A UK carbon border adjustment mechanism: The construction industry and steel

March 2023

CLEANTRADE

A UK carbon border adjustment mechanism could boost construction industry orders of UK-made steel by £525 million annually

By stalling on extending carbon pricing to imports, known as a carbon border adjustment mechanism (CBAM), the government is scoring an economic and climate own-goal.

A fundamental shift in climate policy occurred last year, led by the European Union and the United States. The EU agreed to implement a CBAM from 2026 (1). The mechanism will extend the carbon pricing already in place for domestic industries (through its Emissions Trading Scheme) to imported iron, steel, cement, aluminium, fertilisers, hydrogen and electricity - with pricing ramping up year-by-year to 2034. The U.S. has also boosted domestic low-carbon industry, but through a different approach. With no existing carbon pricing system in place, it decided to subsidise green technologies through tax credits as part of the Inflation Reduction Act (2).

This re-frames the low-carbon industrial transition as a race in which getting - and staying - ahead is key. This could be a boost for the climate and help the world move towards the 45% emissions cut needed by 2030 to stay on track to limit global warming to 1.5 degrees. But it could also lead to a future reorientation of low-carbon industries to the EU and U.S.

The UK must react, even though EU and U.S. policies continue to evolve. If the UK waits for the music to stop before making its move, it may find that all chairs are covered. Without government help - either to protect fledgling low-carbon industries being undercut by cheaper high-carbon imports, or to subsidise green technologies so they can compete with high-carbon imports - the industries won't grow, let alone export their goods.

Whichever route the UK chooses, low-carbon industries need to know they won't be undercut by cheaper imported high-carbon products in order to invest. The EU's CBAM timeline is not fast, and its lack of consultation with both businesses and developing countries (3) could become lessons from which a UK CBAM can learn.

Our analysis of the latest data looked at the effect of a potential UK CBAM on the construction industry. The research focused on steel - one of the bulky products that can be easily be charged at the border, and an important component of the build out of a low-carbon economy in the decades to come, not least for wind turbines, electric vehicles, railways - and the construction industry, which is one of the sectors importing the most high-carbon products.

We found that the construction industry imports £1.4bn of long steel every year, including £870m from countries with more carbon-intense steel production; more than £525m of that would likely change if the UK introduced a CBAM alongside phasing out free ETS allowances to bolster carbon pricing. This represents a big opportunity that low-

carbon UK steel producers could capture - 25% of the UK steel industry's gross value added in 2020 (4). For example, £140m of long steel is imported from Turkey and £56m from the Czech Republic, where producers have a higher carbon-intensity of production compared to the UK. £350m is imported from Spain, where producers have lower-emissions intensities than the UK on average (5).

One example is Segro, one of the leading developers of industrial warehouses, which has grown rapidly with the growth of online retail. Segro does not provide a breakdown of what steel it buys and from where (6). By applying industry-wide numbers to the UK portion of the 1.3 million m^2 of warehouses Segro says it will build (7), we estimate that a UK CBAM could represent a £10m opportunity for low-carbon UK steel from that one company's pipeline alone.

(1) European Council, 2022, *EU climate action: provisional agreement reached on Carbon Border Adjustment Mechanism*, link
(2) McKinsey & Co., 2022, *The Inflation Reduction Act: Here's what's in it*, link
(3) Centre for Global Development, 2023, An EU Tax on African Carbon – Assessing the Impact and Ways Forward, link, The EU's CBAM was criticised by the likes of Mozambique who will see its aluminium exports hit
(4) We focused on CBAM because while the U.S. model of subsidies might be possible in the UK, the delicate state of public finances, and foreign ownership of many industries - for example British Steel and Tata - makes the subsidies approach unlikely.
(5) House of Commons, 2021, UK Steel Industry: Statistics and policy, link
(6) Intensities vary in electric-arc furnaces because of the emissions intensity of electricity. Whereas basic oxygen furnaces' intensity will mostly depend on how modern and therefore efficient the furnaces are.
(7) Nor should it - since it could compromise commercial confidentiality.

"In order to invest, low-carbon industries need to know they won't be undercut by cheaper imported high-carbon products"

A UK CBAM could:

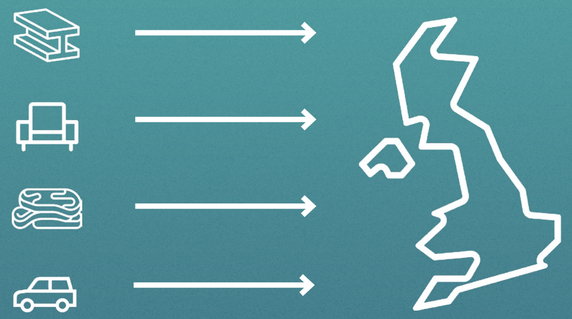
Increase demand for lower-carbon UK steel to the tune of £525m annually from the construction industry alone. This is because the industry imports £870m of long steel annually from places with more carbon-intense steel production.

For just one industrial property developer, Segro, a UK CBAM could shift an estimated £10m from higher-carbon imported steel to lower-carbon UK-produced steel.

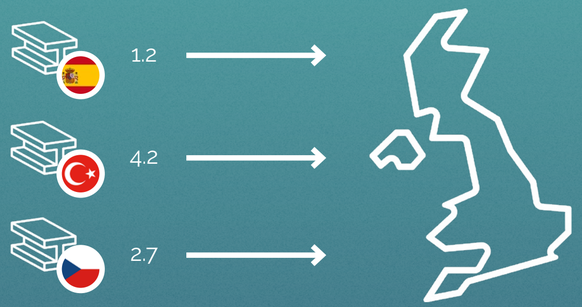
This represents a missed opportunity for the government to upgrade the long-term investment outlook of UK low-carbon industry.

Explainer

Every year the UK imports £500bn of products from around the world.

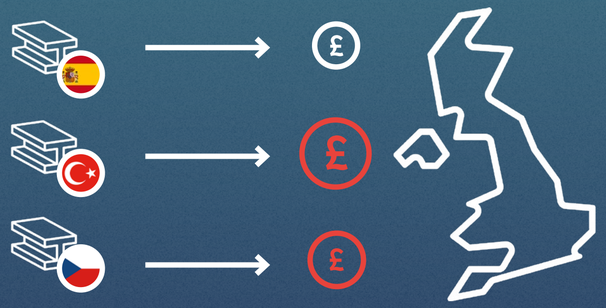


The £1.4bn of long steel that is imported for construction has been produced with varying amounts of carbon emissions. (Units shown are emissions ($kgCO_2e$) per £ spent on steel. UK's emission intensity is 1.4 $kgCO_2e$ / £).

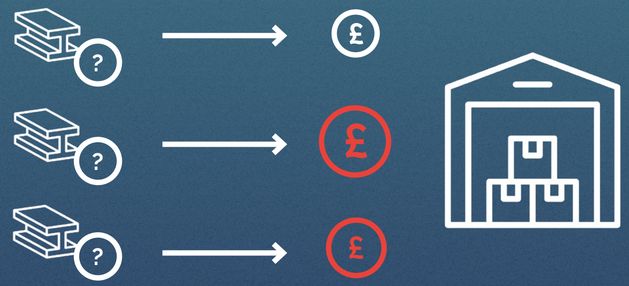


A carbon border adjustment mechanism (CBAM) extends the domestic carbon price to imports. Products pay a charge which depends on how polluting it is.

Of the £1.4bn of long steel imported annually by the construction industry, £525m would likely shift with a CBAM.



Segro, a major UK industrial property developer, could shift an estimated £10m of its steel imports for its UK pipeline.



A CBAM is an opportunity for the UK's fledgling low-carbon steel industry by allowing it compete on a level playing field with high-carbon imports.

It also incentivises supply chains around the world to decarbonise, and countries too - because those products from countries with the same level of carbon pricing don't have to pay it twice.

Comments on the research

"Extracting and burning fossil fuels simply has to become too expensive or illegal. Carbon border adjustments are an important crack in the wall of fossil fuel producers' ability to freely sell their product into all manner of global supply chains."

Prof. Mike Berners-Lee

Prof. Mike Berners-Lee is a Lancaster University professor and Director of Small World Consulting - the organisation's model of emissions intensities of countries' steel production contributed to the analysis.

"This is not to single out Segro as a bad apple. It takes sustainability seriously, with a CDP A rating and a Science-Based Target. Rather, if a company like Segro is only able to commit to a 20% reduction in Scope 3 emissions by 2030, what chance is there for the construction industry to achieve bigger reductions without measures like a CBAM to bolster the investment case for decarbonising our own steel production?"

Kirsten Henson

Kirsten Henson, Founding Director of KLH Sustainability whose construction industry expertise informed part of the analysis,

Note: CDP Score is awarded by CDP, a charity which runs the emissions disclosure system for investors and companies to report their environmental impacts, which around 60% of global market capitalisation reports through. Segro's CDP Score was an "A" on its 2022 Climate Change response. A Science Based Target is a medium-term (usually 2030) emission reduction target approved by The Science-Based Targets initiative, created in 2015 by CDP, UN Global Compact, World Resources Institute (WRI) and WWF.

"The steel industry has a long investment cycle because plants operate for decades. Producers in the UK need certainty now, in order to deliver low-carbon steel by 2035. A carbon border adjustment mechanism is the preferred policy instrument to achieve this, since 60% of the UK's demand for steel is currently imported. It's not just important to help achieve climate targets, but it will help secure the livelihoods of UK steel workers in a carbon-constrained future."

Frank Aaskov

Frank Aaskov, Energy & Climate Change Policy Manager at UK Steel and author of Net Zero Steel - A Vision for the Future of UK Steel Production

Note: "low-carbon steel by 2035" refers to Climate Change Committee, 2020, The Sixth Carbon Budget, The UK's path to Net Zero, link

More about the research

The research was led by Alex Watson, Founding Director of CleanTrade. He has a background in corporate carbon accounting from Climate Impact Partners where, as Director of Product Marketing, he led the evolution of its CarbonNeutral Protocol, a leading framework used by the likes of HP, Logitech, Microsoft and Sky.

Small World Consulting is an expert carbon footprinting consultancy. Its Extended Multi Regional Input-Output analysis provided the estimate of countries' emission intensity of steel production, based on the OECD's Inter-Country Input-Output tables for the world economy in 2018. Housed in Lancaster University's Environment Centre, the team is led by Mike Berners-Lee, Lancaster University professor, who contributed to this research.

KLH Sustainability are sustainability consultants to the built environment. Research for CleanTrade was undertaken by Kirsten Henson, Founding Director, who was the sustainable materials manager for the London Olympic Programme and currently advises on low carbon and sustainable design through numerous Design Review Panels.

Number	Metric	Source
£1.4 billion	Estimated UK construction industry annual spend on long steel imports	IHS Markit, 2022, Page 2, UK imports of steel mill products 2021, link. Analysis by KLH Sustainability, limited non-construction industry uses of long steel
£870 million	Estimated UK construction industry annual spend on long steel imports with higher emissions than UK steel	Analysis by CleanTrade and Small World Consulting
£525 million	Estimated UK construction industry annual spend on long steel imports that could shift to UK with a CBAM	Analysis by CleanTrade, Small World Consulting and KLH Sustainability
460,000 tonnes	Total long steel used in warehouse construction in the UK in 2022	Steel for Life Ltd / British Constructional Steelwork Association, 2023, Updated Constructional Steelwork Forecasts 2023-25, link
3.71 million m^2	Total warehousing built in the UK in 2022	Knight Frank, 2021, UK Logistics Market Dashboard, link (ft^2 converted into m^2)
0.391 tCO_2e	Estimated embodied emissions per m2 of new Segro warehouses	Segro, as reported in CDP 2022 Climate Change survey, based on One Click LCA
454,692 m^2	Estimated pipeline of Segro warehouses it will build in UK	Segro, 2022, Results for the six months ended June 2022, link (1.3m m^2 total pipeline) Segro, 2022, Annual Report & Accounts, link (65% of pipeline is in Europe)
£27 million	Estimated Segro spend on imported steel to deliver pipeline	Analysis by CleanTrade and KLH Sustainability
£10 million	Estimated Segro spend on imported steel that would shift with a CBAM	Analysis by CleanTrade, KLH Sustainability and Small World Consulting

Flat steel was not included in the analysis. It is difficult to entangle how much flat steel is used by the construction industry, versus what is used by the automotive, appliance and machinery manufacturing sectors.

The analysis supposes a CBAM was introduced in the UK along similar lines to what the EU is planning to implement, which includes the gradual removal of free ETS allowances. Under the UK ETS, which is similar to its European counterpart, big polluters such as power plants and manufacturers are given a steadily reducing allowance of pollution permits to cover their emissions of CO_2 and other greenhouse gases. If they pollute above this level they need to buy more, or if they cut pollution they can sell them for profit.

More free allowances were given to trade exposed industries to prevent carbon leakage: industries moving operations to places with lower environmental legislation. So today in the UK, in trade exposed industries like steel, carbon pricing really only occurs at the margin - companies only pay if they are above-industry-average emissions-intensive. A successfully implemented CBAM would enable the withdrawal of free allowances, which would mean that companies would pay the carbon price of the ETS on all their emissions, not just the emissions they pollute above the industry average.

Segro was chosen as an example because it is a FTSE 100-listed company and one of the biggest industrial building developers. It has Science Based Targets, verified under the Science Based Targets initiative's SME programme, which include a goal to reduce the embodied carbon intensity of its development programme by 20 per cent by 2030 against its 2020 baseline (8). Carbon intensity (rather than absolute) reduction targets are allowed for SMEs because these companies often lack the resources and capabilities needed to set Scope 3 targets and monitor progress against them, and matters can be complicated by projections for company growth.

While a carbon border adjustment mechanism could make a significant difference to the businesses buying steel, the maximum possible effect to the UK population is negligible. Across the UK, on average, in the cars, houses and washing machines we buy, we buy about 300kg of steel per annum. A carbon price of £100/tCO_2e could (assuming the worst case) result in a 22% price increase on imports of steel. This would cost consumers £5 a year on average. To put that in context, the average annual gas and electricity bill rose by over £1,000 between winter 2021/22 and 2022/23 (9).

(8) Segro, 2022, Annual Report & Accounts 2021, link
(9) House of Commons, 2023, Domestic energy prices, link

China, Russia, U.S.

...are the top three sources of these imported emissions. UK imports from these countries are responsible for over a quarter of all UK imported emissions.

CleanTrade, 2022

#1 in G7

The UK's proportion of imported emissions compared to its overall footprint is the highest in the G7

John Barrett and Alice Garvey, 2022, Mapping Emissions In An Industrial World in Greta Thunberg et al. 2022, The Climate Book,

€30bn

...is how much the EU's carbon border adjustment mechanism will raise. €4.5bn in charges at the border, €26bn by enabling the eradication of free allowances. It so far plans to include imports of: iron, steel, cement, aluminium, fertilisers, hydrogen, electricity generation, some manufactured products such as screws and bolts, and potentially cars.

E3G, 2021, Storm in a Teacup

Climate Change Committee, 2022,
Progress in reducing emissions 2022

43%

...of the UK's carbon footprint is produced outside the UK through its imports.

£400bn

...is spent annually in the UK on imports from countries with less stringent domestic climate actions .

CleanTrade, 2022

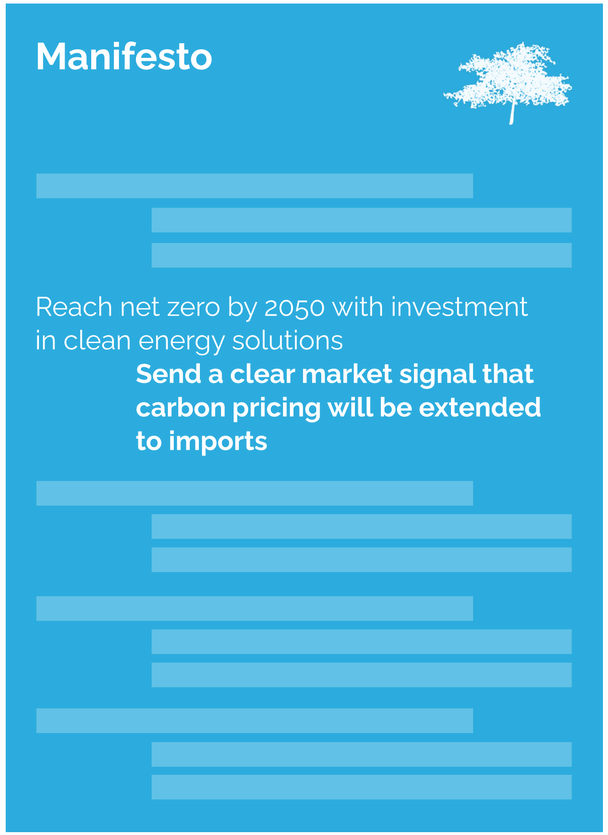
How a UK CBAM might be framed

A move towards a CBAM represents an immediate political opportunity for the UK.

Conservative Party

For the Conservatives, carbon pricing sends a clear long-term market signal to unlock private sector innovation to tackle climate change. It can simplify a myriad of sector-specific regulations and avoid the need for the public sector to pick green winners.

A CBAM could help "level up" by ensuring that fledgling low-carbon industries in the north aren't undercut by high-carbon imports. For example, 6 per cent of all the UK's foreign direct investment goes to Yorkshire. But 15 per cent of all UK FDI into low-carbon businesses goes to that county.

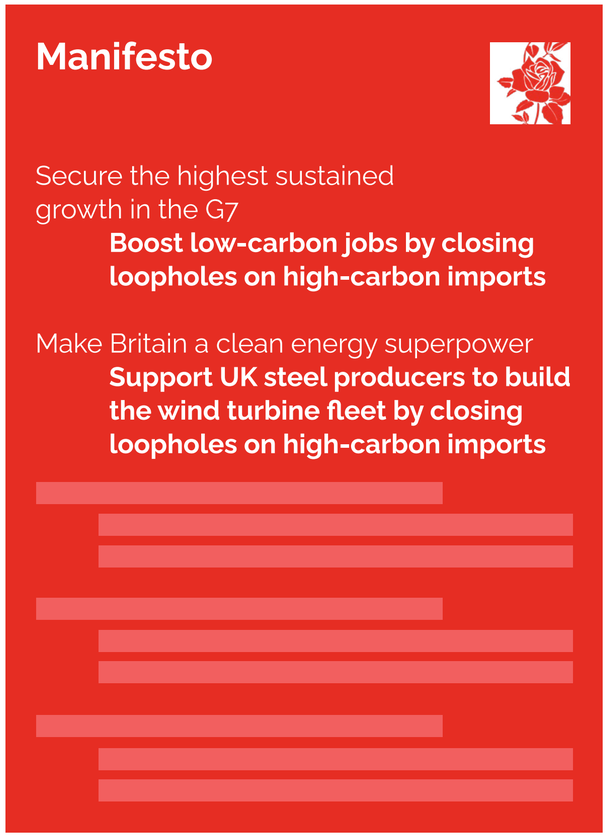


Labour Party

The Labour party has put a stake in the ground for a "fairer greener Britain". .

Driving towards a CBAM represents a chance for Labour to add to its climate programme and promotion of promoting green jobs with a policy that will appeal to voters hesitant about extra public spending.

A CBAM, by levelling the playing field and extending domestic carbon pricing to imports would align closely with Labour policies to close loopholes in other areas, such as its promise to replace the so-called "non-dom" taxpayer status.



Other views on a UK CBAM

"A policy response in the form of a UK carbon border approach is needed. This should include a carbon border adjustment mechanism."

Environmental Audit Committee, 2022, Inquiry into carbon border adjustment mechanisms

"It is our intention to consult later in the year on a range of carbon leakage mitigation options, including on whether measures such as product standards and a carbon border adjustment mechanism could be appropriate tools in the UK's policy mix."

Then-Financial Secretary to the Treasury, Lucy Frazer QC MP, UK Parliament, 2022, Update on carbon leakage mitigations

"To avoid carbon leakage as the UK decarbonises, [The Government] should consult on plans to implement, by 2030 or earlier, Carbon Border Adjustment Mechanisms and mandatory minimum climate-related standards on imports of selected manufactured products and energy."

Climate Change Committee, 2022, Progress in reducing emissions: 2022 report

"Government should progress its consultation on carbon leakage measures, including a carbon border adjustment mechanism and mandatory product standards by 2023. This will enable Government to implement effective carbon leakage mitigations from 2026."

Chris Skidmore MP, 2023, Mission Zero: Independent Review of Net Zero

"Key recommendations for government include... Put[ting] forward tangible proposals for a Carbon Border Adjustment Mechanism... This would prevent high carbon imports from gaining a growing market share at the expense of low carbon goods produced by UK firms."

Aldersgate Group, 2022, Move to net zero emissions creates an opportunity to grow UK industrial supply chains – but a comprehensive plan is needed

About CleanTrade

CleanTrade is a research and campaign non-profit with a mission to boost the UK's industries of the future. It advocates for policies that prevent high-carbon imports undercutting fledgling low-carbon industries.

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