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

Building materials and on-site construction sectors

Annex I: Country fiche – the Netherlands

ECORYS

Answering tomorrow's challenges today

Country Fiche

Netherlands

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1. At a glance[1]

Strengths/Opportunities

• Opportunities in the construction sector:
  ○ The Dutch construction sector will require 140,000–175,000 additional workers by 2030, notably in installation, insulation, and retrofit activities. Labour shortages are most acute in the Randstad, suggesting regional growth in areas like Amsterdam, Rotterdam, and Utrecht.
  ○ Nearly all current workers will need upskilling in energy efficiency, digitalisation (e.g. BIM, digital twins), and circularity related skills. Currently, training participation exceeds 15% of workforce. Initiatives like the Digitaal Skills Paspoort and Manifest Werken en Ontwikkeling aim to support lifelong learning.
• Opportunities in the building materials sector:
  ○ Industrialisation (e.g. prefabrication) is shifting work into factory settings, improving safety and ergonomics, especially for women and older workers. The Collective Labour Agreement for the Dutch Construction and Infrastructure Sector (CAO Bouw & Infra) ensures strong collective bargaining coverage, including for posted workers. The Dutch steel segment of the construction materials supply chain is undergoing rapid transformation.
  ○ Tata Steel Netherlands, one of the largest steel producers in Europe, shifts from blast-furnace production towards electric/hydrogen-based "green steel", creating new demand for skills in hydrogen systems, EAF operation, digital process control and environmental monitoring. Existing Collective Labour Agreements in company level and within the Metalworking and Electrical Engineering industry, provide strong collective bargaining coverage, including negotiated training and transition provisions. Cleaner production methods are expected to gradually improve working conditions by reducing exposure to coke-oven emissions. Job creation is expected in hydrogen and port-industrial hubs around Rotterdam/Maasvlakte.

Weaknesses/Threats

• Challenges in the construction sector:
  ○ The decarbonisation process is creating urgent demand for upskilling, nearly all workers must be trained in energy efficiency, digitalisation (e.g. BIM), and circular practices, yet access to lifelong learning remains fragmented, especially for low-skilled and migrant workers. While the sector benefits from strong collective bargaining coverage via the CAO Bouw & Infra, many freelancers and subcontractors fall outside these protections, leaving them vulnerable.
  ○ Rapid renovation timelines and labour shortages risk intensifying workloads and safety concerns, particularly for migrant workers.
  ○ Skills mismatches, age profile barriers, and geographical relocation pressures could leave workers behind if support measures are delayed. Geographically, labour shortages are concentrated in the

[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.

Randstad, while other regions may be left behind if training and investment are not equitably distributed.
    - The transition also carries major risks for workers in the Dutch steel sector: restructuring at IJmuiden includes announced job cuts (~1,600 roles), concentrated in a region economically dependent on a single site, with older and highly specialised workers facing significant challenges to reskill or get absorbed by other companies or industries.
- Challenges in the building materials sector:
    - Generally, the steel sector is dominated by one company, Tata Steel. This is a potential risk for the construction sector in the country and could also lead to limited incentives for Tata Steel to invest in the wellbeing of their workforce. Despite strong union presence, ongoing cost pressure may erode bargaining leverage, while the shift of activity away from blast-furnace regions risks uneven regional outcomes within the supply chain.

Key organisations

- Key organisations and their roles in enabling a just transition:
    - FNV Bouw and CNV Vakmensen: Trade unions advocate for improved labour conditions in the construction and installation sectors. They represent onsite construction workers, installers, and technical service professionals, and are involved in negotiating collective agreements (CAO Bouw & Infra), monitoring subcontracting practices, and campaigning against exploitation of migrant workers. Their tactics include pushing for sector-wide enforcement tools like the BouwplaatsID (a digital ID card to track worker conditions and rights), and supporting lifelong learning initiatives such as the Manifest Werken en Ontwikkeling.
    - Fair Work (NGO): focus on exposing unfair labour practices, especially among vulnerable groups.
    - O+O Fonds Bouw and Wij Techniek: Sectoral training funds support upskilling and sustainable employability.

Key initiatives and partnerships

- A range of partnerships are emerging between businesses, trade unions, public sector actors, academia, and NGOs to support a worker-centred just transition. Notable examples include the Manifest Werken en Ontwikkeling (2023), jointly signed by employers and unions to strengthen lifelong learning and sustainable employment across technical sectors. The Digitaal Skills Paspoort (developed by Volandis) and BouwplaatsID (a joint initiative of FNV, CNV, Bouwend Nederland, and AFNL) aim to improve transparency, safety, and training access for all workers, including posted and self-employed. Public-private partnerships like Regionaal Bouwen aan Human Capital connect vocational schools (MBO/HBO) with construction firms to address labour shortages and skills gaps.
- Unfortunately, there seems to be little/no cooperation among labour unions and climate organisations to advocate on joint issues.

Hotspots of a Transition in the Construction Sector

Netherlands

Legend

On-site construction:

Expected job creation

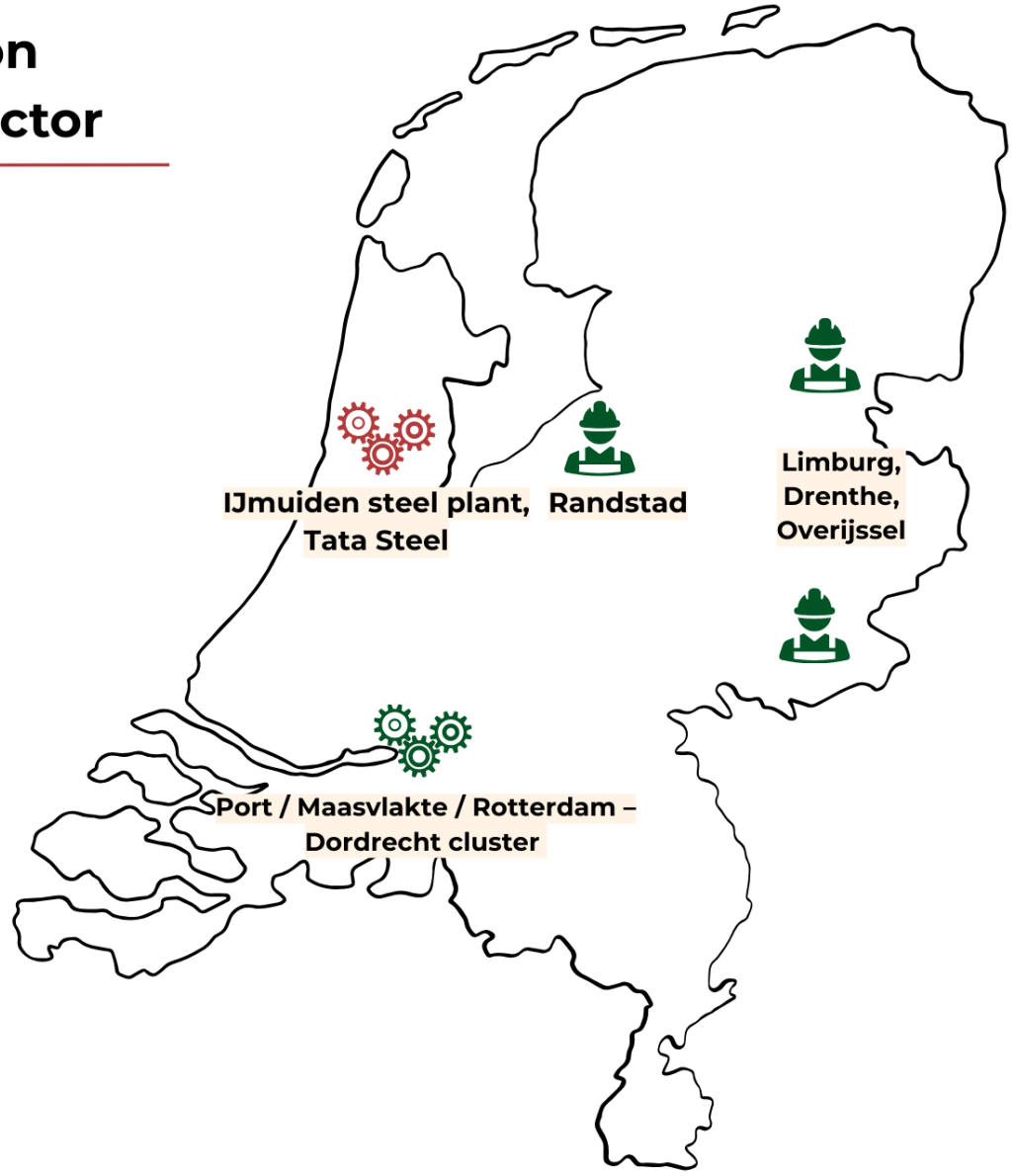
Building materials:

Steel

Modernisation of production site and reskilling of workers

Closure and/or repurposing with redundancy plans

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



2. The broad construction sector

The construction sector today

Economic indicators (2023)	Employment (2023)	Workforce characteristics
Construction (NACE F): • Number of enterprises: 273,647 • Average employment size: 2.0 • Value added (million € per year): 42,700 (4.3% of GDP) • Net turnover (million € per year): 154,451 Architectural and engineering activities; technical testing and analysis (NACE M71): • Number of enterprises: 54,847 • Value added (million € per year): 12,489 (1.3% of GDP) • Net turnover (million € per year): 27,207	• Total employment in the construction sector: 556,843 • Organisation/structure of the construction sector and its supply- and value-chain including materials sector: ○ The Dutch construction sector is highly fragmented, dominated by SMEs and subcontractors with 82.6% of the workforce in the broad construction sector employed by SMEs, while a small number of large general contractors coordinate major infrastructure and housing projects. ○ On the contrary, the steel sector is highly concentrated in the hands of one firm: Tata Steel.	• Age: The workforce is aging, mirroring national cross-sectoral trends (20% of population aged 65+ in 2023). • Gender: Women hold only 10% of construction jobs, and just 0.25% of onsite workers are female. Four out of five technically trained women leave the sector. • Education: Roles range from EQF 1–4 (vocational) for installers and technicians to EQF 6–8 (higher education) for engineers, BIM specialists, and sustainability consultants. • Nationality: In 2020, 56,000 foreign workers were employed, representing ~18% of the total workforce. Most of them are from Central and Eastern Europe (35% from Poland, 14% from Bulgaria, 14% from Romania) and Türkiye (20%). ○ Specific efforts are underway to recruit women, youth, refugees, and career changers. Initiatives include: ○ Girls' Day, inclusive workplace campaigns, and childcare support to retain women. ○ Action Plan Technique (Aanvalsplan Techniek), aimed to attract more people to work in the technical sector, also mentions the goal integrate refugees into energy transition jobs.

The legislative framework for decarbonisation and its impacts on workers

Decarbonisation policies and emission timelines and targets

- Dutch Climate Act (Klimaatakkoord) (2019): Legally binding framework aiming for 49% CO_2 reduction by 2030 and 95% by 2050, compared to 1990 levels. It aligns with the EU Green Deal and the fit for 55 package and sets the foundation for national climate policies.
- Climate Agreement (2019): Operationalises the Climate Act with sector-specific goals: by 2050, all 7 million homes and 1 million buildings must be gas-free; by 2030, 1.5 million homes renovated, 1 million hybrid heat pumps installed, and 500,000 district heating connections created.
- Policy Program for Accelerating Sustainability in the Built Environment (PVGO): Focuses on five program lines: area-based approaches, individual homes, utility buildings, resources/infrastructure, and innovation. Supports industrialisation, digitalisation, and circular construction.
- Circular Economy Roadmap (2030–2050): Targets 50% reduction in primary raw material use by 2030 and a fully circular construction economy by 2050, promoting bio-based materials, material passports, and reuse strategies.
- Netherlands Defence Energy Strategy (2020): Focuses on cutting fossil fuel dependence by 70% by 2050 and ensure that 50% of energy at miliary bases is renewable by 2030.
- BENG (Bijna Energieneutrale Gebouwen)(2021): Since January 1, 2021, all new construction, both residential and non-residential, must comply with the requirements for Nearly Zero-Energy Buildings which stems from the EPBD (see below).
- 2030 targets:
    - 49% CO_2 reduction (Climate Act)
    - 1.5 million homes renovated
    - 1 million hybrid heat pumps installed
    - 500,000 district heating connections
    - 50% reduction in primary building material use (Circular Economy Roadmap)
    - 900,000 new homes built to nearly zero-energy standards
    - 120,000 utility buildings upgraded to energy label C
- 2050 targets:
    - 95% CO_2 reduction
    - All homes and buildings are gas-free
    - Fully circular construction economy

EU policy packages which will be transposed to national level:

- European Green Deal: Overarching EU strategy to be climate neutral by 2050.

- Fit for 55 Package and European Climate law: The fit for 55 package aims to cute greenhouse gas emissions by at least 55% by 2030, the European climate law makes this a legal obligation.
- Energy Performance of Buildings Directive (EPBD): The EU's EPBD aims to fully decarbonise building stock by 2050. The recent EPBD recast in 2024 increasing promotes building renovations, introduces minimum energy standards, and introduces renovation passports and energy performance certificates. The Netherlands is transposing the revised EPBD into national law with the Besluit bouwwerken leefomgeving (Environment Buildings Decree).
- Renovation wave: The renovation is an EU strategy and action plan to double renovation rates and renovate 35 million buildings by 2030. Several elements of the renovation wave strategy were implemented through the EPBD recast and legislative reviews under the Fit for 55 package.

Impacts on the construction industry

- **(Expected) impacts on the construction sector and investments:**
  - **Industrialisation and Prefabrication:** Construction processes are shifting toward factory-based prefabrication, improving speed, quality, and cost predictability, while reducing traditional on-site labour intensity. This might disassociate the location of construction with the location of job posts that could be concentrated in factories for prefabrication.
  - **Digitalisation and Innovation:** Widespread adoption of Building Information Modelling (BIM), digital twins, as well as building and material passports and data-driven design is transforming planning, compliance, and lifecycle monitoring, requiring new digital infrastructure and investment, as well as new skillsets and job profiles.
  - **Circular Economy Integration:** The sector is investing in bio-based materials, and design-for-disassembly, aligned with the Circular Economy Roadmap, which reshapes supply chains, boosts the circularity sector and its businesses and creates job profiles.
- **(Expected) impacts on employment, skills and activity levels of on-site construction workers:**
  - **Skills**: Primarily, Workers need upskilling in energy efficiency, digital tools (e.g. BIM), and circular construction methods. Currently, training access is uneven, especially for low-skilled and migrant workers.
  - **Workforce Composition**: Demand is rising for specialised roles (e.g. heat pump installers, insulation experts, solar PV technicians), while low-skilled manual jobs are projected to decline by ~70,000 by 2035.
  - **Working Conditions:** Industrialisation may improve safety and ergonomics, but it may shift radically the location of jobs that would be concentrated in factories, instead of the construction sites. Rapid renovation timelines and labour shortages risk, limitations on working days due to climate change induced extreme weather events may lead to work intensification, overtime, and higher accident rates, especially for vulnerable (e.g., migrant, elder) workers.

Towards a Just Transition for Construction Workers

Just transition vision in construction

• **Existence of collective bargaining agreements:**
  ○ CAO Bouw & Infra (2024): Covers construction and infrastructure workers, including posted workers from other EU countries. It sets standards for wages, working hours, job classifications, and leave entitlements, and is negotiated between trade unions (e.g. FNV Bouw, CNV Vakmensen) and employer organisations (e.g. Bouwend Nederland).
  ○ Tata Steel CAO / Metalektro: Specific agreements for the metal sector and the workers at Tata Steel.
• There are **no specific policies for the just transition** in the core construction sector in the Netherlands. However, the Netherlands have begun integrating just transition principles into construction sector reforms, especially through training, safety, and inclusion initiatives. However, gaps remain in enforcement, migrant worker protection, and integration of labour rights into climate policy.

Labour implications of the decarbonisation agenda

• **Labour rights challenges:** The sector faces persistent labour shortages and fragmented access to training, especially for low-skilled and migrant workers. While upskilling is essential, many workers are "locked in" to traditional roles with limited pathways to transition.
• **Movement between trades:** There is movement within trades, particularly from general construction to specialised retrofit roles (e.g. insulation, heat pump installation, solar PV). However, there is no significant shift visible from on-site construction to building material industries.
• **Geographical distribution of the implications:** The changes are unevenly distributed within the Netherlands, with largest impacts in the following regions:
  ○ High-demand regions: Randstad (Amsterdam, Rotterdam, Utrecht): Highest labour shortages, especially in retrofit and installation roles. Eindhoven: Growth in circular innovation and manufacturing. Regions with RES (Regional Energy Strategies): Prioritised for renovation waves and grid upgrades.
  ○ Regions at risk of being left behind:
  ▪ Rural and economically weaker regions (e.g., parts of Drenthe, Overijssel, and Zeeland): These areas often face limited access to investment capital, vocational training facilities, and innovation ecosystems. As a result, local construction SMEs may struggle to upskill workers for emerging green construction methods (e.g., circular building, energy-neutral retrofits). Labour mobility is also lower, making it harder to redeploy workers from stalled or declining projects.
  ▪ Regions with strong dependence on fossil fuel–related industries (e.g., Groningen–Emmen, IJmond, Rijnmond, Zeeuws-Vlaanderen, and Zuid-Limburg): These territories host industries and supply chains where construction activity is tied to refinery, chemical, or gas-related infrastructure. Decarbonisation and the phase-out of fossil assets are expected to cause contraction in associated construction and maintenance work.

Benefits for workers brought by the green transition in the construction sector	Disadvantages for workers brought by the green transition in the construction sector
• Creation of new roles in energy performance, installation, and circular construction. • Improved working conditions through industrialisation (e.g. factory-based prefabrication). • Increased training participation and lifelong learning initiatives. • Increased attractiveness for women, older workers due to increase in safety and reduction of physical strain in green job profiles.	• Job losses related to high emitting equipment, ways of building or materials (e.g. gas boiler installers). • Unequal access to training and reskilling pathways. • Increased work intensity and safety risks due to renovation pressure. • Vulnerability of freelancers and subcontractors outside collective agreements.
Ways to reinforce these	**Ways to reduce these**
• Expand access to training for low-skilled and migrant workers. • Scale up inclusive initiatives like Digitaal Skills Paspoort and BouwplaatsID. • Strengthen regional training hubs and public-private partnerships. • Embed sustainability and labour rights into mainstream curricula. • Incentives to create prefabrication factories/hubs in regions in transition/where fossil-fuel dependant industries close.	• Enforce fair labour standards across subcontracting chains. • Integrate migrant workers into training and protection schemes. • Promote inclusive hiring and retention strategies. • Monitor labour conditions alongside energy and emissions metrics.

Workers groups most affected

• **Professional groups in the core construction business and supply-chain who have the highest environmental footprint:**
  ○ **Cement and concrete workers:** These materials have a high carbon footprint. Workers in factories may need to reskill as the type of products (e.g., low carbon cement) produced change. Reskilling needs will emerge also within related roles in the construction site, due to shift toward prefabrication, bio-based materials and circular construction.
  ○ **Gas boiler installers and maintenance staff:** Will be directly affected by the ban on new central heating boilers from 2026, leading to job displacement unless retrained. Opportunities for reskilling could be found in the installation of modern greener equipment, such as heat-pumps.

- **General low-skilled onsite construction workers:** As prefabrication and automation increase, demand for traditional manual labour will decline, especially in physically intensive roles.

- **Groups where training is most needed:**
  - Installation technicians: Need training in renewable energy systems—especially heat pumps, solar panels, and energy storage.
  - Insulation specialists: Require upskilling in advanced insulation techniques, including with bio-based materials.
  - Energy performance advisors & BIM coordinators: Need training in digital tools, building automation, lifecycle analysis and building certifications.
  - Circular economy professionals: Require knowledge of material passports, design-for-disassembly, and reuse logistics.

- **Gaps in skills development:**
  - Lifelong learning is fragmented, especially for low-skilled, migrant, and freelance workers, who often lack access to structured training. As the economy moves towards flexible and freelance work agreements and subcontracting becomes generalised, this bottleneck might persist
  - Sustainability and digitalisation are not yet fully integrated into mainstream vocational curricula, regardless of the EQF level.
  - Funding is needed for:
    - Modular, short-cycle training for lateral entrants and career changers, including incentives to attend whenever necessary.
    - Regionally tailored programmes in areas with labour shortages (e.g. Randstad).
    - Inclusive training pathways for women, refugees, and young people.

Workers positively affected	Workers negatively affected
• Renewable energy system installers • Insulation specialists • Energy performance advisors • Digital and circular economy professionals • Factory-based prefabrication workers	• Gas boiler technicians • Low-skilled manual labourers • Cement/concrete workers • Freelancers and migrant workers

Existing protection mechanisms

• **Existing mechanisms to protect or reinforce labour rights/conditions:**
  ○ Bouwplaats ID (Construction Site ID)
  ○ Digitaal Skills Paspoort (Digital Skills Passport)

- Manifest Werken en Ontwikkeling (Work and Development Manifesto)
- Regionaal Bouwen aan Human Capital (Regional Building Human Capital)
- Aanvalsplan Techniek (Technology Action Plan)
- O+O Fonds Bouw (O+O Construction Fund)
- Wij Techniek (We Technology)
- Heat stress calculation app, developed by both the FNV and CNV union confederations, which can order a suspension of activity due to heatwaves.
- Heat protocol has been established at a company level, which distinguishes temperatures between 25 and 30 degrees, between 30 and 35 degrees and higher than 35 degrees. Examples of individual measures for warmer temperatures include the use of sunscreen, extra drinking and personal protection equipment such as construction helmets with neck flaps, safety sunglasses, summer work trousers and airy long-sleeved shirts. Above 35 degrees construction site personnel do not work unless they can work in a cooler environment.

- **Existence of gender-/age group-/workers group-specific measures**
  - Girls' Day
  - Do you want to work more? Let it be known
- **The role of trade unions/construction businesses:**
  - Trade Unions (FNV, CNV): Advocate for fair working conditions, negotiate collective agreements, and co-develop training programmes with employers.
  - Construction Businesses & Sector Funds: Organisations like O+O Fonds Bouw and Wij Techniek finance training, digitalisation, and sustainable employability.
  - Implementation Costs: These are typically shared between employers and unions through sectoral funds, with public support for broader initiatives like Regionaal Bouwen aan Human Capital.

Digitaal Skills Paspoort	Regionaal Bouwen aan Human Capital
A digital passport that combines occupational health and safety records with education and training pathways. It supports lifelong learning, mobility, and sustainable employability. Developed by Volandis, a paritarian institute, it is being rolled out sector-wide to help workers track and plan their professional development.	A public-private partnership connecting vocational schools (MBO/HBO) with construction firms to address labour shortages and skills gaps. Regional hubs across the Netherlands (North, East, West, South) coordinated by TKI Bouw en Techniek and TNO.

2. The construction material supply chain

<table>
<tr><th colspan="3">In focus: Decarbonising construction material – steel</th></tr>
<tr>
<td>List key enterprises (tonnes of production per year, net turnover)
• Tata Steel Nederland
○ Production: ~4.8 million t liquid steel (Financial Year 2023/24)
○ Turnover: ~€5.9 billion (Financial Year 2023/24)</td>
<td>Number of employees per key enterprise
• Tata Steel Nederland
○ Workforce: 12,661 (2024)
• Relevance of enterprise in construction supply-chain (how much of the material is used in construction):
○ Tata Steel is Sole major steel producer in the Netherlands. In 2020, 23% of sales volume went to the construction sector.</td>
<td>Age, gender, education levels, gender, nationality in the construction material sector:
• Data from Tata Steel:
○ Age: average ~45.9 years
○ Education: Most workers possess technical vocational qualifications (MBO, corresponding to EQF level 4) and higher technical qualifications (HBO/engineering, corresponding to EQF level 6).</td>
</tr>
<tr>
<td colspan="3">• Title and main features of key decarbonisation policies:

○ Climate Act (2019) & Climate Agreement (2019): national targets: 55% GHG reduction by 2030 (relative to 1990), climate neutrality by 2050; industry platform targets and support measures for heavy industry decarbonisation.

○ Tata Steel's Green Steel Plan / Joint Letter of Intent (JLoI) with Dutch government (2025): non-binding framework to support a phased transition at IJmuiden (phase-1 Green Steel plan, emissions reductions, community health measures); Dutch government signalled up to €2 billion potential support and TSN applied for EU Innovation Fund grants — project cost estimates reported in press (project could run into several billion €). Targets referenced: major CO_2 reductions (several million tonnes) over the coming decade(s), and Tata's ambition for climate neutral by 2045/phased reductions as set out in project documents.

• Existence of collective bargaining agreements for workers in the sector: Tata Steel has a site/company CAO (collective labour agreement) (CAO Tata Steel) and the broader Metalektro / Metaal & Techniek collective agreements cover many metal-sector workers in NL. Unions active include FNV, CNV, De Unie, VHP etc. Collective bargaining is active and recent CAOs cover 2023–2025 with negotiation activity in 2024–2025.</td>
</tr>
<tr>
<td colspan="3">• (Expected) impacts on the supply chain (i.e. building materials production process itself and on its use in the construction supply chain: Supply-side transformation: shift from blast-furnace + coke routes → electric-arc furnaces (EAF) / scrap, gas-based transitional routes, hydrogen metallurgy, and CCUS where applied. For example, in IJmuiden the Green Steel plan foresees replacement/modernisation of blast-furnace assets and closure of coke ovens, plus higher scrap use</td>
</tr>
</table>

and eventual hydrogen/electrification. This changes building material inputs (less coking coal, more scrap, hydrogen, electricity).

- **(Expected) impacts on employment, skills and activity levels of workers in the materials industry**
    - **Short term:** restructuring risk — Tata announced workforce cuts in 2025 (≈1,600 jobs, ~20% of their NL workforce) as part of transformation and competitiveness measures; there is active union pushback and negotiation over guarantees. These cuts affect management/support roles and could ripple into the local supplier network.
    - **Medium/long term:** re-skilling / up-skilling demand — hydrogen systems, electrolysis, CCUS, EAF operation, electrification, digitalisation, and environmental-health monitoring require new technical competencies (HBO/engineering and specialised vocational retraining).
    - **Working conditions:** potential benefits (less exposure to coke/soot/particulates) but also uncertainty during restructuring.

- **Country-level policies for just transition in the building materials sector:**
    - The Klimaatakkoord includes measures to protect workers through the transition.
    - Joint Letter of Intent by Tata Steel includes health & social measures and negotiating conditional public support (employment safeguards are an explicit political issue).

- **Changes and trends in labour rights and existing challenges in the construction sector:**
    - Strong CAO tradition in metal sector, active unions (FNV/CNV/De Unie). Collective bargaining remains a key protection, but restructuring pressures strain CAO outcomes and employment security.
    - **Inter-sector movement:** transitioning workers to lower-emission sectors (e.g., construction using timber, offshore wind, hydrogen) is possible but not automatic, skills mismatch (age profile, specialisation) and regional job concentration are barriers.
    - **Job losses** are concentrated at legacy heavy-industry sites (e.g., IJmuiden), while job creation clusters around ports, hydrogen facilities and offshore wind supply chains, but skills & location mismatch will require active transition policies

Key hotspot for transformation #1	Key hotspot for transformation #2
• IJmuiden / North Holland (Tata Steel IJmuiden) — major hotspot for both job loss risk due to restructuring. Tata steel is practically the only steel producer in the Netherlands, hence, job losses will need to be absorbed by other industries.	Port / Maasvlakte / Rotterdam–Dordrecht cluster — job creation (green hydrogen, electrolysers, import/export, CCUS infrastructure). Port initiatives aim to build hydrogen hubs and industry links; this is where many green-steel inputs (hydrogen, electricity, CCUS logistics) and offshore wind connections will sit, a source of new construction and industrial jobs. The Rotterdam cluster is emphasizing workforce transformation rather than downsizing. Major employers are working with local technical colleges, vocational schools (MBOs), and institutes such as STC Group and Techniek College Rotterdam to implement reskilling and upskilling programs.

- **Benefits for workers brought by the green transition in the sector:**
    - Cleaner working & living environment (reduced local air pollution; health gains).

- New green jobs (hydrogen production, electrolyser operation, EAF & recycling, CCUS operation, maintenance). Port/hydrogen and offshore wind clusters will create construction and O&M roles.
- Upskilling opportunities (training in hydrogen, electrification, digital control systems).

- **Disadvantages for workers brought by the green transition in the sector:**
  - Job losses / restructuring at legacy blast-furnace plants (short/medium term), evidenced by Tata's announced cuts.
  - Skills mismatch / age profile issues, many workers are older and specialised; require retraining
  - Local economic disruption in areas dependent on a single large plant (supply-chain supplier firms, local services).
- **Existing mechanisms to protect or reinforce labour rights/conditions:**
  - Collective labour agreements (CAOs) (Tata Steel CAO, Metalektro CAO) — set wages, working conditions, retraining clauses and negotiation frameworks. Works Councils and Central Works Council are engaged in consultations for transformation programmes. Unions (FNV, CNV, De Unie) actively negotiate.
  - Tailor-made government-company agreements / JLoI that may include social conditions, health measures and employment safeguards as part of public support packages (ongoing negotiation). OECD recommends enhancing active labour market measures and regional support.
- **The role of trade unions/construction businesses:**
  - **Trade unions:** actively negotiating CAOs, representing workers in transformation consultations and advocating for training, employment guarantees and social packages (FNV, De Unie updates and negotiation summaries). Unions have negotiated CAO provisions that include training and job transition arrangements.
  - Construction businesses & industry actors: Tata steel has confirmed its intent of reskilling and education of its workers in its Joint Letter of Intent.