



Pointmaker

THE GREAT CARBON SWINDLE

How the UK hides its emissions abroad

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SUMMARY

- Britain has already made significant progress in decarbonising its power grid.
- But there is a sting in the tail. Britain is increasingly importing its electricity from Europe, via undersea interconnectors. Such supplies are not subject to the same carbon levies as domestic output – and in many cases may come from polluting sources.
- As a result, we have not simply cut emissions but increasingly offshored them. During the recent “coal-free fortnight”, the UK was importing Dutch electricity which analysis suggests is highly likely to have come from coal-fired plants.
- It is not just about electricity. We have begun to tax carbon-intensive products in the UK – but all too often the result has been to switch to imports from overseas.
- This puts domestic producers of such products at a competitive disadvantage, encouraging “carbon leakage” of jobs and profits, and can raise overall emissions, for example due to the need to transport the goods to the UK.
- Ahead of the COP26 conference in Glasgow, the UK should take a global policy lead by introducing a carbon border tax on the most carbon-intensive imports, such as steel, coal, chemicals, cement, fertilisers and electricity, weighted according to the exporter’s own electricity generating mix.
- This would ensure a level playing field for UK producers and encourage other countries to move faster towards renewable energy, as well as generating revenue that could be returned to consumers.



INTRODUCTION

Britain is committed to reducing carbon emissions. Thus far, the bulk of the heavy lifting has been done by reducing our reliance on coal, with a flourishing wind farm sector taking the strain instead. Last year, we saw the first three-month period in which more electricity in Britain was generated from renewables than fossil fuels.

But this story is not as positive as it seems. Britain now imports a tenth of its electricity from Europe through undersea cables known as interconnectors – this is set to grow beyond 20 per cent by 2030. And ministers have admitted they cannot identify how much coal or gas is used to generate these imports – and thus omit these emissions from UK statistics.

During the recent “coal free” fortnight, for example the UK was importing Dutch electricity – which is highly likely to have come from coal-fired plants.

It is not just electricity generation. The Government is now extremely reluctant to approve new coal mining projects, because of the emissions consequences. Yet this means that industrial consumers

(such as the steel industry) are simply importing raw materials or finished goods from overseas, which can involve a significant extra cost in terms of carbon emissions.

The consequence is that when the UK claims to be reducing its greenhouse gas emissions, it is often simply offshoring them, for example by increasing its imports of electricity generated from European coal and gas while using statistical sleight-of-hand to ignore the carbon emissions involved.

This not only hides the real picture in terms of emissions, but discriminates against UK firms which are subject to climate levies that their competitors overseas do not have to pay.

If it is to deliver on its climate change commitments and show global policy leadership, Britain will need to deal with its most carbon-intensive imports – including electricity. This paper proposes the introduction of a new carbon border tax, restricted to these specific carbon-intensive sectors.



This would provide a far more accurate picture of Britain's true carbon footprint; deter carbon offshoring; ensure a level playing field for UK and overseas firms; and incentivise those overseas suppliers to lower their own carbon costs if supplying goods to the UK market. It would reduce global carbon emissions, and establish Britain as a policy leader ahead of the COP26 climate conference in November.

WHY OFFSHORING ENERGY EMISSIONS IS THE WRONG POLICY

Britain's new legal commitment to cut greenhouse gas emissions to net zero by 2050 carries with it Herculean responsibilities to decarbonise the energy, transport, industry and housing sectors within 30 years. Yet a key flaw of this legislation is that it does not address the increasing offshoring of emissions connected with the consumption and importing of raw materials to supply UK industry, or the generation of imported electricity by fossil fuel fired power stations in Europe.

CASE STUDY 1: BRITAIN'S DIRTY ENERGY IMPORTS

Back in 2017, the Centre for Policy Studies published *The Hidden Wiring*, the first think tank paper to highlight Britain's increasing dependence on energy imports, via undersea interconnectors.¹

Britain is now importing a tenth of its electricity, after yet another undersea interconnector was opened with Belgium in 2019. This is the highest figure on record – and these imports look set to double by 2030 as more power plants in Britain are closed and more undersea cables are put in place.

Interconnectors can be a useful way of delivering secure and cheap supplies across Europe, given that they can be used to both import and export electricity. But in Britain's case it is increasingly one-way traffic. For example, in the 12 months to March 2017 the UK imported 17.22 terrawatt hours (TWh) of electricity but only exported 2.78 TWh.²

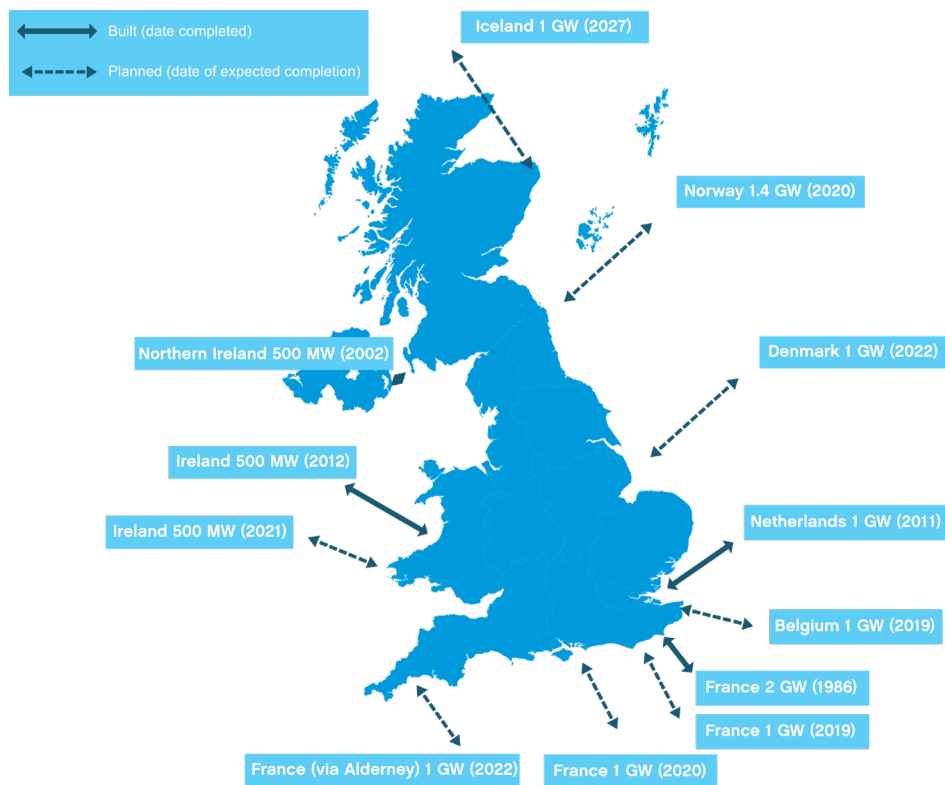


Figure 1: Existing interconnectors and those at various stages of planning – 2018

As we pointed out in 2017, one of the problems with the interconnector strategy is that European nations are also closing old, polluting power plants, meaning that we will over the coming years be relying on more electricity imports from a tighter market, due to falling margins of spare electricity supplies across Europe.³

Yet another major problem is the way that this approach disguises the carbon emissions involved – and indeed incentivises Britain to purchase dirtier electricity. Imports via interconnectors are not subject to Britain’s Carbon Price Floor or network transmission charges. This obviously gives such supply a significant competitive advantage.

HOW INTERCONNECTORS OFFSHORE UK EMISSIONS INTO EUROPE

The result of this is a system built on hypocrisy. The UK claims an emissions reduction victory at home – but this is partly because the interconnectors allow it to effectively offshore carbon emissions to the rest of the EU.

Last year, for example, ministers and environmental groups heralded the claim that renewable energy had for the first time on record outperformed fossil fuels in the supply of British electricity over a quarter.⁴ But no mention was made of imported electricity and its carbon footprint.



In recent years, Britain's main suppliers via the interconnectors have, overwhelmingly, been France and the Netherlands. Thanks to France's world-leading nuclear programme, its emissions from electricity generation are among the lowest in the world. But the Netherlands is a different story.

Recent modelling during periods when there has been no coal generated electricity from the remaining British plants found the largest share of coal-originating electricity imports came from the Netherlands via its interconnector with the UK. If the extent could be precisely measured, then the claims about Britain having liberated itself from coal would face serious challenge.

The Netherlands will close its remaining coal-fired plants, but not until 2030. And it will continue to generate the majority of its electricity from gas, which also produces greenhouse gas emissions – as will neighbouring Belgium.

But it is not just the Netherlands. Germany, until 2011, obtained a quarter of its electricity from nuclear energy, from 17 atomic reactors. But a moral panic in the wake of the Fukushima disaster saw it promise to phase out nuclear power by 2022.

From the point of view of protecting the planet, this was exactly the wrong approach – especially since the shortfall was made up primarily via coal-fired production.

Between 2011 and 2015 Germany opened 10.7GW of new coal-fired generation. This is more new coal capacity than was constructed in the entire two decades after the fall of the Berlin Wall. This resulted, according to the latest estimates, in 36.2 megatons/year of extra greenhouse gas emissions and 1,100 deaths due to air pollution.⁵

Currently, nuclear energy provides around 14 per cent of Germany's electricity, while 38 per cent of its electricity is still generated from coal, the majority from burning lignite.⁶ Though Germany plans to phase out generating electricity from coal, this will not now occur until 2038. Its latest 1.1GW coal power plant at Datteln will start generating this year, despite protests.

In 2015 the UK imported 8.2TWh of German electricity via interconnectors with Belgium and the Netherlands.⁷ It is impossible to say how much of this was coal-fired energy, but it is hard to see how it did not make up a very significant proportion.



The overall picture is that Britain's increasing demand for electricity from Europe will largely be met by fossil fuel generation, at least in the short to medium term – even the French are now turning away from nuclear, with President Macron promising to cut nuclear's market share to 50 per cent, with gas likely to claim a bigger market share as a result.⁸

But given that those imports do not have to pay the British Carbon Price Floor tax or transmission charges, this gives carbon-intensive electricity imports and overseas power plants a clear and unfair market advantage.

During Britain's "coal free" period in late May 2019, modelling found that the largest share of coal-generated electricity imports would have come from the Netherlands, which produced 535.8 gigawatt hours (GWh) of electricity from its coal fired plants over this period. The Netherlands exports 8 per cent of its electricity to Britain, so we can make a rough assumption that around 40.4 GWh of Dutch coal-fired generation aided the UK's "coal-free" fortnight.⁹

Though this is analysis over a very short period involving just one interconnector it highlights significant flows of coal-fired electricity into Britain; proper reporting of these flows from all our interconnectors (including gas-generated electricity)

would show a significant proportion of these imports being generated by these fossil fuels.

OFFSHORE EMISSIONS ARE SHROUDED IN UNCERTAINTY

The cross-border flow of fossil fuel generated electricity (particularly coal) within Europe is considerable, especially between Germany, France, the Netherlands and Belgium. Yet energy ministers have claimed it is impossible to trace, report and disclose the original fuel sources of the electricity which is imported to the UK by interconnector.

In an answer to a Commons Parliamentary Question in 2016, the then energy minister, Jesse Norman MP, stated: "It is not possible to trace the precise source of the electricity transported through interconnectors; the electricity that we import will have been produced by the mix of generation technologies connected to the exporting country's transmission network. The precise generation mix that provides the imported electricity at any point in time will depend on a complex set of factors and, in particular, will vary depending on the characteristics of the exporting market."¹⁰

But this is simply not true. The UK is not the only country to maintain live statistics on the exact proportion of its energy



mix coming from particular sources – including, of course, the interconnectors. At precisely the time of writing, for example, I can see that demand in Britain is 40GW, of which wind is producing 10GW, solar 3.5GW, coal 1.3GW and the interconnectors 4GW between them. In France, by contrast, demand is 66GW, of which nuclear is providing 47.5GW, hydro 9GW, gas 8GW and so on – with another 11GW of indeterminate origin being sent for export.¹¹ However, it is wrong to assume that all of the UK's imports of French electricity are from atomic power.

It may not be possible to match each particular watt imported to Britain to a particular power station. But it should surely be possible either for the generating countries to note the origins of the electricity being exported – or simply for the UK to apply a “carbon weighting” based on the generating blend within the exporting country at that moment, or else over the course of that particular day, month or year.

Encouragingly, the Government has for the first time announced that it will examine how “we can cut our emissions without seeing them exported elsewhere”, as part of a new Treasury-led review into its commitment to deliver net zero carbon emissions by 2050.¹²

CASE STUDY 2: HOW UK RAW MATERIAL IMPORTS HIDE THE DIRTY TRUTH

It is not just in the electricity market that Britain is attempting to wean itself off coal. Yet though the UK's ageing coal-fired power stations will all be closed by 2025, there will remain a market in Britain for between five and six million tonnes of industrial coal to supply the domestic steel, cement, brickmaking, chemicals, domestic fuel, horticulture and other sectors.

For example, the steel sector requires high-grade coals to operate blast furnaces at Scunthorpe and Port Talbot. Despite calls by the Government for new steel-making processes, it is unlikely that the blast furnace technique for raw steel production in Britain will change before 2040 at the earliest.¹³

If you asked Extinction Rebellion, their answer would be to shut down the industry completely. Yet if this industry did not exist, we would simply have to import these products from elsewhere (wind turbines, after all, are largely made from steel). In any event, the Government says it is committed to encouraging and helping maintain a competitive steel industry in the UK as part of its Industrial Strategy.



KEY COAL IMPORT, TRANSPORTATION AND PRODUCTION STATISTICS

In 2018 UK coal demand stood at 11.9 million tonnes.

Imported coal made up 80 per cent of UK supply at 10.1 million tonnes – up 20 per cent on 2017. The majority of coal imports came from four countries: 46 per cent from Russia (4.7 million tonnes), 35 per cent (3.5 million tonnes) from the USA, 6 per cent (0.6 million tonnes) from Australia and 6 per cent (0.6 million tonnes) from Colombia.

UK miners supplied just 2.6 million tonnes – the remaining demand was met by taking coal from existing domestic stocks. After the last coal-fired power plants close by the 2025 deadline, UK coal demand looks set to stabilise with an annual market of between five to six million tonnes for industrial customers.

Addressing the full scope for carbon offshoring in Britain's industrial supply chain is beyond the scope of a relatively brief paper such as this. It is worth pointing out, however, that there are all sorts of ways in which the full cost of emissions is not accounted for. China, for example, is building new coal-fired power stations equivalent to Europe's

entire existing capacity.¹⁴ Analysis by the Brookings Institution finds that coal is likely to remain the dominant fuel source in India for the next decade and likely far longer.¹⁵

If Britain genuinely wants to drive down global emissions, rather than offshoring them – as well as providing a level playing field for our own companies – it would obviously help to take account of whether raw materials, intermediate components or finished products have been produced using dirty energy, especially in carbon-intensive sectors of the economy.

In this paper, we will focus on one emblematic example: the importing of coal.

It is fair to say that Whitehall is not keen on coal: applications in the UK to develop new mines have been repeatedly delayed by the Ministry of Housing, Communities and Local Government, even when they receive local planning approval. Yet the result is not that we are using less coal, but that we are transporting it over from Russia, the USA, Australia and Colombia. This represents a significant offshoring of transportation emissions – without even considering issues around environmental or employment standards.



New data (Figure 2) shows the greenhouse gas emissions across the stages of coal transportation and import to the UK compared with securing supplies from local mines in Britain.¹⁶ The three stages are movement to port of export, shipping and delivery from port of import; the handling at each stage and the total emissions per scenario. This is reported as kilogram CO₂e per tonne of coal.¹⁷

	Mine	Emissions (gCO ₂ e/tonne)
Imported	Kuzbass via St. Petersburg	56,453
	Kuzbass via Murmansk	67,738
	Bailey, USA	33,933
	Cerrejon, Columbia	31,577
	Ravensworth, Australia	73,480
Domestic	Shotton, UK	10,122

Figure 2. Estimated CO₂e transportation/handling emissions of importing coal vs coal from British mines

Russian coal imports

Transporting coal to a British end user, such as the Scunthorpe steel works, from mines in Siberia (Kuzbass), via St Petersburg emits approximately 457 per cent more in CO₂e than transporting coal mined at Shotton in the North of England (56,453 compared to 10,122 CO₂e/tonne

of coal). Alternatively, coal from Kuzbass but via Murmansk – the preferred route when the Baltic’s St Petersburg routes are frozen – emits 569 per cent more in CO₂e than transporting British mined coal (67,738 compared to 10,122 CO₂e/tonne of coal).

US coal imports

Transporting coal from the large Bailey mines in Pennsylvania (USA) emits 235 per cent more in CO₂e emissions than British coal (33,933 compared with 10,122 CO₂e/tonne of coal).

Australian coal imports

Transporting coal from the Ravensworth mine in Australia emits 625 per cent more in CO₂e emissions than transporting British mined coal (73,480 compared to 10,122 CO₂e/tonne of coal).

Colombian coal imports

Transporting coal from the Cerrejon mine in Colombia to Britain emits 211 per cent more in CO₂e emissions than transporting British mined coal (31,577 compared to 10,122 CO₂e/tonne of coal).

It is important to stress here that we are only talking about the carbon costs involved in transporting coal. Obviously, there will also be emissions generated by producing the coal, and far more

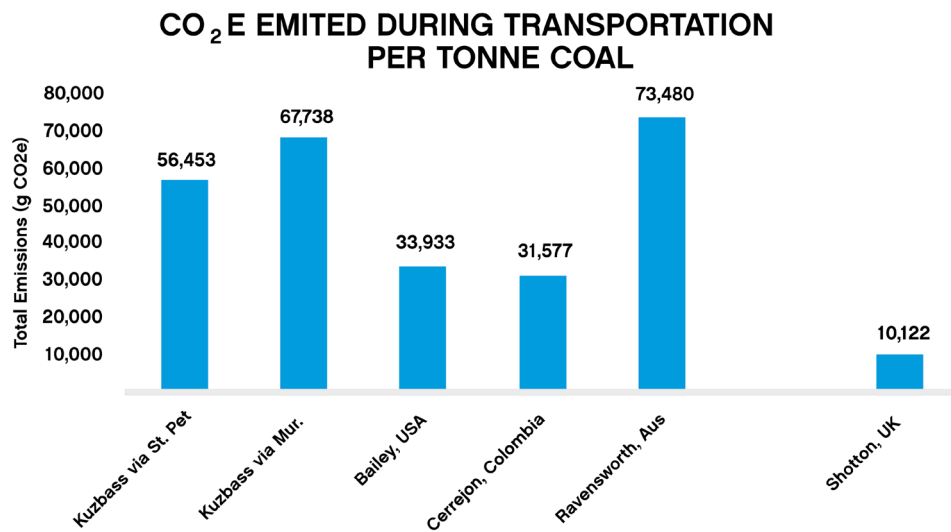


Figure 4. CO₂e emissions of importing coal compared with transporting domestic supplies

significantly by burning it – in the absence of carbon capture and storage technology.

Likewise, this report does not claim that transportation emissions should be the only factor considered – in a market economy, purchasing decisions should ultimately be based on price. The point here is that for such carbon-intensive industries, the market is not a proper market unless it includes a full picture of emissions costs.

SHIPPING EMISSION RULE CHANGES AND RISING TRANSPORTATION COSTS

One reason this is particularly important in terms of coal is that, as is fairly obvious, it is an extremely bulky item – accounting for a quarter of all global “dry bulk”

shipping, ahead of grain and behind only iron ore.¹⁸

Powered by the dirtiest elements of crude oil, shipping is one of the world’s most polluting industries. New global International Maritime Organisation (IMO) rules to be introduced next year are designed to reduce sulphur dioxide (SO_x) emissions from ships which requires either the retrofitting of exhaust scrubbers to existing and new vessels or the use of lower sulphur fuel oil.

The “IMO 2020” rules propose reducing the industry’s greenhouse gases by at least 50 per cent compared with 2008. They are hugely significant – but while reducing emissions, they will also increase international dry bulk shipping costs in the short to medium term. This



will help drive up the cost of imported coal especially as the shipping tonnage typically used for this market will need to make expensive changes to adhere to the IMO proposals.

Sector observers have suggested this could increase costs on certain international coal transportation routes by between \$1 to \$10 per metric tonne. Deep concerns exist about the availability in key global maritime locations of lower sulphur fuel so older vessels can comply and maintain their route schedule and delivery commitments. Overall, IMO 2020 will have cost implications for most coal shippers which will force up costs for the end user, such as steelworks and other customers in the UK. It is an example both of the costs that will be involved in cutting carbon emissions, and the careful balance we have to strike in doing so without undue harm to our economy.

CONCLUSION: WE NEED A CARBON BORDER TAX FOR BRITAIN

There has been much discussion recently about the introduction of a carbon tax in the UK. In fact, Britain already has a carbon tax – but one which only covers CO₂ emissions from the electricity generating sector. It has, however, been extremely successful in forcing coal-fired

power stations out of the UK's energy mix, growing low-carbon generation and helping the country meet its carbon reduction and clean energy targets.¹⁹

Efforts are underway to model what broader carbon taxes would look like – yet it will be hard to devise a tax which exactly targets the carbon embedded in each product we consume, such as meat, bread or milk: such an undertaking would require an in-depth examination of the supply chain of every service we use.

This paper argues that the next-best option is to target particular carbon-intensive goods and supplies which are imported into Britain which also generate large transport emissions. It is in this domain where Britain is increasingly offshoring emissions (and increasing them).

Britain has, in recent years, undergone significant “carbon leakage”. This is when, as a result of stringent climate policies, companies move their production to other countries with less ambitious environmental measures – which can actually lead to a rise in greenhouse gas emissions. It is folly to tax carbon in the domestic market only for the same emissions, or greater, to be generated overseas.



Dealing with the worst carbon-intensive imports – a suggested list would include steel, coal, chemicals, cement, fertilisers and electricity – would not only help put an end to carbon leakage but also cut Britain's global greenhouse gas footprint. It would also establish a clear British policy lead on climate change as the COP26 summit approaches.

HOW COULD A BRITISH CARBON BORDER TAX WORK?

A new British carbon border tax would not need armies of bureaucrats examining ships and their cargoes at ports of entry or coastal power lines. One simple option would be to calculate it based around the composition of the energy grids in the country of export origin, given that many of these carbon-intensive products require large amounts of electricity to produce.

This information, as mentioned above, is well known, regularly updated and documented via respected global bodies such as the International Energy Agency. For example, China relies on coal to generate the majority of its electricity (60 per cent). It exported 0.5 million tonnes of steel into Britain in 2018. Germany relies on coal to generate 38 per cent of its electricity and exported one million tonnes of steel into Britain last year.²⁰ The

rest of Germany and China's electricity grids are primarily made up from natural gas, nuclear and renewables.

Similar to China, Australia generates 60 per cent of its electricity from coal and also, as already highlighted, exports it to Britain – as does the USA which relies on fossil fuels to supply 64 per cent of its electricity (28 per cent from coal).²¹

Consequently, a carbon calculation could be made and applied to imports based on the respective carbon intensity of the respective countries' energy grids and thus the fuels they use to power their manufacturing, chemicals or mining sectors.

HOW COULD IT WORK FOR ELECTRICITY IMPORTS?

As mentioned above, imports of carbon intensive electricity through interconnectors from Europe should be taxed based on the exporting states' electricity generation mix and its respective carbon intensity, either on a real-time or overall basis. If the Government maintains it cannot trace the fuel-generating source of European electricity imports due to cross-border flows, then an average levy should be agreed based on the electricity mixes of the respective states involved.



WOULDN'T A CARBON BORDER BE PROTECTIONIST?

No. The recent Conservative Party manifesto declared that “free markets, innovation and prosperity can protect the planet”. This is the perfect case study.

Indeed, not addressing carbon intensive imports means that Britain will continue to hide emissions off balance sheet, encouraging other countries to pollute while claiming virtue. At the same time, we will damage our own economy via carbon leakage. Retaining the status quo is in effect protecting and encouraging polluting exporters – a reverse protectionism for polluting industries in other countries, which increases global emissions.

A carbon border tax would expose and reduce carbon intensive imports, encouraging the private sector in the UK to invest in cleaner domestic industries and boost growth and skilled jobs in precisely the places where the Government is keen to see investment, such as northern England and the West Midlands. It would also generate significant new revenue streams for central government from the monies raised through the border tax. Though this would reduce over time as carbon-intensive imports declined, it would still represent potential significant

flows in its initial period – which could, for example, be used to compensate consumers for any higher bills via reductions to consumption taxes.

It would not require any extra taxes for the UK or sector-specific subsidies. And it would preserve free trade in these sectors while ensuring that there was a genuine level playing field between Britain and its trading partners.

HOW COULD A BRITISH CARBON BORDER TAX HELP REDUCE GLOBAL GREENHOUSE GAS EMISSIONS?

If Britain were to take steps to introduce a carbon border, then exporting and polluting global states would either be incentivised to decrease the carbon intensity of their own industries and electricity grids, or to follow it with their own similar policies. If enough states did so, then the pressure on exporting states to slash the carbon intensity of their own energy grids would become ever more significant – increasing their export competitiveness while at the same time reducing global greenhouse gas emissions.

Concern about climate change is set to determine large parts of government policy for the foreseeable future. The UK is the world's first leading economy to



legislate for Net Zero carbon emissions by 2050. This overarching policy will affect all major policy areas. It will dictate how Britain conducts global business and diplomacy in the run-up to November's COP26 climate summit in Glasgow – and well beyond.

But we can only deliver global policy leadership so long as our domestic policy is robust and transparent.

Britain now has a unique opportunity both to lead in this area, boost private investment, jobs and competitiveness and further reduce carbon emissions. The Treasury's new review into the Net Zero carbon commitment must examine how the UK can maximise economic growth opportunities.

Polluting imports and the offshoring of energy emissions can and should be tackled and replaced, where possible, with cleaner, more competitive production – either in Britain or in the countries with which we trade.

Establishing a new British carbon border tax in these key sectors would help reduce global emissions and better support domestic industries which have endured damaging carbon leakage. The alternative is more hidden pollution, fewer jobs, insecure power supplies and more global emissions.



Endnotes

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ABOUT THE AUTHOR

Tony Lodge is an energy and infrastructure analyst. His past publications include 'The Hidden Wiring – How electricity imports threaten Britain's energy security' (2017), 'The Great Green Hangover – How to cut bills and avoid an energy crisis' (Centre for Policy Studies, 2015), 'Rail's Second Chance – Putting competition back on track' (Centre for Policy Studies, 2013), 'The Atomic Clock – How the Coalition is gambling with Britain's energy policy' (Centre for Policy Studies, 2012) and 'Rescuing Renewables – How energy storage can save green power' (Bow Group, 2010)

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