

Safeguarding the UK's manufacturing jobs with climate action: carbon leakage and jobs

Summary

- TUC calls on the UK government and companies to work together to future-proof jobs at risk of offshoring.
- The union body estimates that between 368 thousand and 667 thousand jobs could be offshored from Britain if industries fail to meet climate targets and the UK falls behind other countries on climate action.
- North West England, Yorkshire and the Humber, and West Midlands are regions with most jobs at stake.

Why does falling behind on climate action put jobs at risk?

In 2021, crucial decisions will be taken about how the UK economy will change over the following decades to meet climate targets and eliminate greenhouse gas emissions. While the UK prepares to host the COP26 UN climate talks in Glasgow, several far-reaching climate action policies await publication, including the Net Zero Buildings and Heat Strategy and the overarching Net Zero Strategy, as well as a Comprehensive Spending Review which will shape public investment in climate action for forthcoming years.

The decisions taken now can make or break the future of many of the UK's manufacturing jobs.

Businesses in high-carbon sectors, such as steel, cement, or glass manufacturers, face costly upgrades and complex technological and process changes to eliminate emissions. The UK has clear climate commitments, enshrined through international agreements and legislation, so continuing business as usual in these sectors is not an option. Instead, these sectors need additional support to change their production to a model compatible with a net zero carbon future.

Policy-makers have warned of the possibility of 'carbon leakage' – where the high costs of emitting greenhouse gases domestically could prompt businesses to relocate production to countries with less strict rules on emissions.¹ Investors are also likely to

¹ European Commission (2019) *Carbon Leakage*.
https://ec.europa.eu/clima/policies/ets/allowances/leakage_en

redirect capital and businesses may relocate jobs to countries and regions where government support for decarbonisation is better than in the UK. For example, automotive parts manufacturers are entering a period of intense international competition to determine where Electric Vehicle components will be made in the future.²

This briefing aims to quantify the numbers of jobs in harder-to-decarbonise manufacturing sectors, whose medium-term future depends on timely and worker-friendly climate action.

What UK jobs could be affected?

In our narrower estimate, based on the EU's list of industry sub-sectors at risk of carbon leakage,³ the number of direct jobs in industry across Britain at risk from offshoring is 128,000, with a further 240,000 jobs potentially affected across supply chains.

In our broader estimate, based on the Energy Systems Catapult's list of industries at risk, direct jobs at risk reach 260,000, and supply chain jobs reach 407,000.

The top three regions by the number of direct jobs at risk are the North West, Yorkshire and the Humber, and the West Midlands (Table 1).

Table 1. Ranking of Great Britain regions, by number of direct jobs at risk:

Region	Jobs at risk (direct)	
	Narrow estimate	Broad estimate
North West	18,400	39,100
Yorkshire and The Humber	23,300	36,900
West Midlands	19,600	31,300
East Midlands	12,000	30,200
South East	8,500	25,600
East	6,700	21,100
Wales	13,400	20,400
Scotland	9,700	16,700
South West	5,000	15,300
North East	9,400	14,900
London	2,600	8,100
Great Britain	128,600	259,700

² PWC (2019) 'Merge ahead: Electric vehicles and the impact on the automotive supply chain' <https://www.pwc.com/us/en/industrial-products/publications/assets/pwc-merge-ahead-electric-vehicles-supply-chain.pdf>

³ Official Journal of the European Union, L 120, 8 May 2019 <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L:2019:120:FULL>

The industries with most jobs at stake are: iron and steel (26 – 34 thousand direct jobs), glass and ceramics (25 – 41 thousand direct jobs) and chemicals (20 – 63 thousand jobs). See Table 2.

Table 2. Estimates of jobs at risk by industry

Industry	Narrow estimate		Broad estimate	
	Direct jobs	Supply chain jobs	Direct jobs	Supply chain jobs
Refineries	8,400	40,300	7,800	37,400
Chemicals	20,500	42,600	63,200	131,300
Iron and steel	33,700	72,900	26,900	58,200
Cement and lime	1,900	4,600	900	2,200
Paper, pulp, and printing	9,000	11,300	15,500	19,500
Rubber and plastics	10,400	9,400	79,000	71,500
Glass and ceramics	25,200	34,600	41,000	56,200
Textiles	14,600	17,200	18,000	21,300
Wood	4,900	6,300	7,400	9,500
Total	128,600	239,200	259,700	407,100

In the narrow estimate, 70% of direct jobs affected belong to following ten biggest exposed industry sub-sectors.

Table 3. Top 10 sectors affected, by number of jobs (narrow estimate):

Industry	Jobs
2410 : Manufacture of basic iron and steel and of ferro-alloys	23,000
1330 : Finishing of textiles	11,200
2016 : Manufacture of plastics in primary forms	9,300
1712 : Manufacture of paper and paperboard	8,900
1920 : Manufacture of refined petroleum products	8,400
2014 : Manufacture of other organic basic chemicals	7,800
2420 : Manufacture of tubes, pipes, hollow profiles and related fittings, of steel	6,800
2313 : Manufacture of hollow glass	5,300
2341 : Manufacture of ceramic household and ornamental articles	5,200
1621 : Manufacture of veneer sheets and wood-based panels	4,900

Case study: steel

Jobs in the steel sector are at a high risk because manufacturing of high-grade steel is currently dependent on burning coal. However, new technologies are now being developed that allow production without coal.

Last month, Swedish firm Hybrit made its first delivery of 'green steel' produced with hydrogen from electrolysis of water with renewable electricity.⁴ Another Swedish firm, H2 Green Steel, is planning a hydrogen plant that will begin production in 2024.⁵ And in June 2021, Three Consulting announced a hydrogen-based green steel project in Missouri, USA.⁶

All these projects include public investment through government grants or direct public stakes. Workers and their union at the Port Talbot Steel works say that for their jobs to be safe, they need government support to be at the hydrogen-based reduction cutting edge of the green steel revolution too.

Alan Coombs is a Community union rep at the Port Talbot steelworks, which is the largest in the UK with around 4,000 workers. Alan is 56 years old and has worked at the plant for 40 years. He said:

"Companies overseas are already setting target dates for green steel. But the UK isn't even putting our toe in the water. And it's everyone in the community that's worried. We've got lots of local companies, shops and services that rely on the workers here for their business.

"We have families here who are third or fourth generation working at the plant. If we don't have apprenticeships in green steel technology soon, there won't be another generation. And the alternatives for our kids will not be as good – lower skills, lower pay, less security.

"If we put ourselves at forefront of green innovation, we can protect the workforce. But it needs government action. No company has the financial clout for such a big conversion without government aid and the guaranteed supply of green energy.

"The transition will take time. But if we start now, it's not too late to catch up. And we can tell people:

⁴ George Heynes (2021) 'HYBRIT technology delivers the world's first fossil-free steel to Volvo Group', *H2 View*, <https://www.h2-view.com/story/hybrit-technology-delivers-the-worlds-first-fossil-free-steel-to-volvo-group/>

⁵ Loz Blain (2021) 'World's largest hydrogen "green steel" plant to open in Sweden by 2024', *New Atlas*, <https://newatlas.com/energy/h2gs-green-hydrogen-steel/>

⁶ ThREE Consulting LLC (2021), 'ThREE Consulting Announces Green-Steel Project in Missouri, USA', *PRWeb*, https://www.prweb.com/releases/three_consulting_announces_green_steel_project_in_missouri_usa/prweb17993898.htm

“We know what we’re going to do in Port Talbot. We know the technologies we’ll lead in. We know steel’s place in Britain’s future.”

How can we future-proof our manufacturing jobs?

How can the UK’s manufacturing jobs be future-proofed? The UK government has a number of levers to ensure this:

- **Public investment.** The UK government’s investments into decarbonisation are clearly falling behind competitor economies. Research published by the TUC in June found that the UK is second last among G7 economies for its green recovery investment. While the UK Treasury is barely investing £180 per person on green recovery and jobs over the next decade, President Biden planned to allocate over £2,960 per person on green recovery, jobs and programmes like public transport, electric vehicles and energy efficiency retrofits. Scaled by population, the UK’s green recovery investment plans are just a quarter (24%) of France, a fifth (21%) of Canada, and 6% of the USA’s plans.⁷
- **Clear policies on decarbonisation across the economy.** According to the official Climate Change Committee, the UK’s emissions reduction targets are now in line with science, but policy commitments to match the targets are clearly insufficient.⁸
- **Rules on local content.** Local content requirements have been used successfully to build up oil and gas industry supply chains by countries ranging from Malaysia to Brazil⁹ and in renewable energy by Taiwan¹⁰ and France. The UK local content requirement for offshore wind should be brought up to at least 80%. Local supply chain commitments should be required of all energy projects and infrastructure projects, and stringently enforced.

The Government’s independent Green Jobs Taskforce published proposed measures for how green jobs can be secured for the future,¹¹ including by increasing targeted investment into industrial decarbonisation, support for reskilling, and social dialogue between employers, unions, and government.

Conclusion

The future of up to 660 thousand British manufacturing jobs depends on taking timely climate action and supporting domestic supply chains.

⁷ TUC (2021), *Ranking G7 Green Recovery Plans and Jobs*, <https://www.tuc.org.uk/research-analysis/reports/ranking-g7-green-recovery-plans-and-jobs>

⁸ Climate Change Committee (2021), *2021 Progress Report to Parliament*, <https://www.theccc.org.uk/publication/2021-progress-report-to-parliament/>

⁹ https://unctad.org/en/PublicationsLibrary/ditcted2013d7_en.pdf

¹⁰

https://www.researchgate.net/publication/335244906_Pacing_for_Renewable_Energy_Development_The_Developmental_State_in_Taiwan%27s_Offshore_Wind_Power#pf11

¹¹ Green Jobs Taskforce (2021), *Green Jobs Taskforce Report*

<https://www.gov.uk/government/publications/green-jobs-taskforce-report>

The TUC is calling on Government to

- Implement the Green Jobs Taskforce recommendations in full;
- Level up investments in green infrastructure, including industrial decarbonisation, in line with its G7 peers, extending to 2030;
- Put in place strict local content requirements for energy projects, infrastructure, and procurement;
- Establish a Just Transition Commission, including representation from employers and unions, to oversee the workforce aspect of the transition to Net Zero;
- Introduce a permanent short-term working scheme to help protect working people through periods of future industrial change.

Appendix: Methodology

To define industries at risk of offshoring, the TUC's calculations use:

- For the broader estimates, analysis from the Energy Systems Catapult (ESC) on the industries most at risk of carbon leakage. ESC is funded by Innovate UK, which is part UK Research and Innovation, a public body funded by the UK government.
- For the narrow estimates, the subsectors the European Union's official list of industry subsectors at risk of carbon leakage, where they overlap with the ESC's list of key industries at risk.

Direct job numbers for sectors at risk are sourced from the ONS's Business Register and Employment Survey (reference year 2019).

In our broader estimate, the initial sectoral direct job figures were then downgraded based on the TUC's analysis of the relative susceptibility of each sector to offshoring due to decarbonisation. The susceptibility analysis considered a number of factors, including: the sector's overall energy consumption; carbon intensity; ability for domestic production to be replaced with imports (represented by existing imports); investment in new technology and upgrades needed to decarbonise; and the extent to which sub-sectors of the industry are at particular risk of offshoring.

This leads to a more conservative estimate for sectoral jobs at risk. As a result, the estimate for jobs at risk are *lower* in our broad estimate than in our narrow estimate in a number of sectors: Refining, Iron & Steel, Cement & Lime.

Supply chain job numbers were estimated using multipliers from ONS's 2017 Input-Output Analytical Tables, which quantify the number of indirect (supply chain) jobs in each industry proportional to the number of direct jobs.

To take into account the overlap in jobs between different sectors (e.g. a direct job in Chemicals can be an Indirect job in Rubber & Plastics), we used the Input-Output Analytical Tables to calculate the overlap between direct jobs in any of the industries covered, and indirect jobs supported by others. The supply chain jobs at risk for each sector were reduced accordingly, to avoid double-counting.