and Hill Park Drive, a district heating system being installed on a 1970s council housing estate.

Background, current work and ethos

City Building was formed in 2006, from the original Direct Labour Organisation (DLO) of Glasgow City Council, City Building (Glasgow) Limited Liability Partnership (LLP), as an Arms-Length External Organisation (ALEO). Since April 2017, Glasgow City Council and the Wheatley Group Housing Association jointly own its repair and maintenance division. The Construction and other Housing Association Divisions' Parent Company is Glasgow City Council. Collectively they directly employ 2,200 workers and a 2016 University of Strathclyde study, *The Economic and Social Impact of City Building on Glasgow*, estimated that it supports a further 2,000 jobs through its supply chain, and contributes to the generation of thousands of other jobs in and around Glasgow.

In the last ten years, City Building has developed a successful social enterprise with a reputation for sustainable and high standard employment and construction practices. As well as continuing to be responsible for maintaining all Glasgow City Council's building stock and for managing its new construction projects, City Building competes for contracts in the open market. While it has some clients from the private sector, most are from the public sector including local authorities, housing associations, schools, universities and care home providers. The construction portfolio includes new build (including design and build, in collaboration with the Glasgow City Council's in-house team of architects), refurbishment, and restoration. New build projects include social housing, care homes, schools, homeless hostels and student accommodation. Through some high-profile projects (e.g. sites for the Commonwealth Games) and clients (e.g. Scottish Energy, NHS, the Prison Service), it has come to be recognised as a contractor with the capacity to deliver large projects to a high standard.

City Building has also distinguished itself with a strong social ethos and good employment practices. Whilst operating as a successful business and making a substantial contribution to Glasgow City Council (reported to be £5-6 million a year), it is run as a social enterprise and its operations are not driven by profit. Rather, its priority is to sustain the current model of employment, training and operations and grow without compromising quality and labour standards. All staff are directly employed and supported and nurtured for the long-term.

Almost all the personnel interviewed had begun as apprentices with City Building, including the current Executive Director and the plumber trainer who had been with the organization for 44 years. City Building promotes further education to enhance employee qualifications, with many employees undertaking Higher National Certificate (HNC) and degree level courses within their

field of expertise. Employees and managers are also kept up to speed with new and emerging technologies by attending workshops and continued professional development courses relevant to each discipline. The cost of further training is mostly met by City Building, with the time off work required shared between staff and City Building. Employees work to 37 hour contracts, with any additional hours paid as overtime. City Building does not engage labour-only sub-contractors and any sub-contractor employed needs to comply with a framework agreement that sets standards for quality of work and terms and conditions of employment, implying a reduction in and better regulation of the subcontracting chain.

Conditions of engagement include, for example, that apprentices are employed, locally sourced materials are used, and Construction Skills Certification Scheme (CSCS) cards are up to date.

Another unique feature is the involvement of the trade unions that played, historically, a significant role in shaping the ethos that underpins City Building's operations. The unionisation rate is reportedly nearly 100 per cent, across three unions: UNITE (services, plus former UCATT joiners), UNISON (office staff) and Community (remaining RSBi staff). The Joint Trade Union Council includes representatives from each trade union and is actively engaged with the management of City Building at the highest level, attending quarterly meetings of managers and also taking part in specific meetings such as the Health & Safety Working Group, in what is described as 'a great relationship'.

Training programme:

City Building has its own Scottish Vocational Qualification (SVQ) approved **Queenslie Training Centre**, and runs a comprehensive SVQ Level 3 Apprenticeship programme in mainstream construction occupations, including Joinery, Plumbing, Electrical, Painting and Decorating, Roof Slating and Tiling. The 4-year programme combines study, simulated learning in workshops, and on-site practice (both construction and maintenance).



The apprenticeship programme is popular, often described as 'the best in Scotland' and enrolls 60 new apprentices every year, who are selected in a two-stage process, out of 500- 600 applicants. The intake is diverse with female apprentices across all trades; it is reported that 25% of all female apprentices in Scotland train with City Building. It also includes one- two care leavers every year, who may have been referred by the City Council, and are supported through a special programme that cater to their particular needs. The trade mix depends on demand from projects,

on-going and future. The programme is structured such that the amount of classroom time and theoretical learning decreases gradually over three years; The first year is classroom based, the second year is equally divided between classroom and site, the third year is largely learning on site with a smaller element of classroom time. Those training to be gas engineers receive training in gas installations and emergent technologies in their 4th year.

The apprenticeship programme is also distinguished by a strong support programme that ensures very low drop-out rates and an all-round training for the young people joining City Building. The training begins with an intensive 6-week induction that covers health and safety as well as preparing young apprentices for independent and responsible lives as adults. The social and personal support element of the programme continues throughout, ensuring a higher than industry completion rate (95%). Apprentices also take part in many voluntary activities that combine supporting local causes with learning and that help develop social skills. Examples include the redecoration of a local care home.

Upon completion, apprentices are supported to find employment, which includes interview practice and CV writing, but in the last ten years City Building has kept on 80% of its apprentices. Its position as a trainer, employer and managing agent implies that the apprentices receive an all-round service and are well supported and positioned to continue into permanent employment with City Building. All apprentices are guaranteed a job interview and after an initial short-term contract, many stay on as permanent employees.

Training in low energy construction is trade specific; for example, insulation is taught as part of Carpentry and Joinery. Plumbers, Electricians and Gas engineers, in their final year, study 'Emergent Technologies, using teaching and learning materials developed by NAB (National Assessment Bank). For example, plumbing apprentices complete the following units:

- a. Working principles, Installation Options and Regulatory Requirements for Micro-Renewable Technologies, Water Harvesting and Recycling Technologies (Unit F8X), delivered to all plumbing apprentices.
- b. Emergent Technologies Combined, including, in addition to F8X), Solar Thermal Domestic Hot Water, Heat Pumps, Grey water/rainwater harvesting/grey water reuse. (Unit F9HD 04, requirement to complete SVQ Level 3 in Domestic Plumbing and Heating.

The plumbing apprentices interviewed found gas fitting the most difficult part of their training, particularly with 100% accuracy required in the final exam, and appeared undaunted by the physics associated with comprehending energy efficiency. Although these courses are believed to provide a good grounding in RES installations, apprentices are expected to continue with their learning after starting employment, especially because this is a field that is constantly changing with technology.

In addition to the apprenticeship programme City Building runs a number of specific and Construction Industry Training Board (CITB) certified courses in, for example, health and safety, first aid, site management, power tool training, and IT packages.

Low energy construction projects:

Interviewees suggested that sustainability and energy efficiency are becoming more and more embedded in their planning and operations. For instance, every building site is required to have an environmental plan. The design team engages with the services team early on in the process, as the new technologies need incorporating into the design of buildings. These changes are set against a growing awareness of and investment in energy efficiency and renewable energy sources by the government and other local authorities and public bodies.

District heating is becoming popular in Glasgow, where Glasgow Caledonian University runs its own district heating network and the City Council is considering connecting all district heating networks. District heating is also becoming popular elsewhere in Scotland, for example in Aberdeen. This is in the context of the Scottish Government’s ambitious targets to reduce carbon emission and efforts to eliminate fuel poverty.

City Building itself has a growing programme of low energy housing, built to varying standards of energy efficiency, including Ecohomes Level 4 and Passivhaus. Examples include: the *Glasgow House* (see photo), the first of the kind in Scotland, and timber-frame houses with pre-manufactured floor and roof cassettes manufactured by RSBi. These schemes are characterized by: high levels of insulation; windows and sun rooms to suit an orientation capturing sun energy; simple forms of construction using locally-sourced and assembled materials; efficient heating systems using solar thermal panels; and education for residents in how to benefit from special features in their houses. These low energy houses demonstrate a two-thirds reduction in energy costs compared to a similar size traditional house. The City Building workforce is also currently involved in various renewable energy schemes including solar thermal, photovoltaic, combined heat and power, ground and air source heat pump and voltage and boiler optimization technologies. In addition, the in-house Building Management Systems Team develops, implements and monitors control systems within Glasgow City Council and The Wheatley Group ensures buildings are performing as efficiently as possible, in many instances reducing utility bills by as much as 30%.



We visited two energy efficiency schemes by City Building:

Hill Park Drive, district heating network installation:

This is the first large-scale off-grid district heating installation, utilizing a Large Scale Air Source Heat Pump as the primary heat source, to 350 properties at Hillpark Drive in South Glasgow. The project, which began in 2017, is part-funded by the British and Scottish governments (£3.5 million of the total cost of £5.5 million) and expected to reduce fuel bills dramatically and tackle fuel poverty. The previous heating system relied on electrical storage heaters and was very expensive to run (up to £100 per week) resulting in high levels of fuel poverty among tenants. The new system could bring this cost down to 60p a week. The scheme involves laying new pipes to property boundary (undertaken by a civil contractor) and installing new pipework to every flat (by City Building Services Department), replacing cold-water storage tanks and inefficient pumps. Twenty City Building employees work on the project including plumbers, electricians, joiners and carpenters. The energy centre, located next to the housing estate, is reported to be the biggest of its kind in the world. Its maintenance, as well as that required for the heat interface units installed in every flat, requires considerable expertise and will be provided by the City Building commercial team, which is also training apprentices to carry it out.

Liddesdale social housing scheme, with low energy features

The low energy scheme visited is the Liddesdale development, built in a deprived part of the city and forming part of the regeneration plans for the area; the local school was also built by City Building (to similar energy efficiency standards). Liddesdale consists of 70, 2-3 bedroom houses. Technical specifications are:

- Ecohomes Level 4 standard
- Timber frame and brick skin
- Double glazing
- Gas combination boilers
- Solar roof panels
- Standard ventilation
- PVC windows
- Insulation: external walls are 400mm, insulation thickness 140mm.

Upon completion, the houses are tested for airtightness, along with checks for the habitation certificate issued by Building Control (checking for sound insulation, electrical work, access, and drainage), plus a National House Building Council (NHBC) inspection. The local authority is subject to much inspection, but turns this to an advantage by building to higher standards than the private sector. 100 workers are employed in the project, about 30% of who are City Building employees, the rest being provided by sub-contractors. Groundworks, brickwork, joinery and electrics are sub-contracted, while plumbing, roofing, central heating and internal gas works is undertaken by City Building employees. One female apprentice was present (joiner) on the day we visited. Aspects related to LEC are taught on site by supervisors and experienced workers, with quality checked by

the site manager before work can proceed onto the next stage.



Manufacturing division: Royal Strathclyde Blindcraft Industries:

City Building has a manufacturing division, the Royal Strathclyde Blindcraft Industries (RSBi), one of the largest supported manufacturing businesses in Europe. City Building took over its management from Glasgow City Council in 1997. With recent investment, RSBi operates from a large, purpose built and highly equipped factory, with the capacity to design and test products and to supply timber kits, UPVC windows and doors, and a wide range of kitchen and bedroom furniture, including soft furnishings for furnished accommodation providers, care homes and nurseries. RSBi supplies both City Building and external customers. As a supported employment business for people with disabilities, the origins of the RSBi go back to the nineteenth century; RSBi is the successor of the Royal Glasgow Workshop for the Blind, a factory for the blind set up in 1804.



City Building continues to support the ethos of RSBi, which today employs 270 people, about 60% of whom have a disability or disadvantage. Workers also have access to training and development opportunities through RSBi's Learning Centre and to work-related and on-the-job training and participation in other courses delivered by learning partners such as Communitas (the Training and Education Arm of Community Trade Union) and the Workers' Educational Association (WEA). RSBi also has a School Vocational Programme, which includes 1-2 years' training and work experience for 15-17 year olds from Additionally Supported Learning (ASL) schools in Glasgow.

SCOTLAND SUMMARY

The construction union in Scotland/England operates in a different political environment from the other three countries. In general, there is little social partnership in the UK or Scotland, and VET provision is fragmented, based on employer-demand, and only partially funded by the government. The government is committed to meeting the EU targets for improving the energy efficiency of buildings, but under the shadow of Brexit it is not clear if and to what extent EPBD is being implemented and outcomes monitored. The trade union has the lowest rate of membership among the four countries. UNITE covers energy production sectors and its proposals focus more on the transition to renewable energy production and industrial policy, seeking to balance the protection of its workers' interests in these traditional industries with support for climate change action. The built environment is mentioned briefly in that the proposals refer to the employment potential offered by major retrofitting programmes¹⁹.

In this context, City Building, which was a local government in-house building department and is now an arm's length non-for-profit building organisation working in partnership with Wheatley Housing and accountable to Glasgow City Council, provides an interesting and unique example. While the construction union, UNITE, does not have detailed proposals for a green transition in construction, or an explicit response to the EU strategy as articulated by EPBD and nZEB policies, the union has a strong presence, alongside two other trade unions in the organisation. The union presence has clearly shaped the development of City Building as an exemplary locally-based organisation, with a directly employed workforce covering all construction occupations, which contrasts strongly with the fragmented and casual nature of the private construction sector. As a local/regional initiative, influenced by the historical trade union presence and guided by a strong social ethos, City Building presents an alternative organisational, VET and employment model, one that is successful in meeting low energy construction requirements for the new and existing social housing and public building stock.

CONCLUSIONS

Construction unions in Denmark, Germany, Italy and Scotland-UK operate in different contexts in terms of labour market conditions, industrial relations systems and approaches to VET provision.

Denmark and Germany are based on social partnership, whereby trade unions have a voice in

¹⁹ TUC has more detailed proposals on energy efficiency in buildings, but the focus here is on sector unions, not federations/confederations.

policy-making and implementation, including the adaptation of EU LEC policies and the governance of VET. By contrast, trade unions in Italy and Scotland have limited voice except at local level, and relations with employers can be conflictual. In both countries, the EU's green transition agenda is progressing more slowly than in Denmark and Germany and national funds for nZEB implementation (e.g. financial incentives for retrofitting, setting up enforcement systems, investment in LEC training) remain particularly limited in Italy as the sector struggles to recover from the recession. Market demand for low energy housing varies; the green construction sector is smaller in Italy and Scotland, compared to Denmark and Germany where it is sizeable and there is rising awareness among the wider population.

Looking at the internal dynamics of the trade union movement, union density is highest in Denmark (80-90%), and estimated to be around 30% in Italy, 20% in Germany and 13% in UK. Trade union proposals and initiatives identified during the visits include:

- green economic and energy transition policies (3F-Denmark)
- proposals that target specific aspects of high carbon construction (CGIL-Italy)
- proposals that respond to the implementation of EPBD (3F-Denmark, IGBAU-Germany, and CGIL-Italy as part of BROAD project)
- practices that present an alternative employment, training and production model for the sector (UNITE-Scotland/UK).

Danish and German trade unions have access to platforms to influence government's green transition strategy more directly and in both cases articulated proposals are broadly in line with EU strategy, with involvement in its day-to-day implementation taken for granted. 3F's more proactively developed perspective for a sustainable and circular economy emphasises the transition to renewable energy and, with regard to green construction, its proposals support and suggest ways to better implement EU policies. IGBAU's proposals are brief and focus, strictly, on the implementation and consequences of EU policy. In Italy and Scotland, the unions have little role in the implementation of EPBD apart from at a local level and through the VET system in places where they have an input. CGIL was however involved in the EU funded project BROAD, which led to the development of one of the most comprehensive responses to the green construction strategy pursued in Europe. UNITE's proposals make brief reference to retrofitting and its employment potential. The green construction related proposals of all four unions interviewed are responses to actual or planned transition policies and concern in particular their impact or potential impact on workers and jobs. In this focus on the consequences of the transition, particularly with respect to the potential for job creation, training required, the benefits for the environment, and calls for further intervention and regulation by the government, they broadly follow an ecological modernisation perspective (Hampton, 2015). The role envisaged for labour is participant rather than as an active agent and the proposals do not contain an evaluation of the limits set to the nature of the transition by the existing political, economic, social and educational structures, or an appraisal of the technical specifications that drive the new energy efficiency standards set by the EPBD. These are, after all, 'officially' articulated views and activities associated with unions' part in the social partnership system and reflect the strength and/or weakness of their voice in the development of the transition strategy.

However, to describe their overall position as one of ecological modernisation does not

rule out the development of 'alternative' visions and practices. For instance, CGll's challenge to the construction industry to stop building for building's sake is a critique of the underlying economic rationale that, together with the more specific proposals developed as part of the BROAD project, represents a radical perspective. Similarly, whilst UNITE's views on LEC are not radical, the example of City Building Glasgow, with its strong union presence, partnership with a social housing association and local government organisation, extensive energy efficient housing programme, inclusive manufacturing wing, and good quality VET provision, presents a challenge to dominant employment and learning-on-the-job training models.

An apparently limited engagement by trade unions in the climate change agenda and the transition to low energy construction needs to be seen in the context of a long-term decline in union membership in three of the case study countries. Apart from Denmark, membership rates are low and declining employment, particularly in Italy, extensive subcontracting and the use of agency labour, which constitutes a temporary and difficult to reach group, undermine efforts to improve the situation. There are also clearly issues around capacity; in all cases, the efforts to raise climate change to the top of unions' agenda is compromised as environment related activities rely on a small number of individuals who themselves may not have a detailed knowledge and understanding of the EU strategy and the way it is being implemented by government. Lack of awareness of and interest in environmental problems and green construction among the wider membership and the prioritisation of employment related matters by the union enforce the impression that climate change is not a major issue for workers. This is a common theme across the four case studies, one which also resonates with findings on other trade unions in Europe and the USA (forthcoming-Steward & Clarke 2018; Stevis, 2017). Trade unions struggle to prioritise climate change and to integrate it into an alternative political economy agenda with labour at its heart. In this respect, proactive initiatives present an opportunity to enhance, inspire and attract membership.

References

- BWI (2015) *Towards a framework to combat climate change in the construction, building materials, and forestry and wood sectors: a workers' perspective*, Building Workers International
- Clarke, L., Gleeson, C., Winch, C.(2016), "What kind of expertise is needed for low energy construction?", in *Construction Management and Economics*.
- Hampton, P. (2015), *Workers and Trade Unions for Climate Solidarity – Tackling Climate Change in a Neoliberal World*, Routledge, London and New York.
- Lipsig-Mumme, C. (ed). 2013, *Climate and Work*, Fernwood Publishing, Canada. Lipsig-Mumme, C.,
- McBride, S. (2015), *Work in a Warming World*, McGill-Queen's University Press, Canada.
- Ramioul, M., Benders, J., and Peteghem, J. (2016), "Green construction and team design. Low road and high road teams to build energy-friendly houses", in *World Review of Entrepreneurship, management and sustainable development*.
- Rathzel, N, Uzzell, D (2013), *Trade Unions in the Green Economy*, Routledge, London & New York.
- Stavis, D. (2017), *Labour Unions and Green Transitions in the US: Breadth, Depth and Worker Agency*, ACW Research Report
- Steward, F. and Clarke, L. (2018, forthcoming), *Green Transitions in Europe: Depth, Breadth and Worker Agency*, ACW Research Report.

APPENDIX I: Green Transitions in Built Environment Topic Guide

QUESTIONS ABOUT THE BUILDING PROJECT/FOR CONTRACTORS

1. Low energy construction – standards, conditions and quality check

- a. What are the low energy standards applied? Are these the standards set by the building regulations?
- b. What are the procedures for ensuring that these standards are met? Are buildings tested for energy performance post-completion?
- c. If the standards are not met (performance gap), have the reasons for this been identified? And what is being done to address it?

2. The workforce – education, training and qualifications

- a. What kind of VET and qualifications workers have had in low energy construction methods? Any particular area of the work (e.g. insulation)? Is it on site training? Are there workers with prior VET and qualifications?
- b. Are there difficulties recruiting workers with the right knowledge, skills and competence? Is the problem specific to some areas of construction?
- c. Are knowledge, skills and competence levels found to be adequate? If not, where are the deficits?
- d. What about the awareness of energy efficiency of buildings and its importance among workers?

3. The workforce – employment and unionisation

- a. Are the building workers directly employed by the main contractor winning the bid and, if not, are they directly employed through subcontractors?
- b. Are the workers unionised? What is the extent of union coverage?
- c. What kinds of issues the trade union has been involved in on this site, if any?
- d. Are skilled workers generally employed under the collective agreement? Generally how many are in a gang, in, for instance, carpentry?
- e. Can we find out about the current system of pay, working hours and bonus?
- f. What is the extent of agency work? What are they employed to do? Anything specific?
- g. How about migrant/posted workers?

3. Contractual arrangements, construction site and the organisation of work

- a. What is the extent of sub-contracting? What implications do you think sub-contracting has for communication, the organisation of work and supervision?
- b. How is communication between the architects, engineers, contractors and the building workers facilitated? And how is that working? What are the difficulties and how are these addressed?

- c. What problems arise on site in meeting energy targets? Do these concern particular occupations? In particular, do problems arise in the interface between occupations – if so, which occupations? Can you give us examples?

QUESTIONS FOR TRAINING PROVIDERS

1. What VET is provided in low energy construction? Can you give details of what course/modules, their level, duration, and a breakdown of each in terms of knowledge, competence and skill components?
2. Are energy topics covered within existing courses?
3. Does the existing programme provide for the development of interdisciplinary thinking and a deeper and broader knowledge and understanding of energy efficiency in construction? For example, are there courses devoted to more general aspects of energy efficiency such as building physics?
4. Are you experiencing any particular difficulties or problems in developing and providing energy efficiency related VET?
5. Is there variety in terms of the mode and time of study? Is there enough flexibility in the provision to facilitate participation by those in employment?
6. What is the demand like? Who are the participants? Young people, experienced skilled workers? Women, migrants and those from ethnic minority groups?
7. What can be done to improve awareness and take up of VET? (by course providers, the learners, employers, trade unions)

QUESTIONS FOR TRADE UNIONS

1. Can you describe your role and involvement in the sustainability/climate change related policy and practices of your union?
2. Could you tell us about the climate change/sustainability related policies your union?
3. What is the nature and the extent of trade union engagement in the green construction agenda? Has the union developed and proposed any policies in support of green construction? What was the driver of these policy initiatives?
4. Is the union involved in any practical initiatives in pursuing the green construction agenda? Can you tell us about these initiatives, progress, achievements and problems encountered?
5. Do you collaborate with other organisations? Who are they?
6. If no policies or involvement in practical initiatives, what have been the obstacles to developing a position on green construction?
7. What do you think are the barriers to the transition to low energy construction in your country? What do you think is the role of the unions, vis a vis the other agents such as the government, employers and training providers?
8. Is there an awareness within the union of the implications of low energy construction for the labour process and workers' VET and qualifications?

APPENDIX II

An end to the building of new homes, zero-soil consumption and a reduction in building on greenfield sites *

FILLEA-CGIL, the biggest Italian union in construction, is calling for an end to the construction of new homes. This may seem paradoxical, but is not: we are calling for a halt to uncontrolled overbuilding. We must instead redevelop built-up areas and old town centres.

At first glance, it may seem paradoxical that the biggest union in the construction industry is calling for an end to the construction of new homes. Equally it may seem counter-intuitive that we have four million people living in poor housing conditions and at the same time, in the large metropolitan areas, there are millions of properties that are empty and unsold. However, this is what is happening here today and is the consequence of a construction industry that has pillaged the countryside with uncontrolled building, indiscriminately consuming land. For some time FILLEA-CGIL has been campaigning for the protection of the countryside and for sustainable development and the protection of the landscape and territory, supporting “an industrial policy of building in urban areas: zero-land consumption, a halt to over-construction, effective flood protection and the redevelopment of old town centres”.

It is clear that for FILLEA a new politics is needed in construction and one that represents a break with the past. At stake is not just the future of work in our sector, but also the future of our countryside. We are talking about a shift in production, nothing less than a change in direction as well as in the governance of public institutions that have never accepted responsibility for limiting the spread of construction.

The results are there for all to see, especially when we include the catastrophic damage caused by heavy rainfalls or by medium-sized earthquakes. The outcome of this devastation is that these are magnified and turned into major disasters, precisely due to the earth’s fragility.

FILLEA is committed to a Europe-wide goal of zero sum impact on the land, as part of a debate that sees institutions, both political and trade unions organisations, coming together with the aim of sponsoring legislation that drastically reduces the pillage of rural land and increases the amount of land that is flood-free.

It is exactly the opposite of what is going on in Italy, where 100 hectares of rural land are lost every day, ‘eaten up’ by houses, terraces, offices, storehouses, warehouses and so on, exclusively to increase profits derived from a simple change of use that can multiply the monetary value of every square metre of land

With the economic crisis, it has become clear that this development model no longer works, as seen by the fact that despite their volume growth, houses remain unsold. It is an out-dated model that has enriched a few big landholders and has not redistributed wealth among the wider community; indeed it has increased social inequalities.

That is why we have to stop building for building's sake. We need a new development model based on environmental sustainability, on technological innovation, on urban regeneration, and with companies that have structures that focus on product quality; with a government that supports a new political direction and with public planning processes that originate from local bodies, working towards community, instead of private, consumption.

In times of crisis, the more that is built, the lower the worth of family properties, which, in just a few years, have reduced in value by 20% to 40%. By contrast between 1994 and 2008 there was an exponential growth in the value of houses. From this perspective, the implementation of local strategic plans in large cities, based on a frightening increase in the use of cement, makes a bad situation worse. And, at the end of the day, those who lose out are precisely those public authorities (such as Rome, Turin, Parma, Alessandria, Catania) that went (or almost went) bankrupt due to the scandalous urban expansion.

What Italy really needs is organic legislation that is based on the re-use and restoration of existing buildings, to prevent land being gobbled up by urbanisation; at the same time, in built up areas, pushing and sustaining the regeneration of areas that are supportive of this process. Based on statistical data, which show a progressive loss of agricultural land, there needs to be a decisive intervention to save agricultural land and to promote the conservation of natural resources.

To shift direction, as far as the European Union is concerned, we need to take coherent actions with specific targets that are then brought into national and regional law, thus reducing the risk (which is always latent) of yet another a new building programme solely to enrich the pockets of speculators and the mafia.

Therefore, to fight land consumption and the risk of flooding, it is vital to step in to halt the further encroachment of greenfield sites and to reduce the effects of on-going building development, reclaiming and improving the land and reducing the impact of flooding.

FILLEA's goal in Italy is to achieve at least a 50% reduction in land development by 2020.

However, a simple limit to urban expansion would not be enough without additional measures that are essential to support coherent urban redevelopment policies. The first would be to introduce regulations that would act as controls on the restoration of the country's cultural heritage.

Here in Italy we have reached the moment when we need to promote a model of efficient and proper urban planning, capable of transforming the construction industry and the urban fabric. It is essential to restore cities and to build according to simple, shared and efficient rules that do not allow for the logic of the speculation that has prevailed in these last years.

Therefore, our demands are for the regeneration of the historic town centres, refurbishment of the suburbs, maximum expansion of existing infrastructures designated to urban, suburban and ex-urban collective dynamism, taking a direction from Northern Europe, where local authorities have been funded to intervene in urban regeneration projects, with the aim of advancing the public interest. In Italy, up until now, things have gone in the opposite direction, with cuts to local authorities to contain the budget deficit. Every year, thousands of planning consent applications are submitted,

equivalent to thousands of square metres, while in the meantime there are plenty of existing offices, storehouses and warehouses that nobody wants.

Just taking the city of Rome, every year more than 20 million square metres (corresponding to 2,300 hectares of the countryside) are allocated for housing. This is a massacre that needs to be corrected as soon as possible; building new housing is not necessary as this does not encourage development. We need new projects that support sustainable and environmental building, alongside the regeneration of existing constructions.

The same goes for the construction of major infrastructure works. Instead of the many planned highways, we should set our sights on expanding the underground networks in the big cities, so that city planning would not be only for city planning's sake anymore, but would meet the needs of the community. Instead of thinking about lavish bridges, like the Messina Bridge, we should work towards strengthening current harbours and road networks.

There is such a level of overbuilding, in Italy that is not even possible to distinguish between different areas. Cities are increasingly encroaching surrounding areas, overflowing with unbroken lines of industrial warehouses and superstores. That is exactly why we need a new urban strategy, capable of drastically reducing the consumption of land and the use of cement with the aid of tools and interventions that must be agreed upon and shared between the national government, regions and local authorities.

*** Document approved by the National Congress of the Fillea CGIL on 3 April 2014 in Roma. The strategic commitment contained in this document has continued over the years and is still valid today.**



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

adaptingcanadianwork.ca

Printed by union labour (YUSA) at York University.