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

Building materials and on-site construction sectors

Annex I: Country fiche - France

ECORYS

Answering tomorrow's challenges today

Country Fiche

France

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1. At a glance[1]

Strengths/Opportunities
• **Opportunities in the construction sector:** ○ French construction workers benefit from a **highly regulated labour market**, with strong branch-level collective agreements (BTP), powerful trade union representation, and robust mechanisms such as the contrat de chantier, the Carte Professionnelle BTP, and strict subcontracting oversight. These protections ensure minimum wages, safety standards, and oversight of social fraud (important in a sector that is otherwise extremely fragmented, with 80% micro- and small enterprises). The apprenticeship system is another structural strength: France maintains an extensive pipeline of skilled tradespeople through strong collaboration between CAPEB, FFB, FFIE, FNTP, SCOP training centres, the organisation for mandatory prevention OPP BTP and public authorities, which enhances the long-term resilience of employment. ○ The national decarbonisation agenda creates significant **employment opportunities**. With DARES projecting +188,000 jobs by 2030, the renovation wave (700,000 renovations/year under SNBC) promises stable, long-term local employment. Public financing mechanisms (France Relance, France 2030, renovation subsidies such as Ma Prime Renov') are well-established and predictable, channelling billions into energy renovation, heat pumps, insulation and solar installations - helping sustain demand for labour even in periods of economic slowdown. The regulatory frameworks such as RE2020 and rental bans for inefficient housing guarantee a steady flow of renovation work, securing employment for electricians, HVAC installers, insulation workers and energy auditors. The French government expects jobs created through the renovation wave to be spread across the whole territory. The Paris metropolitan area and the north and east of the country are expected to see the steepest growth as the colder regions consume more energy. the acceleration of energy renovation, heat-pump installation, insulation, and solar deployment creates strong demand for electricians, HVAC technicians and energy-efficiency workers, offering reconversion possibilities for workers leaving declining activities, especially fossil-fuel heating or traditional construction tasks. ○ Workers also benefit from expanded pathways for **training and professional development**, supported by OPCOs, publicly funded schemes (FEEBAT, PTP), and digitalisation trends (BIM, energy diagnostics). These new "green" roles often bring higher technical status and improved working conditions, such as the installation of heat pumps instead of gas boilers. Social inclusion mechanisms (such as employment clauses in public procurement requiring hiring of long-term unemployed, migrants or young people without qualifications) create opportunities for vulnerable groups. France's strong welfare and social security systems (unemployment insurance, fund for paid annual leave and weather events, training leave) further cushion workers during transitions, while recent expansions (e.g., heatwave leave in 2024) show adaptability to climate risks. • **Opportunities in the building materials 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.

- Workers in the cement and glass industries benefit from **even stronger bargaining structures**, as nearly all workers are covered by dedicated sectoral collective agreements with powerful industrial unions (CGT, CFDT) that have a strong track record in negotiating Social Plans, training rights, and redeployment guarantees. Permanent contracts dominate (up to 95% in cement), and plants often operate in regions with a long industrial tradition and dense labour-institution networks. Decarbonisation policies come with **large-scale public investment**, including the €5,6bn France 2030 plan for heavy industry, the *Feuille de route de décarbonation* for cement, and EU/territorial funding (Just Transition Fund, Territoires d'Industries). This makes France one of the best financially supported environments for industrial decarbonisation in Europe.
- Where industrial sites remain open, modernisation creates **highly skilled technical roles** in digital process control, carbon capture, electrified kilns, alternative fuels and automation. Cases like Heidelberg's Airvault 2025 show that decarbonisation can secure a plant's future while expanding opportunities for upskilling and internal redeployment. Moreover, decarbonisation reduces chemical exposure and dust hazards, improving health and safety. The growth of alternative materials (recycled aggregates, timber engineering, glass-fibre insulation) and circular economy processes opens opportunities for redeployment within related sectors. Company-led just transition plans (such as Holcim's commitments to retraining, job retention and compensation) provide additional safety nets.
- Some workers in building materials industries, particularly cement and glass, have potential pathways to transition into the timber construction sector, though these are currently limited. At the Airvault cement plant, for example, workers could move into timber construction, but this would require substantial retraining and mobility support due to skill mismatches. Similarly, some glass workers may transfer to related materials industries, including high-tech glass, ceramics, or timber construction, where skills partially overlap. However, large-scale retraining is constrained by the differences in skill sets, such as carpentry versus furnace operation, making these transitions feasible only with targeted upskilling and supportive measures.

Weaknesses/Threats

- **Challenges in the construction sector:**
  - Despite its economic importance, the construction sector faces **structural vulnerabilities** that threaten workers during the green transition. The age distribution is balanced. Women remain deeply underrepresented (13%), and migrants - who represent 27% of non-qualified workers - often occupy the most precarious positions, making them particularly exposed to instability. The sector's extreme fragmentation (80% micro-enterprises) leads to **uneven enforcement of labour law**, safety standards, and training requirements. Subcontracting chains may undermine social protection and security.
  - The transition itself can **deepen inequalities**: new "green" occupations often require certifications (e.g., RGE) that do not enable small businesses to achieve a return on investment. Skills mismatches may also push workers into more precarious forms of employment or trap them in roles that are declining. Regional disparities in renovation activity mean uneven labour demand: colder regions may benefit (+23,000 to +34,000 jobs by 2030), while southern or rural areas risk stagnation.
  - **Financial and administrative burdens** tied to green regulations may also push SMEs into transferring risks to workers through subcontracting, casual labour, or lower-quality employment. Training systems, while robust, still fall short of the scale required, risking bottlenecks and leaving older or lower-educated workers behind. Overall, without deliberate just transition measures, the shift could produce a two-tier workforce: a well-paid, certified green-tech core and a precarious fringe performing physically demanding and risky tasks.
- **Challenges in the building materials sectors:**
  - The material supply chain faces **more acute threats**, especially job losses linked to plant closures, automation, and declining clinker production. Regions dependent on high-emission industries (Centre-Val de Loire, Indre-et-Loire, parts of the North and East) are particularly exposed. While modernisation secures some sites, others (like Holcim's Contes plant) face closure of clinker lines, with direct and indirect job losses that also affect subcontractors and local economies. Workers in older, carbon-intensive plants are at high risk of redundancy, forced relocation, or long commute distances. For many industrial workers, decarbonisation processes lead to temporary layoffs during retrofits, partial unemployment, or reduced shift variety due to increased automation.

- Another major weakness is the **high skill barrier** required to transition. Cement and glass decarbonisation involves complex processes (alternative fuels, CCS, hydrogen, digital kiln control), which require extensive retraining that older workers or those with vocational-only backgrounds may struggle to access. In key industrial sectors like cement and glass, a large proportion of employees are in "ouvrier" (worker) and "technician" categories, and have a substantial older workers cohort. For ciment workers, 35% of cement workers above 50, and 20% of workers will soon retire. In the glass sector, 33% of glass workers are above 50. In France, workers that are old and don't have a lot of qualifications are less likely to participate and have access to trainings. The industrial identity tied to cement production is strong; its erosion contributes to loss of social cohesion and community resilience. In addition, while France has strong financing for industrial decarbonisation, there is **no dedicated just transition policy** for cement or glass workers, and company-level practices vary widely. Workers in subcontracted operations around plants (maintenance, logistics, quarrying, industrial cleaning) have far weaker protections and are the first to be affected by automation or downsizing.
- Finally, competitive pressures from alternative low-carbon materials (timber, recycled aggregates) may reduce long-term employment in cement, while the flat glass sector faces volatility driven by global demand and high energy costs. The combination of plant closures, automation, skill mismatches, and regional inequalities presents a significant threat to vulnerable workers, especially older workers, migrants in auxiliary services, and employees in declining industrial regions.

Key organisations

Trade unions (notably CGT Bâtiment, FNCB CFDT, FO, CFE-CGC, CFTC) lead collective-bargaining and social-dialogue efforts to protect jobs, secure training and negotiate PSEs, while training networks (CCCA-BTP, CFA BTP, les Compagnons du Devoirs, les Maisons Familiales Rurales, les Ecoles de productions, le Réseau ETRE) and public agencies (ADEME) push skills provision and fund transition projects. Employer federations (FFB, CAPEB, FNTP, FFIE, SCOP-BTP, UNICEM) bring together and support construction companies. Major construction firms (Bouygues, Eiffage, Vinci) and major building materials firms (Heidelberg, Lafarge, Vicat, Saint-Gobain, AGC) shape practice through investment, plant modernisation and company-level negotiations. Foundations, co-ops and innovation actors (Fondation BTP-Prévoyance, Impulse Partner) incubate social-innovation responses (wellbeing, outreach, professional integration, cooperative models). Their effectiveness is limited by sector fragmentation, regional disparities and funding or bargaining asymmetries.

Key initiatives and partnerships

Progressive businesses are forming multi-stakeholder training platforms with unions, training centres and academia to co-design curricula and pilot low-carbon skills, while foundations and industry clubs finance wellbeing, outreach and pooled procurement to scale low-carbon solutions and supplier upskilling. Investor engagement is beginning to push portfolio companies toward worker-sensitive decarbonisation commitments, and NGOs (e.g. La Fresque du Climat, Réseau ETRE) deliver climate literacy to build workforce buy-in.

Each construction industry employer federation has set up one or more support and incentive programmes on CSR issues. Collaboration is strongest at the training and social-dialogue level through joint governance bodies, sectoral funds and negotiated social plans. The RE2020 legislation is a good example of the outcome of negotiations between a business federation and the government.

Hotspots of a Transition in the Construction Sector

France

Legend

On-site construction:

Expected job creation

Building materials:

Cement

Modernisation of production site and reskilling of workers

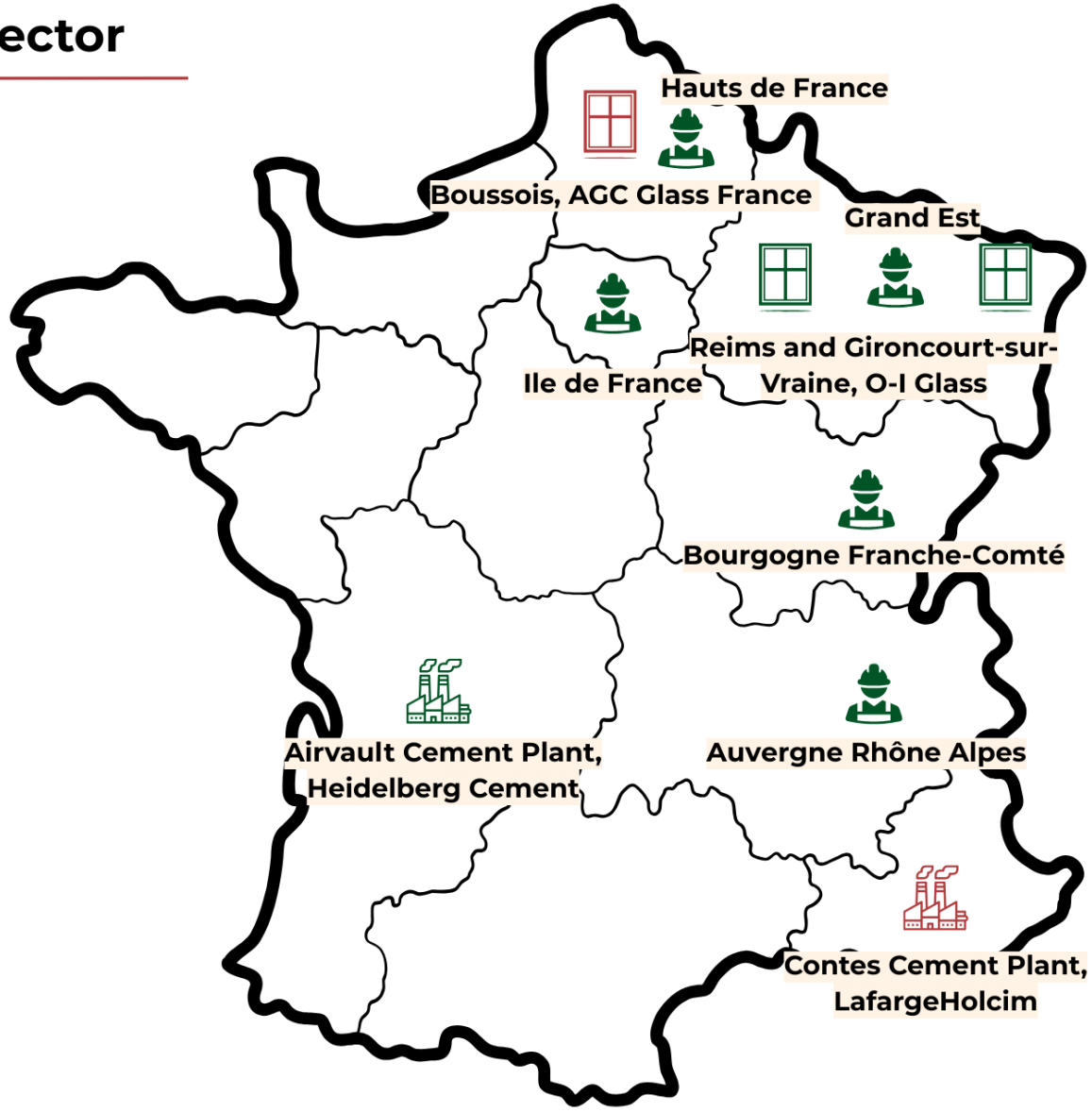
Closure and/or repurposing with redundancy plans

Glass

Decarbonisation of production site and reskilling of workers

Closure and/or repurposing with redundancy plans

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



2. The main construction sector

The construction sector today

Economic indicators (2023)	Employment (2023)	Workforce characteristics
Construction (NACE F): • Number of enterprises: 572,932 • Employment size: 3,7 million • Value added (million € per year): 117,458 (4.4% of GDP) • Net turnover (million € per year): 400,600 Architectural and engineering activities; technical testing and analysis (NACE M71): • Number of enterprises: 105,037 • Value added (million € per year): 31,206 (1.2% of GDP) • Net turnover (million € per year): 67,586	• Total employment in the construction sector: 2,129,384 • The sector is fragmented (95% of small and micro enterprises and a few large firms). Procurement (public and private) still drives much of activity and cascades work through networks of local SMEs. Social relations are dominated by strong branch agreements, apprenticeship pipelines, and active unions/representative bodies (FFB, CAPEB, unions). The sector also depends heavily on apprenticeships to replenish trades (CAPEB regional stats).	• Age repartition is balanced, while women are underrepresented (13% of workforce), and migrants form a significant minority (27% of non-qualified construction workers). • Social-insertion programs target vulnerable groups by requiring contractors in public procurement to hire disadvantaged individuals, such as long-term unemployed, youth without qualifications, RSA recipients, and asylum-seekers, for a portion of the work. • Communications campaigns from the government, companies and training centres try to attract more women and young people into the workforce.

The legislative framework for decarbonisation and its impacts on workers

Decarbonisation policies and emission timelines and targets
• **Climate and Resilience Act (2021):** Reaffirms 2050 carbon-neutrality goal; strengthens climate governance; accelerates building renovation with stricter energy-performance standards, rental bans for inefficient homes, and rooftop greening/PV requirements; introduces Zero Net Land Take by 2050. • **National Low-Carbon Strategy – SNBC-2 (2020):** Aims to rapidly decarbonise the building sector by cutting emissions 49% by 2030, fully decarbonising by 2050, and massively scaling up energy renovations to 700,000 per year. It focuses on improving both existing and new buildings through better insulation, efficient heating and cooling systems, renewable energy installations, and increased use of low-carbon materials, supported by strict regulations and professional upskilling initiatives. • **France Relance (2020–2022):** €100bn COVID-19 recovery plan, including €30bn for ecological transition; supports energy renovation, industrial decarbonisation, hydrogen, clean mobility. • **RE2020 Building Regulation:** Environmental standard for new buildings; reduces embodied and operational carbon; promotes low-carbon materials.

Impacts on the construction industry
• **(Expected) impacts on the construction sector and investments:** The French construction sector is undergoing a major transformation due to strict green regulations like RE2020 and SNBC targets (49% emissions reduction by 2030; net-zero by 2050). These rules have created pressure on property values for inefficient homes. The sector is shifting toward energy-efficient renovation, insulation, heat pumps, solar panels, and low-carbon materials, requiring upskilling of hundreds of thousands of professionals. • **(Expected) impacts on employment, skills and activity of on-site construction workers:** The push for energy renovations has increased demand for skilled labour, but shortages and training gaps - especially among subcontractors and micro-entrepreneurs - limit capacity. Precarious working conditions, late payments, and fragmented enforcement of regulations exacerbate inequalities. The renovation wave is regionally uneven, mostly benefiting poorly insulated northern and eastern areas, and could exclude less-qualified tradespeople due to administrative and certification requirements. Green construction jobs are often physically demanding and risky, while training schemes remain insufficient to fully address technical and administrative challenges. Overall, the transition creates opportunities for job growth but also risks deepening inequalities and precarity among workers. Extreme weather events due to climate change affect construction sites, posing limitations in the application and handling of materials and products, workers wellbeing and working hours. On the same time, they reveal the need for energy renovations to allow citizens to keep their homes warm enough in winter but also cool enough during summer.

Towards a Just Transition for Construction Workers

Just transition vision in construction
• **Collective agreements:** Collective bargaining plays a key role here. The BTP collective agreement covers 34% of SMEs and represents most of the employees. Set fundamental labour standards and regulations for the construction and public works sector. • **Country-level policies for just transition and just transition considerations in relevant policy debates:** France does not have specific just transition policies for the construction sector. However, the concept is emerging, and the ADEME public agency recently published an opinion on the topic. Since the Yellow Vests protests (2018-2020), workers are increasingly aware of the social consequences of decarbonisation policies, making a just transition a very relevant and timely debate. Debates mostly evolve around job losses and creation, the need for reskilling, and the inclusion of worker consideration in policy debates. Most worry that the transition might exacerbate or create inequalities.

Labour implications of the decarbonisation agenda
• **Labour rights challenges:** The French construction sector faces structural challenges that complicate its green transition, including an aging workforce, high rates of self-employment and SMEs, and widespread subcontracting. While legal protections like the duty of vigilance and the 'contrat de chantier' (construction site contract) offer some stability, unions report ongoing issues with short-term contracts and safety in subcontracted work. While we still need certain trades (welders, scrap metal workers, plasterboard installers, tilers, bricklayers, painters, sealers), the materials and tools they use are evolving, requiring training. Stakeholders regret that although much effort has been

made so far to add green skills, these are not sufficiently embedded in the practice of the profession. The subject of reclassifying roles needs to be questioned in light of the level of education required for these new professions. Ensuring fair wages, safe conditions, and incentives like improved allowances is key to attracting and retaining workers in renovation.

- **Geographical distribution of the implications:** Construction job growth in France is highly regional Renovation-driven employment will concentrate in colder and densely populated regions, with Île-de-France accounting for 20% of demand and adding around 23,000 jobs by 2030, while Auvergne-Rhône-Alpes may gain up to 34,000. In contrast, warmer southern regions like Occitanie and Nouvelle-Aquitaine show slower growth, besides renovation needs to adapt buildings to extreme heat. Meanwhile, industrial areas such as Grand Est and Hauts-de-France are expected to experience job losses in supply-chain sectors like steel and cement, prompting Just Transition funding to focus on these vulnerable territories. Regions with older housing stock (especially Île-de-France, Grand Est, and Bourgogne-Franche-Comté) also face acute skill shortages in renovation trades.

Benefits for workers brought by the green transition in the construction sector	**Disadvantages for workers brought by the green transition in the construction sector**
• **Job Creation and Security.** Decarbonization spurs millions in retrofit investment, generating many local jobs. In the building sector DARES projects roughly 188,000 new positions by 2030. This offers career opportunities, especially for younger workers or those re-entering the workforce. • **Skill Development and Wages.** Transition jobs often require higher technical skills (energy auditing, systems installation), which can command better pay and status. New training programs (publicly subsidized or sector-funded) can upskill workers, increasing their employability and mobility. • **Health and Safety.** Some green practices can improve workplace conditions: e.g. replacing toxic solvents or asbestos removal (with proper safety) reduces health hazards. Modernized construction methods (better equipment, digital tools) may also ease physical strain.	• **Job Losses in High-Emission Industries.** Workers in polluting supply chains face layoffs. Cement plant, steel mill, or chemical factory closures (due to CO_2 constraints) mean unemployment or forced relocation. Studies estimate up to 65,000 jobs cut in metallurgy, cement, petrochemicals by 2030. Without retraining, affected workers risk unemployment. • **Skills Mismatch and Precarity.** Some existing BTP workers may lack the new skills needed, leading to underemployment or contract renewal difficulties. Smaller firms might respond to regulation pressure by using more casual labour or sub-contracting, increasing job insecurity. • **Uneven Benefits.** New "green" jobs (like solar installers, energy auditors) tend to require certifications and may exclude older or less-educated workers, potentially widening inequality. Meanwhile, older-style roles (gas boiler fitters, asphalt pavers) may shrink. There is a risk of a two-tier workforce: a well-paid core of certified "clean-tech" trades versus a precarious fringe. • **Compliance Costs.** Companies facing higher costs (for e.g. new equipment) might limit hiring or cut fringe benefits. Workers may also face costs (e.g. obtaining RGE certification) to stay employed, unless supported.
Ways to reinforce these	**Ways to reduce these**
• **Robust Training Programs.** Expand publicly supported training (e.g. subsidized	• **Social Safety Nets.** Strengthen unemployment insurance and retraining

certifications in energy performance) so workers can upgrade, susch as France's "Projet de transition professionnelle (PTP)". Sectoral training funds (OPCO Mobilités, Constructys, etc.) should prioritize green skill development and make programs accessible to all ages. • **Quality Job Standards.** Enforce decent wage floors and employment standards in new green jobs. For example, tie retrofitting subsidies to agreements on fair pay. Use collective agreements to ensure overtime and allowances (meal, travel) continue under green contracts. • **Recruitment and Retention of Workers:** Recruitment is hampered by low attractiveness; strategies must target young people, jobseekers, workers seeking retraining, women, and professionals from new construction. Retaining skilled workers is equally critical. • **Career Pathways**. Create clear career ladders so workers can move from traditional to green roles (e.g. an electrician can become a certified renewable energy technician). Fund apprenticeships and job-matching services in renovation trades. Employers can be incentivized (through tax credits) to hire and train legacy BTP workers into new positions. • **Community Engagement.** Involve workers and unions in planning local retrofitting programs, so that transitions meet local labor needs and avoid surprise layoffs. Joint "transition committees" (as in some industrial closures) can smooth re-employment. • **Recognition and Social Value.** Promote the prestige of green construction jobs (marketing campaigns, bonuses) to attract recruits. Recognize competencies gained (digital badges, medals).	funds for displaced workers from cement, steel, etc. For instance, allocate a portion of carbon tax or EU Just Transition funds to support lost-income and mobility assistance. • **Advance Notice and Redeployment.** Require companies to give advance notice of major shutdowns and consult unions on redeployment plans. Use France's Fonds national de l'emploi (FNE) and sectoral retraining (Compte Personnel de Formation) to help re-skill affected workers. • **Temporary Protection.** Extend or introduce a "transition premium" on top of wages for workers in at-risk jobs, to incentivize skill acquisition (similar to long-service bonuses). The 2024 extension of "congé intempéries" (leave for heatwaves) to cover heatwaves is an example of adapting protections to new climate; similar proactive measures can shield workers from extreme conditions. • **Inclusive Outreach.** Target training for low-skilled, older, and rural workers. For example, hold renovation training in rural areas, and ensure programs are open to both genders. Subsidize participation (travel stipends, childcare) to reduce barriers.

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:** In the supply chain, steelworkers (plant operators, welders, foundry workers), cement and glass factory labourers, asphalt plant workers, and oil & coal industry staff. In core construction, large-scale concrete construction and heavy machinery operators (e.g. crane drivers with diesel gear) are relatively high-impact. • **Groups where most training is needed and what kind of training:** Building energy diagnostics (energy auditors, DPE experts), renovation specialists (insulation installers for walls/roofs, HVAC technicians for heat pumps and modern boilers), renewable installers (solar PV, small wind, smart grids), and efficient construction (BIM/digital planning). France needs more qualified heat-pump

technicians to meet retrofit targets. Circular economy skills are in demand (deconstruction and materials reuse). The existing education system has limited offerings in green trades: the Certificat de Qualification Professionnelle (CQP) RGE and BTS Énergies Renouvelables need expansion. The FEEBAT programme is a good initiative and could be promoted.

- **Hotspots of need:** Training investment should focus on regions with large renovation backlogs like Île-de-France, that has the highest share of energy-inefficient homes, so subsidized training centers there would yield high impact. Similarly, Grand Est, Hauts-de-France and Bourgogne-Franche-Comté have many old dwellings and lag in energy performance, indicating strong demand for retrofit skills. Southern regions (Provence, Occitanie) have lower heating needs but should not be neglected, as they lead in heat-pump adoption. The Just Transition Fund is already present in some of these regions to support their decarbonisation, and the Laudes Foundation could intervene to fill in the funding gaps specifically for construction projects.

Workers positively affected	Workers negatively affected
• Renovation and green-tech trades (insulators, heat-pump engineers, solar electricians) and project managers in eco-construction. • Architects and engineers who specialize in energy-efficient design stand to gain. • Public-sector construction projects (like social housing renovations) may also create stable jobs.	• Jobs linked to high carbon output face the biggest disruption, in cement, steel or coal. • Older workers and those with fewer formal qualifications may struggle most to adapt to new practices. • Migrant and informal workers (common in BTP) lack social protections and may bear disproportionate risk if jobs shift. • Women (a small minority in BTP) could face either opportunities (e.g. in energy management) or exclusion if training is male-dominated. • Workers in geographically vulnerable regions (e.g. industrial North and East) are more likely to be in at-risk industries, while urban regeneration projects may favour workers living in (big) cities.

Existing protection mechanisms

- **Existing mechanisms to protect or reinforce labour rights/conditions during the transition:**
  - Collective agreements and labor law set a floor for rights, while sector institutions manage training and insurance. Notable mechanisms include the Contrat de Chantier for BTP (buildings' construction site contract) open-ended contract tied to a project to ensure that the worker gets a severance package rather than a short-term layoff indemnity when a project ends. The employer's duty of vigilance where if a subcontractor fails on safety or wage laws, the principal contractor must intervene immediately.
  - Other mechanisms include the law No 2015 990 for growth, activity and equality of economic opportunities, also called the Macron Law, introduced the Carte Professionnelle BTP. The card includes the first and last name of workers, an ID picture, the name of their employers

and a QR code. Social ID cards in the construction sector are a very useful preventive tool to prevent undeclared work.

- **Existence of gender-/age group-/workers group-specific measures:** While no major gender- or age-specific programs are uniquely tied to green construction, some initiatives exist, several campaigns and programmes support the inclusion of women and the youth into the workforce, for instance the « Plurielles, Les femmes au cœur du BTP » to promote gender parity inside the construction sector, or the « BÂTIR LA MIXITÉ" campaign from the CAPEB to promote diversity inside management structures. Other programes such as « Bâtis l'avenir ! » target specifically young people.
- **The role of trade unions/construction businesses in professional development (and implementation costs):** Unions and employers play critical roles in implementing just transition. Joint labour-employer observatories (like the Observatoire des Métiers du BTP) produce data and guidance on future skills.

Specific measure #1	Specific measure #2
• Leave for Heatwaves (2024): Following trade union CGT advocacy, the BTP sector extended the weather-related leave scheme to cover. Now workers cease work during extreme heat while receiving 75% pay (funded by employer insurance).	• Contrat de Chantier Guarantees: The legal framework (and reinforced by sector accords) ensures chantier-contracted workers receive full severance and have access to training. • Legislation protecting workers: France's subcontracting regulation include a regulation indicating that in the event of non-payment by subcontractors, the main contractor may be held accountable for part, or all, of the statutory or contractual minimum wage owed to the posted worker.

3. The construction material supply chain

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• At national level in 2016, only 12 companies, production estimated at 2,08 billion euros, according to INSEE. Key companies are:
• Heidelberg Materials France Ciment: production number not disclosed, but has 7 production sites. Net turnover in 2024: €688 million.
• Lafarge Ciment: 1 008 260 tons produced in 2023, net turnover of €95,5 millions in 2024.
• Vicat: 21 million tons produced in tons produced in 2022, no data for net turnover in France.
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• France is the second European producer of cement (17% of European production).
• Relevance of enterprise in construction supply-chain (how much of the material is used in construction):
• 76% of its cement production is for buidlings (Insee).
• Heidelberg Materials France: 2,000 workers
• Lafarge Ciment: 1,675 workers.
• Vicat: 2,462 workers.
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• 4,515 direct jobs, of which 95% are permanent contracts (CDI) and 66% are located in cement plants. (56% are employees, technicians, and supervisors, 28% are engineers and managers, 17% are workers, and 4% are on apprenticeship contracts-.
• Production sites mostly located by limestone quarries (Insee).
• Workforce mostly male and mature.
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• Title and main features of key decarbonisation policies:
○ “Feuille de route de décarbonation de la filière ciment” (May 2023): Sets a target of –50 % emissions by 2030 (vs. 2015) and up to –100 % by 2050 under the most ambitious scenario. Four main levers: reduce clinker content, increase use of low-carbon/alternative fuels, upgrade energy efficiency of kilns, deploy carbon capture/storage (CCS/CCU).
○ Plan de transition sectoriel de l’industrie cimentière: A sector-specific transition plan aligned with the Stratégie nationale bas-carbone (SNBC), aiming for ~–81 % emissions by 2050 for French industry. Recognises the need for co-construction with industry, workforce implications, investment and cost-challenges.
○ "France 2030" Investment Plan- Heavy industry decarbonisation investment – Policies - IEA: Industrial strategy allocating €5.6 billion for heavy-industry decarbonisation including cement. Supports large-scale projects, innovation in low-carbon technologies (hydrogen, electrification) and regional deployment.
• Existence of collective bargaining agreements: The cement industry is governed by its own national collective agreement (“Convention collective : Ciment : industrie de la fabrication des ciments - Code du travail numérique”) covering wages, working conditions, etc. Thus virtually all employees in cement plants are covered by this sectoral agreement, regardless of employer. Unions are very active: e.g. CFDT and CGT (Chimie-BTP federations) represent cement workers at major sites.
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• (Expected) impacts on the supply chain: Decarbonisation in France’s cement sector is driving a shift from coal to biomass and recycled materials, while demand grows for lower-carbon alternatives like timber and recycled concrete. These changes are affecting the entire supply chain (from fuel suppliers and cement plants to demolition and waste services) and are likely to reduce traditional cement volumes as new product lines expand.
• (Expected) impacts on employment, skills and activity levels of workers in the materials industry: Workers face new roles in recycling and alternative fuels, retraining needs, and employment risks at older high-carbon plants. The decarbonisation of the industry might reduce workers' exposure to polluting chemicals and improve work conditions - however, this is conditional on the reskilling and upskilling workers. If not, workers face redundancy and linked to restructuration strategies.
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• Country-level policies for just transition: France does not have specific just transition initiatives to support workers in the cement industries. Its legislative framework provides financial support in
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decarbonising plants, which can include the up-skilling and reskilling of workers. The national programmes "Territoires d'Industries" and the European Just Transition Fund are supporting the decarbonisation and economic diversification of territories where cement plant are located. At the company levels, major cement companies like Holcim have adopted just transition strategies. Other companies like Heidelberg Cement or Vicat have committed to retrain or provide compensations to workers affected by the transition.

- **Cross-sector mobility:** The green transition in France's cement sector offers benefits such as safer working conditions, higher-skilled (and sometimes better-paid) technical roles, and expanded training and reskilling programmes, including commitments from companies like Holcim to retain and upskill workers. However, it also brings risks of job losses, relocation, and periods of partial unemployment during retrofits, while new automated processes may reduce job variety. As one municipal representative in Contes put it, some fear that "we will breathe better" but "it will cause unemployment." At the same time, the growing timber-construction sector and prefabrication offer a potential alternative pathways for workers transitioning out of cement (with lower-carbon materials and fewer chemical hazards) but direct transfers are limited, and successful mobility typically requires significant retraining and upskilling.

- **Geographical distribution of the implications:** Job losses are concentrated in older, carbon-intensive production regions (Centre-Val de Loire, Indre-et-Loire) where plants face closure or major downsizing. Job creation and transformation are concentrated in regions where investments in green cement technologies, recycling or CO_2 capture are being made (Hauts-de-France, Occitanie, Auvergne-Rhône-Alpes). Local labour markets will need to manage the transition: closed plants mean local economic stress, while growth in green sites offers new opportunities, but only if workers can be retrained and reemployed.

Key hotspot for transformation #1	**Key hotspot for transformation #2**
• The Airvault (Vienne) cement plant, operated by Heidelberg Cement, is undergoing a major modernisation under the Airvault 2025 / Airvault GOCO_2 programme, which upgrades kilns and introduces low-carbon processes, including future carbon-capture capacity, to secure the site rather than close it. Public consultation (CNDP) and company documents indicate that workers are expected to be retained and upskilled, particularly in automation, alternative-fuel handling and CO_2-capture operations, with union participation in dialogue. No site-specific layoff plan has been announced, reflecting the project's objective to preserve employment. While a direct conversion of the plant to timber production is unrealistic, some workers could transition into the growing timber-	The Holcim France cement plant at Contes (Alpes-Maritimes) is slated for closure of its clinker production line as part of the company's decarbonisation plan, which will directly impact around 65 jobs and many more indirectly. The company has begun consultation with unions (such as CGT and CFDT) emphasizing that "environmental goals not come at workers' expense," and has committed to redeployment and training of affected staff. The local community is now redeveloping the 70-hectare quarry and plant area for other uses (logistics, solar parks) to create new employment.

	construction value chain, though this would require substantial retraining and mobility support due to skill mismatches.	

- **Benefits for workers brought by the green transition in the sector:** Potential benefits for workers include improved health and safety, new skills and career paths, and possibly better-quality jobs. Reducing hazardous exposures (e.g. replacing coal grinding with automated systems) will cut the cases of cement-induced dermatitis and bronchitis. Decarbonisation projects often pay higher wages for technical specialists, which could raise the overall skill level in the workforce. Training programs funded by both government and industry (often via sector bodies like France Ciment) aim to equip workers with digital, environmental and engineering skills. Holcim's Just Transition plan explicitly commits to "job retention, training, reskilling and upskilling" for employees. In practical terms, a veteran technician might retrain on new PLC control systems or CO_2 capture maintenance, which can extend employability.

- **Disadvantages for workers brought by the green transition in the sector**: Challenges include job displacement and reskilling burdens. Workers displaced by plant closures may need to relocate or switch careers. Those remaining in cement manufacture must adapt to new processes (e.g. hydrogen fuels, nanostructured cements) that require substantial retraining. During transitions, workers may face temporary unemployment or partial unemployment (reduced shifts during refits). Moreover, the very act of cleaning up pollution (e.g. fully enclosing dusty operations) can make work more monotonous (relying on sensors rather than craftsmanship), which some workers view negatively. The transition of legacy employment also disrupts the social fabric and the shared identities of the region.

- **Existing mechanisms to protect or reinforce labour rights/conditions:** The existing collective agreement (CCN) provides baseline protection (wages, overtime pay, severance conditions). When companies propose restructurings, labour law requires negotiated Social Plans (PSE) with unions. The cement industry's vocational framework (managed jointly by unions and employers) subsidizes apprenticeships and certifications. For example, France Ciment's website advertises over 200 specialized training modules. In practice, many older cement workers benefit from "congé de formation" (training leave) negotiated by unions, sometimes co-financed by state grants. employers and unions jointly fund the Fonds Paritaire de Secours and construction-industry training funds that allocate millions to requalification programs each year.

- **The role of trade unions/construction businesses:** Unions play a key role by representing workers in negotiations (ensuring that closures come with strong Social Plans) and by advocating for government support for employment (e.g. France's Decarbonisation Roadmap was developed in consultation with unions and industry). Employer federations likewise promote skills development. Implementation costs for these training and social measures are generally borne jointly by companies (via collective agreement obligations) and public funds (via industrial decarbonisation grants).

In focus: Decarbonising construction building material – flat glass		
• Saint-Gobain Glass France: no publicly available annual production, 311,031,587 net turnover in 2022. • AGC Glass France: 430,000 tons produced in 2018, net turnover €1,619,232 in 2024.	• Relevance of enterprise in construction supply-chain (how much of the material is used in construction): In France, 50 industrial sites produce around 5 Mt annually. Flat glass (16% of	• Workers tend to be of varied ages, mostly male, and typically have technical/vocational training (glass furnace operators, engineers, etc.).

	the total glass production) is mainly used in the construction and automotive sectors; glass fibber and wool (9%) is mainly used for construction. • Saint-Gobain Glass France: 763 employees (290 managers/engineers, 223 technicians, and 250 production operators). • AGC Glass France: 200 employees.	• INSEE data, the Musée de l'histoire de l'immigration, and INED's "Trajectoires et origines" study all indicate that immigrants are more likely than non-immigrants to work in industry and construction, although sub-sector data, such as for glass manufacturing, is not available.

- **Title and main features of key decarbonisation policies:** The glass sector in France falls under both EU-wide climate rules (EU ETS) and national decarbonisation strategies (Stratégie Nationale Bas-Carbone) that commit to carbon neutrality by 2050. The French Glass Industries Federation (La Fédération des Industries du Verre) decarbonisation objectives for 2030 and 2050 will focus on electrification and recycling. Saint-Gobain likewise commits to carbon-neutrality (Scopes 1-3) by 2050. Sector-specific initiatives include a national Sectoral Transition Plan (Plan de Transition Sectorielle) developed with ADEME in 2024, and industry R&D projects like the VERCANE program aiming low-carbon glass processes.

- **Existence of collective bargaining agreements for workers in the sector:** The flat-glass industry in France is covered by national collective labour agreements (Convention collective nationale – Industries de fabrication mécanique du verre). Under French law, any layoff of more than 10 employees triggers mandatory negotiation of a Plan de Sauvegarde de l'Emploi (PSE) with unions. Thus, companies like Saint-Gobain Glass France and AGC Glass France have plant-level bargaining (with CSE representatives) and must negotiate social plans on closures or major restructurings. For example, AGC announced a proposed PSE for the Boussois shutdown, one of AGC glass plant.

- **(Expected) impacts on the supply chain:** Since melting furnaces consume mostly sand, soda, limestone and energy, shifts to alternative fuels or electrification will change building material flows. The recent energy crisis caused glass plant shutdowns (e.g. AGC Boussois line), which tightened supply of flat glass and highlighted the vulnerability of high-energy processes.

- **(Expected) impacts on employment, skills and activity levels of workers in the materials industry:** New technologies (electric/hybrid furnaces, advanced heat recovery, H_2 burners) demand skills in electrical engineering, digital control and hydrogen chemistry, beyond traditional furnace operations. Some roles (e.g. manual float-line operators) may decline as plants automate or consolidate. Conversely, there will be new jobs in equipment installation, maintenance of clean-energy systems, and in glass recycling. For example, modern O-I Glass upgrades include heat-recovery and gas-oxy furnaces, which managers say improve energy efficiency and working conditions.

- **Country-level policies for just transition**: There's no "just transition" policy in France, the only small just transition provisions in the SNBC apply at regional/sectoral levels.

- **Cross-sector mobility:** A long-term challenge is the decline of glass-industry employment - in two years, the glass sector lost 4,500 workers. Movement between sectors is possible: some glass workers may transfer to related materials (ceramics, high-tech glass, even construction timber fabrication) where industrial skills overlap. However, large-scale retraining from glass to timber building is limited by different skill sets (carpentry vs. furnace operation).

- **Geographical distribution of the implications:** Job losses and gains will be regional, in the industrial sites - mostly the northern and eastern regions. Rural areas near these plants may lose jobs (e.g. Boussois) while sites with new investment (Salaise, Reims) may see stable or increased employment in green production.

Key hotspot for transformation #1	Key hotspot for transformation #2
• **Boussois (AGC Glass France):** This Northern France plant had two float furnaces. In 2022 AGC announced it would shut down the second (B2) line due to the energy crisis. The 135-person site is negotiating a Social Plan. This represents a green-transition drawback (jobs lost, wages at risk), but AGC emphasizes reskilling options and maintaining the other line.	**O-I's Reims and Gironcourt-sur-Vraine** plants underwent modernization, installing more efficient gas-oxygen/heat-recovery furnaces and increasing cullet use, which cut energy consumption and CO_2 emissions. Workers were involved through social dialogue, with unions and works councils negotiating and staff trained on new furnace controls, heat-recovery systems, and cullet processing. The upgrades improved working conditions and created technically skilled roles, although some manual tasks were reduced by automation.

- **Benefits for workers brought by the green transition in the sector:** The green transition can create higher-quality, higher-tech jobs in glass plants that remain open. New furnaces (electrified or hybrid) often have automated controls and better heat insulation, reducing manual labour and accident risk. Workers may gain training in advanced technology (furnace control, maintenance of renewable energy systems), which enhances their skills.

- **Disadvantages for workers brought by the green transition in the sector**: The most direct is job loss at outdated, carbon-intensive facilities, but even in at modernizing plants, some roles (e.g. furnace stoking) may disappear or require new certifications. Restructuring and modernisation plans often create stress for workers due to work uncertainty, the need to acquire new skills, and the impossibility to relocate to other plants. During transitions, job postings often shift to skill sets (electric, digital) that some current workers lack. Furthermore, while emissions drop, new hazards can arise (e.g. handling compressed biogas or electricity hazards), requiring fresh safety training.

- **Existing mechanisms to protect or reinforce labour rights/conditions:** At national level, no glass-specific "just transition" plan exists, but workers may access public retraining funds (e.g. Pôle Emploi, regional authorities). France's social dialogue model means that company, union, and government actors share responsibility. Mandatory Plans de Sauvegarde de l'Emploi (PSE) ensure that large layoffs involve union-negotiated mitigation (severance, retraining, relocation aid), like during AGC's site closing.

- **The role of trade unions/construction businesses:** Unions are very engaged in the glass sector, promoting training and education while representing workers' interests during negotiation with the government and businesses. Large glass makers fund most training and redundancy costs, sometimes supported by state aid for green investment, while trade unions and employer federations both promote professional development.