Towards a just transition for workers in the built environment in Europe

Building materials and on-site construction sectors

Annex I: Country fiche - Denmark

ECORYS

Answering tomorrow's challenges today

Country Fiche

Denmark

Towards a just transition for workers in the built environment in Europe

Building materials and on-site construction sectors

1. At a glance[1]

Strengths/Opportunities

• Opportunities in construction sector:
  ○ The decarbonisation of Denmark's construction sector is expected to generate significant job creation, including both permanent and temporary positions. Major green projects such as carbon capture and storage (CCS) and Power-to-X (which are technologies that produce fuels, chemicals and materials based on green hydrogen produced through electrolysis) are projected to create over 10,000 full-time jobs by 2030, requiring extensive upskilling and reskilling. Sustainable construction practices are increasing demand for advanced competencies, including green materials, energy-efficient technologies, digital construction tools, and prefabrication. Denmark's strong social dialogue ensures workers are involved in the transition through collective agreements that promote participation, training, and bottom-up innovation.
• Opportunities in the building materials sector:
  ○ Measured in volume, cement is the most used building material in Denmark[2]. Denmark's cement sector benefits from strong labour protections, with workers (including those at Aalborg Portland) covered by the 2025–2028 Industrial Agreement, ensuring stable wages, solid working conditions, and robust union representation through CO-industri, 3F, and Dansk Metal[3]. Decarbonisation is supported by effective public financing tools such as the CO_2 tax system and the Green Tripartite Agreement, while Denmark's longstanding tradition of tripartite social dialogue creates a coordinated, worker-centred transition environment. The flexicurity model further strengthens this framework by combining easy job mobility with generous social protection and state-supported reskilling. Decarbonisation, CCS deployment, circular production, and digital industrial processes are driving a growing demand for skilled labour, supported by large-scale investments like Aalborg Portland's CCS projects, including the Hirtshals CO_2 hub and the EU pilot facility in northern Denmark.

Weaknesses/Threats
• Challenges in construction sector:

[1] The core construction sector is assessed in detail in all ten countries, while the depth of analysis varies in the building material industries, with the one or two biggest industries (measured by volume of material output produced in tons) analysed per country. For Italy, the Netherlands, Czechia, Denmark and Ireland, the analysis focuses on either steel or cement, depending on which material has the highest output. Germany, France, the United Kingdom, Poland, and Spain are subject to a deeper analysis, including steel or cement and an additional industry (either timber or glass) selected based on its importance in material output.

[2] Denmark produces about 10 million tonnes of concrete annually, which equals approximately 1.7 tonnes per person each year.

[3] 3F has approximately 252,000–265,000 members, while Dansk Metal has roughly 140,000–145,000 members. These two unions together directly represent about 20–21% of all union members in Denmark. CO-industri is an umbrella bargaining cartel consisting of nine unions with about 230,000–306,000 members. Hence, members of 3F and Dansk Metal can also be members of CO-industri.

- The green transition increases demand for highly skilled labour, but many current workers lack the required technical and digital competencies, creating risks of job displacement. Employment in the sector is vulnerable to fluctuations in government support and project approvals, particularly in **building renovation and retrofit projects**, where policy changes or delays in energy efficiency mandates reduce job opportunities. The shift toward deep renovation and energy retrofitting of existing buildings represents a challenge: Denmark's National Building Renovation Plan (2025) aims to transform the entire building stock into Zero-Emission Buildings by 2050, requiring renovation of millions of square meters of residential and non-residential buildings.
- Job creation in renovation and retrofit is often **temporary and project-dependent**: employment peaks during major renovation programmes but can decline sharply once projects are completed, leading to worker insecurity. The renovation sector faces specific challenges including fragmented project timelines (individual building upgrades rather than continuous workflows), seasonal fluctuations in work availability, and the need for workers to constantly adapt between different building types and retrofit technologies (heat pumps, insulation systems, advanced ventilation, and energy management systems). Denmark's 2024 agreement on energy efficiency in public buildings and the 2021 social housing renovation scheme (targeting 72,000 homes) created an estimated 3,300 full-time jobs in 2020 and 7,800 in 2021, but these gains are temporary without sustained programming..

- Challenges in the building materials sector:
  - Decarbonising cement production may cause short-term job losses in high-emission roles, while ongoing skills shortages sustain a strong reliance on migrant labour for lower-skilled and hazardous tasks. Migrant workers face heightened vulnerability, with lower pay, longer hours, limited safety training and weak knowledge of their rights. Policy support is limited, since the National Strategy for Sustainable Construction does not include sector-specific transition measures and slow progress on circularity restricts new job creation. Risks are geographically concentrated in northern Denmark, where Aalborg Portland is the only cement plant, making the region particularly exposed to restructuring or delays in CCS development, while the timber sector offers only minimal alternative employment.

Key organisations

Major Danish trade unions and employer organisations include:

- The Employee organisation 3F (United Federation of Danish Workers)
- The Employer organisation Danish Construction Association (Dansk Byggeri, or DI Byggeri)
- The industry association, Confederation of Danish Industry
- The federation of unions, the BAT-Cartel or Danske Byggefag

Key initiatives and partnerships

- The Danish government has initiated a Climate Partnership for the Construction sector, which is one of 14 public private partnerships initiated to tackle climate change and mitigation with key sectors in the country. It includes a 100+ companies and organisations related to the Danish construction industry as members.
- The Bridge to the Future (Broen til Fremtiden) alliance brings together Danish trade unions, green NGOs, social movements, and researchers to promote a just transition toward carbon neutrality by 2040 through renewable energy, job creation, and social equity. It includes major unions such as 3F and IDA, and works to ensure climate action and labour protections reinforce each other through green job creation and retraining programmes. The alliance has developed a position paper on sustainable construction that addresses concrete and building materials, setting the direction for how Denmark can build more climate-responsibly and defining the role of craftspeople, technicians, and planners in this transition. 3F has developed a Green Think Tank and policy initiatives supporting green jobs in sectors such as wind, waste management, and the bioeconomy, estimating hundreds of thousands of potential green jobs. IDA, in partnership with Aalborg University, has produced detailed decarbonisation roadmaps to reach full renewable energy and large-scale job creation by 2045.
- WE BUILD DENMARK serves as a national cluster organisation connecting construction firms, knowledge institutions, and public authorities across the sector.
- The Institute for Human Rights and Business partners with Denmark's largest construction associations: Bygherreforeningen and Byggeriets Samfundsansvar.

Hotspots of a Transition in the Construction Sector

Denmark

Legend

On-site construction:

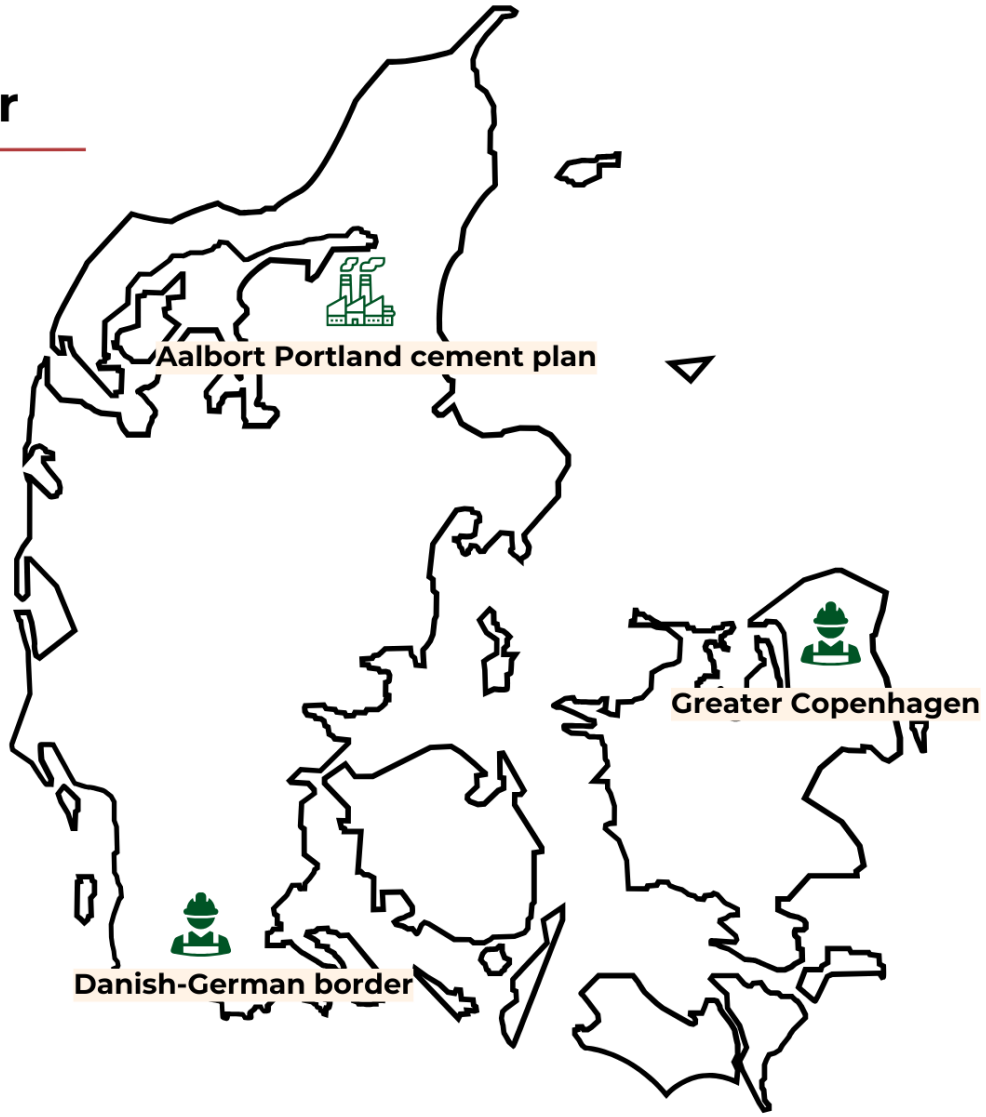
Expected job creation

Building materials:

Cement

Modernisation of production site and reskilling of workers

Not covered in the analysis: steel, glass and timber (see footnote 1).



2. The broad construction sector

The construction sector today

Economic indicators (2023)[4]	Employment (2023)	Workforce characteristics
Construction (NACE F) • Number of enterprises: 36,409 • Average employment size: 5.5 • Value added (million € per year): 13,737 (3.6% of GDP) • Net turnover (million € per year): 49,761 Architectural and engineering activities; technical testing and analysis (NACE M71): • Number of enterprises: 7,895 • Value added (million € per year): 5,129 (1.3% of GDP) • Net turnover (million € per year): 11,405	• Danish construction sector: ~71,900 enterprises (contractors, architects/designers, material/component manufacturers, real estate/property management). • Key associations: DI Byggeri represents contractors, manufacturers, and specialist trades in policy, agreements, training, and international coordination. • Large firms (Per Aarsleff, MT Højgaard, NCC, Skanska) focus on infrastructure, industrial, and complex projects; SMEs serve regional, residential, and renovation markets. • Sector is historically fragmented, with limited early-phase collaboration between advisory firms and contractors. • Primary materials: concrete, wood, steel; growing focus on recycling and circularity, though <1% of materials are reused; Denmark's economy is 4% circular.	• The Danish construction sector has a well-educated, male-dominated workforce, made up of both Danish nationals and a growing number of migrant workers. Denmark's population is ageing: the share of people aged 65+ is expected to rise from 19.9% (2020) to 25.6% (2050), and the retirement age is 70. Labour shortages are acute among younger qualified workers (25–29). Youth employment (15–24) in construction remains robust, but interviewees reported recruitment challenges for young workers without quantifying their numbers. • Education levels are rising: by 2025, around 70% of 30–34-year-olds will hold high-level qualifications. Many construction workers, however, still come from vocational or intermediate training backgrounds due to the technical nature of the work. • The sector is male-dominated: women represent only 9–10% of the workforce, though numbers are gradually increasing. • Migrants are increasingly critical to addressing labour shortages. As of July 2023, the sector employed: 11,585 Polish, 4,024 Romanian and 2,741 Lithuanian workers, with rising numbers from outside the EU. Migrants accounted for 13% of the construction workforce between 2016–2022. Denmark uses fast-track immigration routes ("Positive Lists") covering 65 shortage occupations relevant to construction, from unskilled helpers to skilled trades (e.g. joiners, concrete workers, engineers).

[4] For countries outside the euro area, figures were sourced from Eurostat, which reports them already converted into euro.

The legislative framework for decarbonisation and its impacts on workers

Decarbonisation policies and emission timelines and targets

• Denmark's climate action strategy: Denmark aims for a 70% reduction in GHG emissions by 2030 (vs. 1990) and climate neutrality by 2050; legally mandated by the 2020 Climate Act. Construction accounts for ~23% of CO_2 emissions.
• **Legislation & standards:**
  ○ Building Regulations 2018 (BR18) and the Building Act set fire, health, and technical standards.
  ○ Recent amendments streamline permits, merge fire legislation, and relax insurance for rentals.
  ○ Voluntary agreements (AB 92, AB 93, AB Forbruger) define contractual relationships.
  ○ 'Building Class 2020' mandates highly efficient homes (<20 kWh/m² annual solar gain).
• **Sustainable construction strategy (2021, updated 2024):**
  ○ Strict CO_2 limits phased in: large buildings from 2023, all new buildings from 2025.
  ○ Life Cycle Assessment (LCA) mandatory, considering embodied + operational carbon; recycled materials incentivised.
  ○ Circular economy focus: recycling, reuse, and waste reduction.
  ○ 2024 update: new limit of 7.1 kg CO_2e/m²/year for new buildings (effective July 2025).
• **Regional policies:** Predominantly, climate plans are developed at municipal level (Denmark has 98 municipalities and five regions) but which are then coordinated at regional level, i.e. the Danish NUTS 2 regions are encouraged to coordinate the NUTS3 municipalities in their remit, e.g. through the programme DK2020 initiative. In some cases, like Copenhagen, the municipality is also a city. Hence, there is a Copenhagen Climate Plan 2025, which promotes energy efficiency, deep renovations, and renewable integration (e.g., solar panels) in both new and existing buildings.

Impacts on the construction industry
• **(Expected) impacts on the construction sector and investments:** The 2025 Danish emission framework tightens sustainability requirements for site operations, materials, and design, shaping investment and project planning. Increased focus on renovation, reuse, and circularity drives investment in low-carbon and adaptive-reuse solutions. Engineers and foundation specialists must adapt to limits on high-emission materials and greater use of bio-based alternatives, influencing procurement. Site operations will require greener logistics, electric equipment, reduced fuel use, and stronger LCA compliance. Material and waste management must prioritise recycled and reused inputs, supported by improved sorting and storage infrastructure. All new buildings must provide climate documentation, with non-compliance potentially delaying completion and occupancy. • **(Expected) impacts on employment, skills and activity of on-site construction workers:** The green transition will require designers, architects, engineers, and sustainability specialists to integrate LCAs early, choose low-carbon materials, and meet stricter reporting rules, increasing demand for LCA and compliance roles. Site managers, operators, and labourers will take on new tasks such as monitoring emissions, using electric equipment, reducing fuel use, and completing detailed reporting. Demand will rise for jobs in sustainable renovation, retrofitting, circularity, and adaptive reuse, supported by new technical skills in energy modelling, digital tools, green certifications, eurocodes, and low-impact materials. Additional competencies in circular-economy practices, problem-solving, and retrofit expertise will be needed, alongside soft skills to support behavioural change. Cedefop forecasts increased demand for medium- and high-skilled workers and a sharp decline in low-skilled roles across construction and metal/machinery trades.

Towards a Just Transition for Construction Workers

Just transition vision in construction

- **Existence of collective bargaining agreements for workers in construction:** Denmark has a comprehensive collective bargaining system covering construction and related building material sectors such as steel, cement, glass, and timber, all falling under broader industrial agreements. Sectoral and enterprise-level negotiations set unified standards on wages, working hours, leave, safety, and overall workplace conditions, while company-level agreements provide additional, tailored provisions such as bonuses or work-time arrangements. These local agreements must always meet or exceed national and sector-wide standards.

- **Country-level policies for just transition:** Denmark has introduced comprehensive just transition policies specifically relevant to the construction sector, aiming to decarbonise the industry, implement circular economy principles, and support workers and companies in adapting to new climate requirements. Relevant policies include:

    - **Climate requirements for construction:** Since July 2025, new buildings must meet a CO_2 cap of 7.1 kg CO_2e/m^2/year, with stricter limits phased in through 2029. Requirements cover both materials and construction-phase emissions (transport, site work) and rely on LCAs, pushing the sector toward low-carbon materials and methods.

    - **National Plan for Waste and Circular Economy (2020–2032):** Denmark's circular economy plan targets design, consumption, waste management, and recycling, with priority areas in biomass, construction, and plastics. Key construction actions include updating Building Regulations with sustainability elements, raising climate footprint limits, developing LCA/LCC design tools, requiring standardised demolition plans, setting limits for contaminants in recycled concrete/brick, and improving traceability and rules for construction and demolition waste.

    - **Workforce retraining:** Denmark is investing in green skill development through vocational education. A 2024 political agreement allocates over € 67 million to update curricula for circular and green transition skills and to upgrade training frameworks and equipment.

- **Just transition considerations in relevant policy debates:** Danish media debates[5] on just transition and the construction sector focus primarily on the need for a circular and climate-friendly transformation within the industry and highlight gaps in political support and regulatory frameworks (or the implementation thereof). Key themes include the urgency of circular transition, political and legislative gaps, economic and competitive opportunities, emission-reduction goals: Stricter CO_2 limits for new buildings from 2025 are viewed both as a challenge and as a driver of better LCAs, material efficiency, and low-carbon design, holistic and regenerative approaches, and renovation over demolition.

[5] Sources: Circular transformation in the construction industry is crucial, but will only succeed with political support for new requirements, Major Danish project reveals how to renovate in a climate-friendly way, Decarbonisation : Denmark's new buildings even less emissive from 2025, Beyond the Roadmap: A Transition Plan for the Danish Building Industry.

Labour implications of the decarbonisation agenda

- **Changes/trends in terms of labour rights and existing challenges in the construction sector:** trend indicate shifts between main construction, renovation, and emerging activities like heat pump and insulation installation:
    - **Workforce demand:** Denmark needs more workers in building construction and energy renovation to replace an ageing workforce and meet new demand, including skills for circularity, energy efficiency, heat pumps, and insulation.
    - **Labour shortages**: The sector faces shortages due to retirements and new green/circular economy skill requirements; around 10,000 new construction workers are projected to be needed annually.
    - **Upskilling trends:** Workers from traditional construction are expected to move into renovation and green technology installation, rather than into building material industries.
    - **Material-focused roles:** Demand is rising for construction workers skilled in material reuse, management, and deconstruction, within construction/renovation rather than building material extraction.
    - **Employment growth:** Strongest growth is in renovation and real estate activities, with less expansion in manufacturing and traditional building materials.
    - **Migrant workforce:** Migrant workers are highly present in Danish construction and likely to remain within the sector.
- **Geographical distribution of the implications:**
    - **Short-term outlook:** Danish construction is expected to contract by 0.8% in 2025 due to high interest rates, weak investor sentiment, rising material costs, and supply chain disruptions; the offshore wind sector faces particular challenges.
    - **Long-term growth:** From 2026–2029, the sector is projected to grow ~4% annually, supported by transport and renewable energy investments and the government's DKK157.6 billion (€ 21 billion) infrastructure plan through 2035.
    - **Employment trends:** No major job losses are expected; main challenges are skill shortages and increasing reliance on migrant workers.
    - **Regional focus:** Investments are spread across Denmark, with concentration in Greater Copenhagen and the Danish-German border.
    - **Major projects:** New 35 km double-track high-speed railway from Odense West to Kauslunde, including 34 bridges, DKK4.9 billion (€ 656 million), completion by 2028. Novo Nordisk new 40,000 m² production facility in Odense, DKK8.5 billion (€ 1.14 billion), completion by 2027.

Benefits for workers brought by the green transition in the construction sector	Disadvantages for workers brought by the green transition in the construction sector
A fundamental benefit of the green and just transitions for workers in Denmark's construction includes job creation, reskilling opportunities, and increased job security. These benefits are rooted in Denmark's collaborative approach between the state, unions, and industry and can be further reinforced by	• The need for highly skilled workers increases, but many current employees may lack the new technical or digital competencies needed, creating barriers to continued employment in the sector.

expanding training, participation, and support systems for workers. • The shift toward greener construction practices is expected to create thousands of permanent and temporary jobs, throughout the country. • The Danish Metalworkers' Union highlights the creation of over 10,000 full-time jobs by 2030 in CCS and Power-to-X hydrogen/fuel projects, requiring new skills and training. • The sector is leading in sustainable construction, driving demand for advanced skills related to green building materials, energy-efficient technologies, and digital methods like Building Information Modelling and prefabrication. • The 3F union and the Economic Council of the Labour Movement estimated that projects aiming at a 70% CO2 reduction by 2030 in Denmark could generate over 380,000 mainly temporary jobs, with 17,000 permanent ones. • Collective agreements actively include workers in green transition initiatives, valuing their ideas and encouraging bottom-up contributions.	• Green transition projects are often dependent on continued government support and subsidies. Any reduction or delay in new project approvals, especially in key areas like offshore wind, leads to significant declines in employment opportunities for construction workers. • Much of the job creation is front-loaded, with demand likely to fall significantly after large-scale green infrastructure projects are completed or if new ones are not approved, resulting in periods of job insecurity and possible layoffs for workers. • The construction sector in Denmark faces significant labour shortages intensified by the green transition, causing stress and overwork for existing personnel and prompting reliance on foreign labour, which can impact job stability for local workers.
Ways to reinforce these	**Ways to reduce these**
• Continued investment in education and construction-centred retraining courses. • Continuing collective agreements that guarantee worker involvement in decision-making and climate goal-setting. • Securing community-wide buy-in for the green transition through fair opportunities, including fair migration, avoiding deterioration of living conditions to encourage broader participation.	• Targeted investment in continuous upskilling and retraining programmes for both current and incoming workers to bridge competence gaps and adapt to new technologies. • Policy stability and clear long-term investment strategies would help smooth employment cycles and provide workers with greater job security. • Enhanced worker engagement in the planning and implementation of green projects can better align skills development and job quality with actual needs in the evolving sector.

Workers groups most affected
• **Professional groups in the core construction business and supply-chain who have the highest environmental footprint and how these are affected:** primarily produced by workers involved in the extraction, production, and use of non-metallic minerals and construction materials, especially concrete, cement, and steel. These sectors are responsible for a significant portion of Denmark's CO_2 footprint and resource consumption, as construction activities account for 31% of Denmark's total resource use and 40% of its waste. • **Groups where most training is needed and what kind of training:** Several groups in the Danish construction industry are highlighted as being in need of (re)training: Construction site workers; Technicians and installers, especially for renewable energy (RE) systems, Electricians and plumbers for district heating and energy-efficient systems; Blacksmiths and those dealing with steelwork in structural applications; Professionals involved in retrofitting, renovation, and waste management. Several new and upgraded training opportunities exist in Denmark to meet these needs, such as vocational education tailored for green transition skills in building renovation, sustainable construction, and renewable energy installation and specialised "green apprenticeship exams" for

bricklayers and carpenters, focusing on sustainable materials and energy-efficient construction. There are also refresher and upskilling programmes for construction workers, particularly in sustainable indoor climate and energy optimisation for buildings.

- **Gaps in skills development:**
    - **Funding for green skills:** Political agreements allocated over €67 million to modernise Danish vocational schools, train educators, and enhance green skills in construction; Villum Foundation contributed nearly DKK 50 million (€6,7 million) for technical and agricultural curricula. Ongoing investment needed for curriculum updates, worker training, and emerging sectors like building retrofits and renewable energy infrastructure.
    - **Access to training:** Primarily aimed at Danish workers; migrant workers on contracts have limited access.
    - **Vocational education:** Denmark's dual-system VET combines school and paid apprenticeships, typically lasting 3.5 years; heavily subsidised by the state with grants for employers hosting apprentices. Career guidance is provided by professional associations. "New Apprenticeship" pathways allow flexible, direct workplace entry.
    - **Recruitment challenges:** Construction is generally seen as unattractive to young Danes, despite initiatives like EuroSkills 2025 and the Fehmarnbelt project. International recruitment is increasingly important to address labour shortages.
    - **High-demand occupations:** Welders, electricians, plumbers, bricklayers, carpenters, HVAC technicians, engineers, and architects.
    - **Positive Lists for work permits:** Denmark's lists for higher education and skilled work identify shortage occupations, including 65 roles in construction, manufacturing, and logistics, supporting foreign recruitment for unskilled helpers, skilled trades, and technical roles.

Workers positively affected	Workers negatively affected
The below list is of occupations that are currently in high demand in Denmark: • Welders • Electricians • Plumbers • Bricklayers • Carpenters • HVAC technicians • Engineers and architects	• Workers not encompassed by collective agreements and in particular migrant workers that are hired on a contract basis.

Existing protection mechanisms
• **Danish labour model:** Employment terms, wages, hours, and pensions are mainly set through collective bargaining between employers' associations and trade unions rather than legislation. Union coverage: Denmark has high union membership, low industrial disputes, and most construction and building material workers are unionised with legally binding agreements. • Collective agreements include clauses on environmental working conditions, such as **indoor temperature, energy waste, and material-handling standards**, though they do not cover emission ceilings or green-procurement rules. Temperature-related health and safety standards are primarily defined by the Danish Working Environment Authority (Arbejdstilsynet) and supplemented by agreements. During winter, outdoor workers must be protected from cold and wind through tents, covers, or windbreaks, and employers must provide appropriate winter clothing when shielding is insufficient. There are no legally binding upper temperature limits. For indoor or covered worksites, guidance recommends around 10°C for physical labour and 15°C for more stationary tasks; if these levels cannot be reached, employers must compensate with warm clothing and breaks. • **Compliance measures:** Mandatory ID cards on large projects from 2026 will help monitor compliance and combat social dumping. • **Support for migrants:** Unions provide workshops, multilingual info, advocacy for fair pay, dispute resolution, and counselling through Danske Byggefag. • **Regulatory responses:** Fines for labour rights violations and contractor stop orders for OSH breaches have increased, though enforcement remains challenging, especially for migrants. • **Social partners:** Organisations like the Council for Sustainable Construction promote sustainability and due diligence, providing guidance on human rights risks and mitigation across the construction value chain. • **Gender:** Women represent only about 9–10% of the Danish construction workforce, but there are targeted policies, educational campaigns, inclusive hiring, and the rise of female visibility are intended to gradually improve this ratio. In recent years, there has been an increasing awareness of and discussion about workplace violation, bullying, sexual harassment and discrimination. The construction industry in Denmark has long aimed at increasing the general proportion of women, which has not changed in the past 20 years. To counter this, the Boss Ladies project seeks to encourage young women to enter and develop careers in the male-dominated Danish construction industry, addressing a projected shortage of 17,000 skilled builders and craftsmen over the next decade. With 65% of companies already reporting significant labour shortages, the project aims to challenge gender stereotypes about "men's work" and "women's work," breaking down barriers and fostering motivation for women to pursue and grow their talents in construction trades • **Immigration:** the Danish government has increasingly turned to international talent and targets recruiting migrant workers, through Priority Lists covering occupations where there are particular skills shortages. As of June 2025, Denmark has new agreements to facilitate the hiring of skilled workers from 16 non-EU countries on fair terms regulated by collective agreements, with lower salary thresholds and strong monitoring to prevent exploitation. Visa sponsorship is frequently offered to attract entry-level construction workers and helpers, with support for relocation and guidance in multiple languages. • **The role of trade unions/construction businesses in professional development:** Danske Byggefag operates as a platform for joint policy development, advocacy, and action on labour rights for all construction workers, including migrants, drawing on organisational resources of all seven member unions.

Specific measure #1	Specific measure #2
The Fehmarnbelt project provides extensive apprenticeship and vocational training, targeting at least 500 full-time positions. By early 2025, 269	Denmark launched the National Coalition for Digital Skills and Jobs in 2019, supporting over

apprenticeships are complete and 89 are active across 19 vocational programs. Apprentices gain hands-on experience in trades such as metalwork, construction, welding, electrical, and IT, with well-being support and collaboration with educational institutions.	10,000 members and promoting graduates with in-demand skills.

3. The construction material supply chain

<table>
<tr><th colspan="3">In focus: Decarbonising construction building material – cement</th></tr>
<tr>
<td>• List key enterprises and net turnover per year:
• Aalborg Portland A/S: € 244,7 million (H1 2025). Aalborg Portland is the only clinker and integrated cement producer in Denmark, serving both domestic and export markets. Most other companies concentrate on downstream concrete and precast products rather than cement production itself.
• Betonelement A/S: € 160 million
• Boligbeton A/S: € 78,9 million DKK</td>
<td>• Number of employees:
○ Aalborg Portland A/S - 358 employees: only integrated cement producer in Denmark; operates one plant with 7 kilns, 33 ready-mix plants, 9 terminals, and 3 aggregate quarries.
○ Boligbeton A/S - 316 employees: focus on concrete for residential and commercial buildings.</td>
<td>• Denmark's cement sector employment patterns and worker diversity are not publicly disaggregated in readily available sources.</td>
</tr>
<tr>
<td colspan="3">• Title and main features of key decarbonisation policies:
○ Industrial decarbonisation policy framework (2022–2025) Introduces the CO_2e tax system, differentiating between emission sources by 2030 (750 DKK/t CO_2 for non-ETS industries, 375 DKK/t for ETS industries, 125 DKK/t for energy-intensive mineral and building materials sectors (e.g., cement, lime, glass).) Includes a Green Tripartite Agreement with industry, trade unions, and environmental NGOs to coordinate decarbonisation support for hard-to-abate sectors.
○ Existence of collective bargaining agreements: In Denmark, the cement industry, including Aalborg Portland, is covered by the Industrial Agreement (2025–2028), a legally binding collective agreement between CO-industri and the Confederation of Danish Industry. It applies to around 230,000 workers across 6,000 companies in industrial sectors like cement, metals, and chemicals, ensuring unionised employees at Aalborg Portland have regulated wages, conditions, and protections under 3F and Dansk Metal.</td>
</tr>
<tr>
<td colspan="3">• (Expected) impacts on the supply chain: Denmark's cement production, mainly from Aalborg Portland, is energy-intensive and accounts for about 5% of national CO_2 emissions. Aalborg Portland aims for full decarbonisation by 2030 through CCS investments. Cement producers must meet new standards on embodied carbon, recycled content, and lifecycle tracking, while construction firms are encouraged to adopt reuse, recycling, and greener sourcing. Circular economy measures like</td>
</tr>
</table>

alternative binders, calcined clay, and recycling waste are promoted but progress remains slow due to legal and infrastructure barriers.

- **(Expected) impacts on employment, skills and activity levels of workers in the materials industry:** Investments in decarbonisation, circular production, and CCS in Denmark are expected to create strong demand for skilled labour in engineering, CCS operations, industrial maintenance, and digital process management, with up to 10,000 CCS-related jobs by 2030. Short-term transitions may cause some job losses in high-emission or fossil-based roles, but these will be offset by growth in green materials, recycling, and process innovation.

- **Country-level policies for just transition:**
  - **National Strategy for Sustainable Construction**: Aims to cut CO_2 emissions by 70% by 2030 (vs. 1990) and promotes recycled content and circular building methods, but does not include direct worker transition measures.
  - **Worker support:** Addressed through broader labour market policies focused on skills development, reskilling, and social protection under Denmark's green and just transition framework.
  - **Historical context:** Denmark has a long tradition of dialogue between employers, unions, and government on industrial and climate transitions, e.g., coal-to-wind power sector shift.
  - **Flexicurity model:** Combines easy hiring/firing with strong financial and social protections, supported by active labour market and education policies to equip workers for new roles.
  - **Practical initiatives:** Examples include Port Esbjerg's "Offshore Academy" with the United Federation of Workers, offering training for renewable energy and related industries.

- **Changes/trends in terms of labour rights and existing challenges in the building material sector:**
  - **Working conditions:** Generally regulated through trade unions and collective bargaining; major Green and Just policies have not directly impacted conditions.
  - **Skills shortages & migrant labour:** Labour gaps in construction and cement sectors are filled by migrants, often in hazardous, heavy, or undesirable tasks ("3D jobs").
  - **Occupational safety:** Construction is Denmark's most dangerous sector; migrant workers are overrepresented in fatalities (37% of deaths, 13% of workforce) with severe underreporting (~20% of EU migrant accidents registered).
  - **Segregation & unequal treatment:** Migrants face separate teams ("B teams"), lower pay, longer hours, job insecurity, inadequate safety training, and pressure to work while injured.
  - **Labour crime & exploitation:** Wage theft, fake contracts, and exploitation are prevalent, especially on public projects; documented cases include Albanian workers on major sites being forced to return portions of salaries illegally.
  - **Union access & work pressure:** Migrants often lack awareness or access to collective agreements, union protection, or Danish labour rights, and face high work demands with limited breaks.
  - **Timber sector:** Denmark manages its own forests; timber felling increased 2.5% in 2023 and 41% over the past decade, mainly for firewood and energy, while useful timber volume decreased 6%.

- **Geographical distribution of the implications:** Aalborg Portland is Denmark's only cement manufacturer and is responsible for virtually all cement production in Denmark.

- With regards to new job creation, the timber industry in Denmark is experiencing overall stable but modest growth, with projected growth rates around 0.4% to 0.5% annually up to 2029. The market growth is driven mainly by the construction and furniture sectors, with increasing demand for sustainable and certified wood products aligned with Denmark's environmental policies. Stricter climate and sustainability regulations in construction are also boosting demand for bio-based, eco-friendly timber materials. Based on the modest growth rates, there are no indications that there will be an increase in employment opportunities. Current employment is linked to jobs directly on-site, i.e. in rural areas of Denmark

- Denmark is pursuing increased use of home-grown biobased building materials (straw, hemp, grass) as part of its circular economy strategy to reduce reliance on imported timber. However, this strategy has labour market implications: (1) Limited scalability: Denmark's domestic timber production cannot fully meet construction demand, potentially constraining sector growth; (2) Cross-border trade debates: Reduced imports from major suppliers like Sweden (the world's third-largest timber exporter) could affect material availability and costs. (3) Skills implications: Emphasis on alternative biobased materials (straw, hemp, recycled wood) requires different construction competencies than traditional timber framing, affecting workforce training needs; (4) Employment patterns: Jobs in processing alternative biobased materials may increase modestly but remain limited compared to overall construction employment.

Key hotspot for transformation #1

Aalborg Portland is the sole supplier of cement for almost all domestic construction projects in Denmark, including infrastructure, housing, and public sector projects. It is one of Denmark's largest industrial companies and is a key contributor to national and regional employment. Aalborg Portland directly employs around 350-360 people, with an additional 500 contractors and subcontractors supporting its operations daily. This makes it a major industrial employer in northern Denmark. The company is investing in new technologies to meet stricter building regulations and climate targets. Some of its recent activities include: 1) The launch of a large-scale Carbon Capture and Storage (CCS) facility. The goal is to establish a hub at the Port of Hirtshals for import and shipment of captured CO2. 2) A new pilot facility for carbon capture at Aalborg Portland operating at as part of the EU Horizon 2020-project ConsenCUS.

- **Benefits for workers brought by the green transition in the sector:** Considerable opportunities for upskilling gaining more specialised and digital skills, relating to CCS technologies.

- **Disadvantages for workers brought by the green transition in the sector**: For low-skilled workers, continued and potentially increased use of migrant labour may lead to worsened working conditions, however collective agreements should mitigate for this.

- **Existing mechanisms to protect or reinforce labour rights/conditions:** There are no specific mechanisms designed for the building material sector per se. The Danish national flexicurity model is the overall mechanism overseeing labour rights and it also applies to the building material sector sectors. As such, the main mechanism is the existence of collective bargaining agreements, which have a long-standing importance in Danish working culture.

- **The role of trade unions/construction businesses in professional development (and implementation costs):** Danish trade unions are funded by membership fees and negotiate and maintain collective agreements that ensure fair pay, decent working hours, holiday entitlements, and safety standards for cement workers. They also provide shop stewards and safety representatives who represent workers' interests locally at cement plants, including in dialogue on workplace health, safety, and environmental measures. Unions are active in ensuring continual education and

vocational training, important for the cement sector's transition to greener technologies and industrial automation. They also participate in policy discussions and social dialogue through tripartite bodies, influencing regulations and industrial policies that affect the cement sector.