

THE MISSING LINK ESTABLISHING STRONG UK SUPPLY CHAINS FOR LOW CARBON INDUSTRIAL PRODUCTS

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With thanks to our membership for their input and the following for their additional contributions: British Ceramic Confederation, British Glass, Encirc, Hanbury Strategy, Liberty Steel, Materials Processing Institute, Skanska, Swansea University, Tarmac, and UK Steel. Individual recommendations cannot be attributed to any of the above.

ALDERSGATE GROUP

The Aldersgate Group is a politically impartial, multi-stakeholder alliance championing a competitive and environmentally sustainable economy.

The Aldersgate Group is an alliance of major businesses, academic institutions, professional institutes, and civil society organisations driving action for a sustainable and competitive economy. Our corporate members, who have a collective turnover in excess of £550bn, believe that ambitious and stable low carbon and environmental policies make clear economic sense for the UK.

Our policy proposals are formed collaboratively and benefit from the expertise of our members who span a wide range of industry sectors and public interests. Our breadth and collegiate approach allows us to formulate progressive policy positions to benefit all organisations and individuals.



Recommendations made in this report cannot be attributed to any single organisation and the Aldersgate Group takes full responsibility for the views expressed.

EXECUTIVE SUMMARY

Net Zero: Opportunity beyond the challenge

To achieve net zero, the UK's heavy industries – responsible for around 16% of the nation's overall emissions¹ - will need to reduce their carbon intensity by at least two-thirds by 2035, and 90% by 2050.² While there are significant challenges involved in reducing emissions in these carbon intensive sectors, the timely and strategic decarbonisation of the UK's foundation and manufacturing industries comes with significant opportunities beyond emissions reductions, from increased economic activity and job creation to investment in skills, resilient supply chains and new export opportunities.

As of the COP26 summit last year, 136 countries have committed to net zero.³ To establish low carbon economies, they will need a range of industrial goods and services, such as green steel for wind turbines and electric vehicles, recycled glass in energy efficient glazing to insulate homes, and low carbon cement to build the next generation of commercial buildings and large infrastructure projects. This presents a significant opportunity to those able to deliver low carbon materials, products and services. By establishing strong supply chains for low carbon industrial products in the UK, these benefits can be realised domestically. This will also enable domestic producers to benefit from greater access to global low carbon markets while also meeting a greater level of domestic and international demand themselves.

The social and economic importance of low carbon industry and manufacturing in the UK

The UK's heavy industries already contribute £170bn to the economy and employ over 2.6 million people in areas primarily outside of London and the South East.⁴ This means an expansion into low carbon industrial markets will deliver nationwide economic benefits that directly support the missions of the government's Levelling Up White Paper, particularly to reverse the historic decline of manufacturing in the UK⁵ and stimulate investment in areas outside of the greater South East.⁶

Moreover, delivering low carbon industrial products will benefit sectors further along industrial value chains. For example, an automotive sector with greater access to locally produced green steel, low carbon glass and recycled rubber will be better prepared to meet rapidly expanding demand for zero emissions vehicles (with the UK market alone set to double in 20227). Similarly, a construction sector less beholden to imports of critical resources and products, such as bricks and prefabricated housing components, will be better equipped to deliver national infrastructure plans in a timely and costefficient manner.

A lower carbon, more circular economy also presents significant opportunities in manufacturing. Tyre, automotive, electronics and pharmaceutical producers could all harness greater levels of renewable energy, recycled materials, and resource efficiency **to provide the next generation of low carbon products and services to domestic and international markets alike.**

1 > BEIS (March 2021) UK Industrial Decarbonisation Strategy p.16

3 > Energy and Climate Intelligence Unit, Data-Driven Enviro Lab, New Climate Institute, Oxford Net Zero (2021) <u>Net Zero Tracker</u> [accessed 06/01/2022] 4 > BEIS (March 2021) Industrial

Decarbonisation Strategy p.16

5 > DLUHC (February 2022) Levelling Up the United Kingdom pp.xxi

7 > Business Green (4 January, 2022) <u>'Rapid</u> Growth': UK electric vehicle sales predicted to double in 2022 [accessed 09/02/2022]

^{2 &}gt; Ibid p.8

^{6 &}gt; Ibid Kingdom pp.ii



Establishing strong UK supply chains for low carbon industrial products

However, through a coalescence of high levels of cheap and carbon intensive imports, high industrial electricity prices, and comparatively low levels of public investment, the UK's heavy industries are finding it difficult to compete with international firms. The benefits of a net zero economy will not be realisable if the UK's heavy industries are unable to compete on a level playing field, as the UK will be forced to increasingly rely on imports.

Though a framework for decarbonising heavy industries has been put in place, to establish strong domestic supply chains for low carbon industrial products, government must go further to ensure that industry remains competitive and can invest in low carbon production. Going forward, government must provide detailed sectoral pathways to net zero for the UK's heavy industries and manufacturing sectors, with a view to providing certainty around the availability and cost of renewable electricity, low carbon fuels, and Greenhouse Gas Removal (GGR) technologies.

Government must also prioritise skills and innovation support to ensure that the UK is equipped to deploy current low carbon technology and develop new options for decarbonisation where they don't yet exist. The success of the offshore wind sector – in some areas of the UK of late, but particularly in countries such as Denmark – has demonstrated the important role of skills and innovation investment in creating jobs, driving down the cost of new technologies and attracting investment.

Lastly, it is crucial that government

incentivise greater retention of valuable waste materials, such as scrap steel, cobalt and lithium, that can ease supply chain vulnerabilities, and be used to produce high value secondary products, from recycled electric vehicle batteries to new train tracks.

SUMMARY OF POLICY RECOMMENDATIONS

Steps government should take to establish strong UK supply chains for low carbon industrial products.

Competitiveness and Industrial Decarbonisation:

Provide robust sectoral pathways for the decarbonisation of the UK's foundation industries to incentivise investment in low carbon production processes.

Government should build on the Industrial Decarbonisation and Net Zero Strategies to give a clear idea of the extent to which renewable electricity, alternative fuels and Carbon Capture, Utilisation and Storage (CCUS) will be available to industry, and at what cost. While their availability remains limited, a 'priority use framework' for low carbon fuels and technologies, such as green hydrogen and CCUS, should be established. To enable businesses to meet operational costs. Government should also finalise the business models for CCUS and hydrogen, ensuring that both clustered and dispersed sites are eligible for funding.

Put in place measures to reduce UK industrial electricity prices by accelerating investment in grid development and low-cost renewables (such as solar and on- and offshore wind), supporting continued growth of interconnection and storage, and establishing a market for long-term, zero carbon and tradable electricity contracts.

Electrification is a low regret, established route to industrial decarbonisation. However, the UK's heavy industries pay 25–44% more for their electricity than key European competitors.⁸ To address this, the Government needs to take measures to cut both the wholesale price and carbon intensity of electricity in the UK, whilst also taking bespoke measures targeted at making electricity prices more affordable for heavy industry.

To deliver affordable, low carbon electricity prices in the UK, the Government must maintain a policy framework that attracts investment in low-cost renewable energy, whilst supporting timely and coordinated grid development. The confirmation of annual Contracts for Difference (CfD) auctions for renewable energy projects is welcome. Going forward, the investment climate could be further improved by providing forward visibility on the volume of projects being auctioned each year, and greater clarity on the timing of the

next Crown Estate leasing round. Finalising the review of the Energy National Policy Statement is key in enabling timely planning consent for the transmission infrastructure needed to support the connection of new offshore wind projects. In addition, improving co-ordination between the planning process and the roll-out of future transmission and generation infrastructure (both onshore and offshore) will be key to minimise delays in project delivery.

Accelerating investment in interconnection and storage would also be beneficial as it can lower wholesale electricity prices, as well as boost energy security. Each 1GW of interconnection capacity can reduce UK wholesale electricity prices by 1-2%.9 Meanwhile, standardised structures of long-term, tradeable zero carbon electricity contracts should be made available to industrial consumers. These long-term, zero carbon and tradable electricity contracts can mitigate exposure to the indirect costs of carbon prices and the volatility of fossil fuel prices, whilst creating certainty of demand for low carbon generators.

9 > Ibid p.22

^{8 &}gt; UCL, commissioned by the Aldersgate Group (September 2021) *Delivering Competitive Industrial Electricity Prices in an Era of Transition* p.7

3

Put forward tangible proposals for a Carbon Border Adjustment Mechanism (CBAM) to prevent high carbon imports from gaining a growing market share at the expense of low carbon goods produced by UK firms.

As border adjustments are complex policy mechanisms that may take time to be implemented, **in the interim the UK should collaborate** with industry to review and restore relevant tariffs on imports of industrial products that were lost upon the UK's departure from the European Union, as has been done with quotas on steel imports. Government should investigate a range of options to grow the demand for low carbon products. Alongside the development of a proposal for a CBAM, government should finalise the consultation on product standards with a view to introducing mandatory product standards with targets on embodied and lifecycle emissions, and the recycled content of products sold on the UK market.

Careful **consideration is needed to understand how a CBAM and product standards can interact with one another.** This will ensure that the UK has a range of options at its disposal to drive demand while creating a level playing field between domestic and international producers.

It is also vital that standards on recycled material content are applied to materials that exist in abundance, or are presently being exported/ sent to landfill. This will ensure that inefficient waste handling is discouraged, without creating unrealistic standards on materials that are scarce. To this end, **product** standards should reflect the availability of different materials on the UK market, and be introduced over time to maximise levels of compliance. Standards and targets should be tightened over time, as options for decarbonisation become more readily available. To ensure we can measure lifecycle emissions by the time a target or standard is introduced, it is vital that government expedite the introduction of mandatory carbon reporting and verification mechanisms.

In public and private procurement contracts, implement requirements for a higher percentage of goods procured to be low carbon in order to drive demand for low carbon goods and incentivise the UK's heavy industries to pivot to low carbon production.

These requirements should place a maximum threshold on the embodied carbon level and lifecycle emissions of goods and services procured. With UK firms well-poised to deliver low carbon industrial products ahead of international competitors, low carbon procurement rules can maximise the opportunities for domestic workers and firms. To ensure that domestic projects developed with taxpayer funding continue to benefit the UK, public procurement contracts should include a clause for the retention of a share of the intellectual property developed by projects in receipt of taxpayer funding and/or tax relief.

Innovation:

Increase innovation funding to facilitate fuel switching and the development of new low carbon technologies where routes to electrification and low carbon production do not yet exist.

This should build on existing mechanisms such as the UK Research and Innovation (UKRI) Transforming Foundation Industry fund, and the Department for Business, Energy and Industrial Strategy (BEIS) Net Zero Innovation Portfolio (NZIP), which have kickstarted industrial innovations such as the ultra-low carbon glass produced by Glass Futures. In particular, this should address options for decarbonisation and fuel switching where they are currently limited or unproven at scale, such as in the production of chemicals (including ammonia for hydrogen, which is vital to the broader decarbonisation of the UK economy).

To support the greater adoption of best practices across industry, HM Treasury should hypothecate revenue from the sale of UK Emissions Trading Scheme (ETS) emissions allowances to fund low carbon production methods.

Many of the UK's industrial and manufacturing sectors receive comparatively less public funding than firms in key competitor countries (as discussed in Section 1). By using the revenue raised by the sale of emissions allowances in the UK ETS to facilitate decarbonisation in that sector (for example by investing in grid development, fuel switching and electrification, or to directly cover operational expenditure (OpEx) spending), government can increase the pace and cost-effectiveness of industrial decarbonisation and improve competitiveness. An industrial base able to decarbonise more quickly will also enable ETS market participants to better comply with a more ambitious ETS, with fewer free and overall emissions allowances. As BEIS looks to consult on aligning the UK ETS with net zero, it is vital that industrial producers are able to respond to the carbon price signal (thereby preventing carbon leakage).

In addition to supporting decarbonisation of industrial clusters and the development of new technologies, government must establish a credible plan for decarbonising off-cluster industrial sites.

This should involve basing subsidies on avoided CO₂ emissions to incentivise more circular practices, removing existing barriers to fuel switching, such as levies on alternative fuels that cannot be reclaimed by industry, and creating business models for low carbon hydrogen, waste biomass, and CCUS, for which dispersed and clustered sites will be eligible.

Dispersed industrial sites will have decreased access to low carbon infrastructure, such as hydrogen pipelines, than firms operating in industrial clusters. To develop robust low carbon supply chains across UK industry, it is vital that dispersed sites are able to utilise all decarbonisation options, such as switching to more accessible low carbon fuels, including sustainable biomethane produced on-site.

Skills:

BEIS and the Department for Education (DfE) should work with industry, unions, and Local Authorities (LAs), to design skills centres to train and reskill workers in areas that are essential to delivering a net zero economy.

Central government should work closely with local experts to **identify areas in the UK that are best placed to develop particular industrial supply chains due to local strengths,** and would therefore benefit most from the establishment of relevant skills centres. As recommended by the Green Jobs Taskforce, **government should work with employers, sector bodies, unions and workers to ensure that business and skills plans for the net zero transition are in place** to support such developments.



Simplify and expand the Apprenticeships Levy and amend the Lifetime Skills Guarantee to allow participation from people that already have a Level 3 qualification, and remove restrictions that limit participation to Level 3 or below.

It is crucial that government maximise the opportunities for workers to gain low carbon skills or transition from carbon intensive sectors. Expanding the Lifetime Skills Guarantee can increase the number of workers able to gain the qualifications needed to transition from high to low carbon industrial sectors. As recommended by the Green Jobs Taskforce, skills vouchers, training sabbaticals and paidtime-off-to-train arrangements would provide workers with the flexibility needed to learn these green skills. The additional funding allocated to the National Skills Fund in the last manifesto should be used to finance workers taking on courses and, where needed, compensate employers for temporarily losing employees taking on reskilling opportunities.¹⁰

Resource Efficiency:

Offer tax relief on investments that create cheaper, more efficient practices for recovering and sorting materials to stimulate investment in the recovery of valuable resources that already exist within the UK.

To ensure that such investments lead to intra-UK trade across value chains, government should utilise its position as an intermediary – or 'matchmaker' – to establish collaboration between manufacturers and waste management and sorting companies, who would benefit from a guarantee of supply and demand for recycled materials, respectively.

¹⁰ > Green Jobs Taskforce (July 2021) Report to Government, Industry and the Skills Sector, p.62



Use tax incentives, such as reduced business rates on waste materials sold in the UK market, to incentivise waste management and sorting companies to supply valuable scrap and waste materials to UK industry rather than the export market.

This is particularly important where materials are recovered at a high rate (such as scrap steel), but not retained in the UK market. Such measures should be a part of wider tax reform aimed at bringing the UK's tax system into alignment with net zero. For example, where resource efficient products struggle to compete on upfront cost, VAT should be adjusted to ensure greater price competitiveness with high carbon alternatives, reflecting their longer-term environmental and economic benefits.



Implement an expanded Deposit Return Scheme (DRS) and accelerate the roll-out of Extended Producer Responsibility (EPR) schemes to incentivise the design and greater B2B trade of recyclable waste products.

To increase the retention of valuable materials where they already exist on the UK market, a DRS should be clarified in the near future, with a focus on introducing schemes in areas where progress may not be sufficiently made by the introduction of EPR schemes and eco-design criteria. Government should explore the options for expanding the DRS to cover products such as tyres to incentivise the remanufacture of materials often burned or shipped abroad as waste.

The roll out of EPR schemes should be accelerated beyond packaging to incentivise the development of industrial products that are easier to re-use and recycle. To be effective, EPR schemes will need ambitious fee modulation mechanisms that charge more for products that are harder to sort and recycle, alongside close monitoring of performance. Beyond packaging, the DRS and EPR should be expanded to tyres and batteries. Work with the British Metals Recycling Association and major industrial players to establish mandatory sustainability criteria for the export of waste and scrap to create a level playing field between domestic and international markets for waste materials.

At present, waste materials sold as indiscriminate bundles to other countries do not have to meet the same sustainability criteria as those sold directly to UK industry. This can make exporting specific materials or indiscriminate bundles of waste cheaper than meeting the regulatory standards needed to sell to the UK market. By developing similar criteria for exported materials, government can improve both the UK's reputation for the responsible handling of its own waste, and incentivise the retention and reprocessing of valuable materials. Greater access to locally supplied secondary materials would benefit domestic manufacturers, who could grow their range of low carbon products such as re-treaded tyres, recycled glazing, or goods made with scrap steel.

INTRODUCTION

The UK has committed to achieving a net zero economy by 2050 and reducing emissions by 78% by 2030, compared to 1990 levels. To achieve these ambitions, it is vital that UK's manufacturing and heavy industrial sectors, such as iron and steel, chemicals, ceramics, cement, and glass – responsible for around 16% of the UK's total emissions¹⁷ – pursue an ambitious decarbonisation agenda that sees emissions drop by at least two-thirds by 2035, and 90% by 2050.¹²

While a transition to low carbon production presents a challenge for heavy industry, timely and strategic decarbonisation can provide increased job-rich economic activity, enhanced competitiveness, and new export opportunities. Net zero targets have been established by 136 countries and over 3,000 of the world's largest businesses, covering 85% of the world's population and over 90% of global GDP.13 This international movement towards a net zero economy - which at COP26 saw the UK, US, India, China and the EU, among others, commit to investing billions in clean technologies over the next decade¹⁴ - will require a global infrastructural transformation not seen since the industrial revolution. This will create significant demand for low carbon products, from green steel for the erection of wind turbines and production of zero emissions vehicles, to recycled glass for energy efficient glazing to insulate homes, and low carbon cement for building the next generation of commercial buildings and large infrastructure projects.

However, the UK currently imports a significant level of low cost, high carbon industrial goods and services, which has created a dependence on global supply flows and severely undermined the ability of low carbon domestic producers to compete on a level playing field. With production moving offshore, often to jurisdictions with fewer constraints on emissions, this has led to an increase in the UK's consumption emissions, which is ultimately incompatible with the government's net zero agenda.

The UK's industrial capacity does not need to reach a level at which it wholly satisfies domestic demand, and the UK should utilise the best, most costeffective low carbon technologies and products from across the world to stimulate decarbonisation. This said, **by establishing domestic supply chains for low carbon industrial products in the UK, domestic firms can draw on their historic strengths as technological innovators and successfully pivot to the creation of the next generation of goods and services needed to deliver net zero.** This will ensure that the UK does not forfeit the benefits of its own transition. and instead harnesses the opportunities for growth into rapidly expanding global markets for low emission goods. For example, despite the successful adoption of offshore wind in the UK, which has delivered cost-effective decarbonisation, greater energy security, and cheaper electricity,¹⁵ a lack of policy support and investment in domestic production has led to the associated manufacturing and research and development opportunities fleeing to other countries, where turbines and turbine technology are now produced and imported into the UK (and other markets). This means that despite having the highest level of installed offshore wind capacity in the world and one of the world's leading low carbon steel sectors, the UK has failed to fully reap the job creation and economic benefits of its own low carbon power sector, an outcome that government should seek to avoid repeating.

14 > HM Government (2 November, 2021) World leaders join UK's Glasgow Breakthroughs to speed up affordable clean tech worldwide [accessed 28/11/2021]

¹¹ > BEIS (March 2021) UK Industrial Decarbonisation Strategy p.16

¹² > BEIS (March 2021) UK Industrial Decarbonisation Strategy p.8

^{13 &}gt; Energy and Climate Intelligence Unit, Data-Driven Enviro Lab, New Climate Institute, Oxford Net Zero (2021) <u>Net Zero Tracker</u> [accessed 06/01/2022]

¹⁵ > UCL, commissioned by the Aldersgate Group (September 2021) *Delivering Competitive Industrial Electricity Prices in an Era of Transition* p.7

Moreover, **delivering low carbon industrial products will benefit sectors further along industrial value chains.** For example, **an automotive sector with greater access to locally produced green steel, low carbon glass, and recycled rubber will be better prepared to meet demand for zero emissions vehicles** (with the UK market alone set to double in 2022¹⁶). Similarly, a construction sector less beholden to imports of critical resources and products, such as bricks and prefabricated housing components, will be better equipped to deliver national infrastructure plans in a timely and cost-efficient manner.

To establish stronger supply chains for low carbon products, it is essential that government provide competitiveness support to ensure that the UK's heavy industries have both the capacity and market access to maximise the emissions reduction potential of existing global technologies, and the benefits of producing low carbon industrial products themselves. The retention of critical raw materials will also be key to mitigating dependence on fluctuating global supply flows and the few countries to whom manufacturers are beholden for precious resources. Similarly, by maximising resource efficiency and circularity, producers can decarbonise their supply chains while pivoting to increased production of low carbon high value secondary products. To deliver these goods and services, concomitant innovation and skills support will be essential to enable domestic producers and the UK workforce to create, develop, and deploy low carbon technologies that will provide the basis of the world's net zero economy.

¹⁶ > Business Green (4 January, 2022) 'Rapid Growth': <u>UK electric vehicle sales predicted to</u> <u>double in 2022</u> [accessed 09/02/2022]

1. SUPPORTING THE COMPETITIVENESS OF THE UK'S HEAVY INDUSTRIES TO STIMULATE DOMESTIC PRODUCTION OF LOW CARBON INDUSTRIAL PRODUCTS

The decarbonisation of manufacturing and heavy industry is vital to progressing towards net zero and unlocking the benefits of an expansion into low carbon markets across the economy. Establishing strong supply chains for low carbon products in the UK will stimulate new economic activity and retain and create jobs, be that via increased production of low carbon steel and cement or the production of ultra-low carbon glass for packaging, windows, cars, and pharmaceuticals. A vibrant low carbon industrial sector also offers the strategic benefit of a more resource efficient economy, able to draw on its own capacity and resources at times of crisis, insulating the UK from sudden changes in global supplies of materials or goods, and improving the balance of trade.

Moreover, already accounting for £170bn (9%) of total GDP and providing 2.6 million direct jobs¹⁷ – primarily outside of London and the South East and with salaries 45% higher than regional averages¹⁸ - supporting the competitiveness and prosperity of heavy industry and manufacturing is vital to the UK's broader economic health and the ambitions laid out in the government's Levelling Up White Paper. Should the business environment in the UK render heavy industry uncompetitive, plant closures would result in a direct loss of hundreds of thousands of manufacturing jobs, valuable economic activity, and key export opportunities. Similarly, should companies fail to decarbonise in line with the government's net zero targets, they will risk stranding expensive, high carbon assets.

17 > BEIS (March 2021) Industrial Decarbonisation Strategy p.16

18 > UK Steel (April 2021) *Key Statistics Guide* p.3 To deliver low carbon industrial products and reap the benefits involved, it is vital that the UK's heavy industries are able to maintain and increase their capacity as they decarbonise to expand into the production of new low carbon products. By doing so, the UK can use its position as an industrial innovator to reduce global emissions and meet global demand with low carbon products. This is essential for keeping global temperature increases within a 1.5 degrees trajectory, given that the iron and steelmaking sectors alone are responsible for more than a tenth of global emissions.¹⁹

However, in recent years, the UK's heavy industries have come up against increasing pressure from global competitors, due to higher energy prices and comparatively low levels of public investment. For example, in 2019, industrial electricity prices in the UK were between 25–44% above the EU average²⁰ (depending on the methodology through which taxes and levies are calculated²¹). With many of the UK's heavy

21 > Between 2016 and 2019, reported UK prices increased by 17%, reaching 44% above the EU average. However, it is possible that carbon prices have been double counted to some degree, due to statistical errors arising from complex changes in the approach to compensation, exemptions, and data collection in the UK. Nonetheless, were carbon prices to have been double counted, UK prices in 2019 still stand at 25% above the EU average. For more detail see UCL, commissioned by the Aldersgate Group (September 2021) *Delivering Competitive Industrial Electricity Prices in an Era of Transition*

industries and manufacturing sectors relying at least in part on electrification to decarbonise, this presents a major barrier to both emissions reductions and international competitiveness.

Though UK firms can apply for funding to support their decarbonisation via schemes such as the Industrial Energy Transformation Fund (IETF), public investment remains extremely low in comparison to key competitor countries. For example, the Canadian government recently granted CAD\$800m (c. £462m) to just two steel projects in a bid to establish a robust domestic supply of fossil-free steel.²² Similar trials have been established in China, Sweden and Spain, enabling steel producers in these countries to capture a first-mover advantage by securing a larger share of the global market for low carbon steel.

Moreover, many of the UK's heavy industries produce low value products for export while high value goods are imported. Though UK production does not need to wholly satisfy domestic demand, this leaves a gap between the UK's production and consumption of high value industrial products that UK producers, with the right support, could fill.

22 > Government of Canada (July 30, 2021) Government investing in Hamilton's steel industry to support good jobs and significantly reduce emissions [accessed 11/12/2021] and Government of Canada (August 18, 2020) Government of Canada announces support for Algoma Steel's climate action initiatives [accessed 11/12/2021]

¹⁹ > Carbon Brief (29 June, 2021) <u>These 553</u> steel plants are responsible for 9% of global <u>CO2 emissions</u> [accessed 09/12/2021]

²⁰ > UCL, commissioned by the Aldersgate Group (September 2021) *Delivering Competitive Industrial Electricity Prices in an Era of Transition* p.7

For example, UK demand for steel far exceeds domestic production, while at the same time, the UK exports around 45% of its steel output, primarily in the form of low value items.²³ To meet demand for high value steel products, the UK then relies on imports from overseas. This forfeits a significant opportunity for domestic producers. In the offshore wind sector, a single 10MW turbine uses over £880,000 worth of steel,²⁴ most of which is imported from China. With the UK looking to guadruple its offshore wind capacity to 40GW by 2030 (the equivalent of 4,000 10MW turbines),²⁵ and the renewable energy sector acting to reduce the embodied emissions of its infrastructure,²⁶ there is an enormous economic opportunity for low carbon steel making in the UK from power sector demand alone. There is also a huge international opportunity, with the EU alone looking to achieve 240GW of offshore wind capacity by 2030.27

The picture is similar for the solar power sector, in which the crystallised silicone panels that dominate solar networks in the UK are largely imported from abroad. However, as an innovator in low carbon technology, the UK is well poised to displace imports with low carbon alternatives. UK solar panel manufacturer OxfordPV, recently developed the world's most efficient solar cell, that, unlike traditional panels, can be made into a thin, transparent film and applied to uneven surfaces and windows. Not only does this reduce the need for vast areas of land for solar farms, it also unlocks a new portion of the consumer market previously deterred by the appearance of solar panels. This technology also uses alternative materials to silicone, for which the UK relies on imports. With support to scale up, this offers the UK's glass sector an enormous opportunity to tap into a market for more efficient and attractive solar technology to meet domestic and international demand at both a domestic and industrial level.

To maintain the competitiveness of heavy industry and enable costeffective investment in low carbon production, businesses in these sectors have highlighted the need for a more competitive business environment, with long-term policy certainty, support for innovation, and mechanisms to create and grow the market for low carbon industrial goods.²⁸

1.1 Removing barriers to decarbonisation and establishing robust sectoral roadmaps to net zero

Due to the diversity of the UK's heavy industries, **different sectors have distinct pathways to net zero.** The UK's steel sector for example, will achieve a greater level of its emissions reductions through electrification (amongst other measures) than the chemicals sector, which will rely more heavily on CCUS. There is also a sectoral variance in the extent to which the UK's foundation industries will rely on recycling, low carbon hydrogen, and negative emissions technologies that abate residual emissions.

Over the next decade, many of the UK's heavy industries are set to make investments into machinery and equipment that will last up to 30 years. To ensure the business environment is conducive to investment in low carbon production, manufacturers need certainty for when key infrastructure will be in place and how prices of production inputs will evolve in order to plan upcoming investments, minimise the marginal costs of abatement, and avoid stranded assets.

Recommendation 1:

Government should provide robust sectoral pathways for the decarbonisation of the UK's foundation industries to incentivise investment in low carbon production processes. Sectoral pathways should build on the Industrial Decarbonisation and Net Zero Strategies to give a clear idea of the extent to which renewable electricity, alternative fuels such as waste biomass and low carbon hydrogen, and/or GGR technologies will be available, and at what cost. This could be done using CfDs and clear sign-posting by policymakers. Alongside sectoral roadmaps, the timely development of **business** models for technologies like CCUS and hydrogen will be key to providing businesses with certainty around operational costs, thereby de-risking investment. In addition, an explicit 'priority use framework' for the allocation of low carbon fuels and technologies, such as green hydrogen and GGR technologies is needed, given their limited availability.

Given that a range of sectors will be competing for access to alternative fuels and abatement opportunities, some of which will be limited in supply, a clear prioritisation of use will be important to maximise emissions reductions in the most efficient and cost-effective manner possible. The Aldersgate Group, along with industry stakeholders from the bioenergy industry, welcome the government's decision to establish a priority use framework for biomass as set out in its 2021 Biomass Policy Statement, which acknowledges the limited supply of genuinely sustainable biomass, which must be directed to the sectors that will benefit most from it.

²³ > University of Cambridge (April 2019) Steel Arising: Opportunities for the UK in a transforming global steel industry p.3

²⁴ > The Crown Estate (January 2019) Guide to an offshore wind farm Updated and extended pp.34–55

²⁵ HM Government (November 2020) The Ten Point Plan for a Green Industrial Revolution p.8

²⁶ > Vestas (5 August, 2020) <u>Vestas Becomes</u> First Renewable Energy Manufacturer with Verified Climate targets in line with 1.5°C <u>Scenario</u> [accessed 26/11/2021]

²⁷ European Parliamentary Research Service (November 2020) Offshore Wind Energy in Europe

^{28 &}gt; Frontier Economics, commissioned by the Aldersgate Group (September 2021) Accelerating the Decarbonisation of Industrial Clusters and Dispersed Sites

As discussed further in Section 2.3, sectoral pathways are particularly important for decarbonising and unlocking investment in dispersed sites, which have suffered from less policy clarity and limited access to low carbon infrastructure to date, compared to industrial clusters. This leaves industrial supply chains for sectors operating offcluster, such as cement and ceramics, particularly vulnerable to disruption, and a more costly transition to net zero.

1.2 Reducing Industrial Electricity Prices to drive decarbonisation and competitiveness

As mentioned above, **the UK's heavy industries pay, on average, 25–44% more for their electricity than industrial producers in the EU.** This places UK firms at a significant competitive disadvantage to their key European rivals, while also stifling their ability to decarbonise: electrification, CCUS and low carbon hydrogen production all require competitively priced low carbon electricity. It is therefore essential that government prioritise measures to reduce industrial electricity prices.

Recommendation 2:

Reduce UK industrial electricity prices by accelerating investment in grid development and low-cost renewables (such as solar and on- and offshore wind), supporting continued growth of interconnection and storage, and establishing a market for long-term, zero carbon and tradable electricity contracts.

To deliver affordable, low carbon electricity prices in the UK, the Government must maintain a policy framework that attracts investment in low-cost renewable energy, whilst supporting timely and coordinated grid development. The confirmation of annual CfD auctions for renewable energy projects is welcome. Going forward, the investment climate could be further improved by providing forward visibility on the volume of projects being auctioned each year,

and greater clarity on the timing of the next Crown Estate leasing round. This will also provide a demand

signal to catalyse investment further along wind sector value chains in the production of low carbon steel, cement and glass – all needed to produce wind turbine equipment.

Finalising the review of the **Energy** National Policy Statement is key in enabling timely planning consent for the transmission infrastructure needed to support the connection of new offshore wind projects. In addition, improving co-ordination between the planning process and the roll-out of future transmission and generation infrastructure (both onshore and offshore) will be key to minimise delays in project delivery. The UK already needs to improve its transmission infrastructure to facilitate current electricity demand. The current approach to designing and building offshore transmission was developed when offshore wind was a nascent sector and industry expectations were as low as 10GW by 2030. This is set to become more complicated as competition for offshore space increases to deliver the 2030 target of 40GW of offshore wind capacity,²⁹ which will require a four-fold upscaling of operational offshore wind in this decade, as well as the target of fully decarbonising the electricity system by 2035,30 which will require a further expansion of offshore wind.

Accelerating investment in interconnection and storage would also be beneficial as it can lower wholesale electricity prices and allow for improved security of electricity supply, as well as price arbitrage between markets.³¹

Each 1GW of interconnection capacity can reduce UK wholesale electricity prices by 1–2%.³²

Meanwhile, standardised structures of long-term, tradeable zero carbon electricity contracts should be made available to industrial consumers. Contracts on the UK electricity market are seldom longer than a few years into the future, meaning that the UK's heavy industries and manufacturing sectors are vulnerable to sudden changes in energy prices. Industrial stakeholders have told the Aldersgate Group of energy bills increasing threefold in the last year, creating a financial strain and loss of capital that could have been invested in decarbonisation. Longterm, zero carbon and tradable electricity contracts, delivered by Power Purchase Agreements (PPAs) can mitigate exposure to the indirect costs of carbon prices and the volatility of fossil fuel prices, whilst creating certainty of demand for low carbon generators. Industrial consumers would benefit from access to low-cost renewable electricity alongside the flexibility provided by the ability to trade part of their PPA during the term of their contract should their demand profile change.

A comprehensive policy framework to reduce industrial electricity prices is explored at greater detail in a briefing the Aldersgate Group commissioned from UCL, <u>Delivering Competitive Industrial</u> <u>Electricity Prices in an Era of Transition</u>.

1.3 Creating a level playing field for UK industrial producers

As many industrial sectors are also heavily trade-exposed and dealing in goods with thin profit margins, **low** carbon products made by the UK's heavy industries have been increasingly displaced by cheaper imports, which are

²⁹ > HM Government (November 2020) The Ten Point Plan for a Green Industrial Revolution p.8

³⁰ > BEIS (7 October, 2021) <u>Plans Unveiled</u> to Decarbonise UK Power System by 2035 [accessed 01/03/2022]

³¹ > UCL, commissioned by the Aldersgate Group (September 2021) *Delivering*

Competitive Industrial Electricity Prices in an Era of Transition p.13 32 > bid p.22

often higher in carbon. Consequently, the UK has become increasingly dependent upon imports of industrial goods and global supplies of critical raw materials.

In 2020, only one sixth of final steel consumption was met with steel produced in the UK, despite domestic demand far exceeding domestic supply.³³

Although the UK has undergone a shift towards becoming a services-based economy, weakened industrial and manufacturing capacity poses several challenges. As domestic production of bricks has declined over time, the construction sector has become dependent on fluctuating global supplies, resulting in increased costs and delivery times for key materials - with some projects on waiting lists for over a year³⁴ threatening the UK's ability to build and meet its own infrastructure plans. These higher costs and comparative lack of competitiveness at an international scale undermine investment in the UK's heavy industries, as prospective investors are drawn to other jurisdictions with lower costs.

Moreover, while the Aldersgate Group welcomes the government's decision to reapply quotas on steel imports that existed under the EU,³⁵ other sectors such as glass, have seen import duties decrease by as much as 8%, while the cement industry does not have trade remedies at all.

Implementing a CBAM alongside competitive trade remedies would place a fair price on carbon for both domestic and foreign producers, while also aligning UK industry with the EU's proposed CBAM when it comes into effect in 2026.³⁶

Recommendation 3:

To prevent low cost, high carbon imports from gaining a growing market share at the expense of low carbon goods produced by UK firms, the government should put forward tangible proposals for a CBAM. This would create a level playing field for low carbon domestic firms, by placing a fair price on carbon for both domestic and international producers. Importantly, a CBAM can ensure that the UK is still able to harness and benefit from the best available global technologies for cost-effective decarbonisation, without sacrificing the opportunities for domestic growth. As border adjustments are complex policy mechanisms that may take time to be implemented, in the interim the UK should collaborate with industry to review and restore tariffs on imports of industrial products that were lost upon the UK's departure from the European **Union,** as has been done with quotas on steel imports.³⁷ Trade remedies should not be applied to secondary products, as these goods present a valuable opportunity to the UK's industrial producers and are currently traded with relative ease at an international scale. The government should therefore seek to minimise any trade friction they may face.

With the introduction of a CBAM, the Government will need to lay out a robust and clear timeline for phasing out free allowances under the UK ETS to prevent double compensation and significantly reduce the likelihood of a challenge under the WTO. This will also serve to define a CBAM as an environmental rather than protectionist tool.

37 > Financial Times (4 July, 2021) <u>UK Move</u> to Protect Steel Industry and Risk of WTO <u>Challenge</u> [accessed 25/11/2021]

When putting forward a proposal for a CBAM, the UK should develop a strategy for co-operation and encouragement with other countries on its design and implementation - including offering technical and capacity-building support for developing countries as part of its climate diplomacy. A strategy would address the need for careful design, planning and diplomatic groundwork in advance of the implementation of a CBAM and related policies. Such a package would meet the objective of incentivising companies and countries to adopt greener methods of production, whilst rewarding companies and countries that are already adopting greener practices by making them more competitive. The UK should also seek to comprehensively understand the financial and technological support developing countries might need under its proposals - for example by exempting vulnerable nations, such as Least Developed Countries (LDCs) and Small Island Developing States (SIDS), or using the revenue generated by the CBAM to accelerate the diffusion and uptake of low carbon industrial production methods in lower income countries.

Recommendation 4:

Government should investigate a range of options to grow the demand for low carbon products. Alongside the development of a proposal for a CBAM, government should finalise the consultation on product standards with a view to introducing mandatory product standards with targets on embodied and lifecycle emissions, and the recycled content of products sold on the UK market. Careful consideration is needed to understand how a CBAM and product standards can interact with one another. This will ensure that the UK has a range of options at its disposal to drive demand while creating a level playing field between domestic and international producers. Product standards should take lifecycle as well as embodied emissions into account to ensure that products with higher embodied but lower overall emissions across their lifetime, such as energy efficient glazing, are not perversely disincentivised.

³³ > University of Cambridge (April 2020) Steel Arising: Opportunities for the UK in a transforming global steel industry p.3

³⁴ > Federation of Master Builders (20 April, 2018) <u>Material Prices Continue to</u> <u>Rocket, Says FMB</u> [accessed 09/02/2022]

³⁵ > Financial Times (4 July, 2021) <u>UK Move</u> to Protect Steel Industry and Risk of WTO <u>Challenge</u> [accessed 25/11/2021]

³⁶ European Commission (July 2021) Establishing a Carbon Border Adjustment Mechanism p.8

It is vital that standards on recycled material content are applied to materials that exist in abundance or are presently being exported/sent to landfill. This will ensure that inefficient waste handling is discouraged, without creating unrealistic standards on materials that are scarce. To this end, **product standards should reflect the availability of different materials on the UK market** and be introduced over time to maximise levels of compliance. **Standards and targets should be tightened over time, as options for decarbonisation become more readily available.**

Crucially, ahead of the development of a product standard, mandatory carbon reporting and verification mechanisms must be introduced to provide greater visibility of embodied carbon content, and more informed consumer choices. It will also be vital to providing producers and consumers with confidence in a future standard. By introducing mandatory reporting of emissions now, BEIS can enable the smoother introduction of a product standard in the future.

For ease of introduction and better sectoral coverage, **these could be developed and executed jointly with the proposed eco-design standards for resource efficiency being developed by the Department for Environment, Food and Rural Affairs (DEFRA).** As a leader in environmental regulation, the UK should also push for harmonisation of such product standards globally through the International Standardization Organisation and the WTO.³⁸

Stakeholders across the sectors remarked that, at current, standards demanded by customers, such as a limit on the embodied carbon of a wind turbine tower, are often more ambitious than those set in legislation, and are the driving force behind a transition towards the provision of lower carbon goods. **Policy now needs to catch up to establish mandatory standards that meet and exceed those enforced by consumer and**

business demand and voluntary thirdparty standards.

For further information on how product standards can drive the UK towards a more circular economy by creating increased demand for the retention and reprocessing of waste and scrap materials, please see Section 3.4.

1.4 Enhancing procurement requirements to drive demand for low carbon products

To ensure that UK producers switching to the production of low carbon products are able to benefit from domestic demand for such goods and services, government should establish ambitious low carbon purchase requirements in public and private procurement rules. **Similarly to product standards, these requirements should place thresholds and targets on the embodied carbon, lifecycle emissions and recycled content of products procured.**

If applied across the UK's economy alongside a comprehensive sectoral plan for decarbonisation, this would create a stable demand for domestically produced low carbon goods and services, supporting the development and expansion of domestic supply chains for low emissions products. Alongside iob-rich economic opportunities, driving the UK's low carbon capability can also ensure that the UK can meet its own demand for industrial goods during times of crisis and/or fluctuations in global supplies of critical resources and products. It would also ensure that taxpayer funds support UK industry.

Policy should not seek to displace affordable low carbon options from across the world, as this could negatively impact the pace and cost-effectiveness of reaching net zero globally and in the UK. Rather, where options to displace higher carbon materials and products exist, government support should facilitate the displacement of higher carbon materials and products, especially where the UK is well-placed to provide a low carbon alternative.

Recommendation 5:

To incentivise the UK's heavy industries to pivot to the production of low carbon products, government should enhance low carbon purchase requirements in public and private procurement contracts to drive demand for low carbon goods and services. These requirements should place a maximum threshold on the embodied carbon and lifecycle emissions of goods and services procured. With UK firms well-poised to deliver low carbon industrial products ahead of international competitors. low carbon procurement rules can ensure that the UK not only harnesses the low carbon technologies already available globally, but also maximises the opportunities for domestic workers and firms with leading low emissions practices. As laid out in Recommendation 1, it is imperative that a comprehensive policy framework for the decarbonisation of heavy industry is delivered at pace to ensure that UK manufacturers are able to meet increased demand as the UK transitions to a net zero economy.

To ensure that domestic projects developed with taxpayer funding continue to benefit the UK, **public procurement contracts should also include a clause for the retention of a share of the intellectual property developed by projects in receipt of taxpayer funding and/or tax relief.** This will be particularly important as the UK looks to export low carbon goods or maximise its strengths as a services economy to provide relevant consultancy or design work to other countries pursuing net zero.

2. FOSTERING THE INNOVATION AND SKILLS NEEDED TO DEVELOP DOMESTIC SUPPLY CHAINS FOR LOW CARBON INDUSTRIAL PRODUCTS

To access the opportunities offered by a global transformation to a net zero economy, **innovation support is needed to ensure that the UK's heavy industries and manufacturing sectors are able to develop the next generation of low carbon technologies** and production processes. There is also a concomitant need for investment in low carbon skills, so that the UK workforce is adequately equipped to develop, deploy, and operate this infrastructure.

By taking the steps outlined above, government can ensure that the UK's heavy industries and manufacturing sectors are able to deliver low carbon industrial products. This will drive demand for low carbon skills and innovative technologies, which will, in turn, enhance the UK's ability to expand production in growing markets for low carbon goods and services.

With world-leading universities and research centres, the UK is well-placed to move quickly on the development of new technologies, and can establish a strong domestic supply chain for low carbon production capacity in the near-term. This will enable the UK's heavy industries to harness an increased market share to meet both domestic and international demand.

2.1 Supporting the development of new low carbon technologies and production processes

Where low carbon technologies do not yet exist at commercial scale, or barriers to deployment are currently insurmountable, it is vital that government provide innovation support. This should focus on projects that enable fuel switching and the development of new low carbon, resource efficient technologies. **Through upfront capital support to** establish new production sites, as well as ongoing support for the establishment of research centres, government can de-risk projects and stimulate blended investment to roll out new methods of low carbon industrial production.

This will support decarbonisation across the UK's industrial base, while futureproofing existing jobs and establishing new opportunities in the process. **By supporting the creation of a domestic supply chain for low carbon industrial products, government can also enable industry to displace imports of carbon intensive materials,** such as the soda ash used in glass production, thereby diminishing the UK's exposure to fluctuations in global supplies of key resources.

Recommendation 6:

Where routes to electrification and low carbon production do not yet exist, government should increase innovation funding to facilitate fuel switching and the development of new technologies. This should build on existing mechanisms such as UKRI's Transforming Foundation Industry fund, and BEIS' Industrial Energy Transformation Fund (IETF) and Net Zero Innovation Portfolio (NZIP), which have kick-started industrial innovations such as the ultra-low carbon glass produced by Glass Futures. In particular, investment should address options for decarbonisation and fuel switching where they are currently limited or unproven at scale, such as in the production of chemicals (including ammonia for hydrogen, which is vital to the broader decarbonisation of the UK economy).

2.2 Deploying existing technologies at scale

Elsewhere in the UK's industrial base. the technologies needed to scale up low carbon production already exist. For example, the steel sector can significantly reduce its emissions through a combination of electrification, hydrogen-based primary steelmaking, and CCUS (amongst other measures). However, these technologies have not been deployed at scale, with many of the UK's electric arc furnaces (EAFs), which produce low carbon steel by utilising scrap steel and low carbon electricity (see Case Study 3), currently running well below their maximum capacity. As discussed in Recommendation 2, reducing industrial electricity prices is key to unlocking investment in low carbon industrial production. Government must further strengthen the business case for investing in EAF and hydrogen DRI production by prioritising the establishment of demonstrator projects in key areas of industrial production, such as a large-scale green steel pilot, as has been done in Sweden, Germany, Spain and China.39

In the glass sector, methods for reducing emissions also exist. First Solar and NSG Pilkington currently work together to produce thin film solar technology, which, at its end-of-life, is collected, recycled, and reprocessed – with over 90% of all materials recovered and reused. (Increasing the level of recycled materials in industrial production is explored at greater length in Section 3).

39 > Agora Industry (November 2021) *Global* Steel at a Crossroads. Why the global steel sector needs to invest in climate-neutral technologies in the 2020s.

THE CASE STUDY 1: DEVELOPING THE NEXT GENERATION OF LOW CARBON PRODUCTION IN THE UK: GLASS FUTURES

One example of where collaboration between industry, government and LAs has successfully led to the development of world-leading low carbon technology is Glass Futures.

The initiative saw investment into ultra-low carbon glass production through Glass Futures Ltd., a not-for-profit company which, in 2020, was awarded \pounds 15m through UKRI's Transforming Foundation Industry (TFI) fund. With investment from government, industry and the St. Helen's Borough Council, a combined \pounds 54m has kickstarted production of 30 tonnes of low carbon glass per day, utilising alternative fuels, heat recovery, and CCUS, among other innovative technologies.⁴⁰

Glass Futures has also established the Global Centre of Excellence, a world-leading innovation hub in St. Helens that will provide the glass sector with commercial training and a means to develop processes to enhance resource efficiency, moving the industry closer to net zero production.⁴¹

As well as providing early funding to de-risk investment, a core strength of the Glass Futures model has been close collaboration between industry and government with LAs, which has allowed local experts to advise on how central government funding can best draw on the St. Helens region's strengths as an historical centre for the production of glass.



40 > UKRI (30 October, 2020) <u>UKRI</u> Invest £15m in the Future of Glass Production [accessed 09/02/2022]

41 > Place North West (8 February, 2022) Work Starts on £54m Glass Futures [accessed 09/02/2022] Similarly, glassmaker Encirc now imports products such as wine in bulk, before packaging them on the same site at which it produces its bottles. This reduces transport emissions and import duties for customers, while also providing a productivity gain for Encirc.

It is essential that government supports broader uptake of such best practices across various industries. This can both ensure that the UK is decarbonising as rapidly as possible, while also making the UK a more attractive place to invest in the technologies needed to produce low carbon industrial products for a net zero economy.

Recommendation 7:

To support the greater adoption of best practices across industry, HM Treasury should hypothecate revenue from the sale of UK ETS emissions allowances to fund low carbon production methods. Many of the UK's industrial and manufacturing sectors receive comparatively less public funding than firms in key competitor countries (as discussed in Section 1). By using the revenue raised by a certain sector's participation in the Emissions Trading Scheme to facilitate decarbonisation in that sector (for example by investing in grid development, fuel switching and electrification, or to directly cover OpEx spending), government can not only increase the pace and cost-effectiveness of industrial decarbonisation, but also improve the competitiveness of UK heavy industry. An industrial base able to decarbonise more quickly will also enable ETS market participants to better comply with a more ambitious ETS, with fewer free and overall emissions allowances. As BEIS looks to consult on aligning the UK ETS with net zero, it is vital that industrial producers are able to respond to the carbon price signal (thereby preventing carbon leakage).

As discussed in **Recommendation 4**, a standard on embodied and lifecycle emissions and recycled material content can help to drive demand for low carbon industrial products. **Implementing product standards can also help to de-risk early adoption of more efficient technologies**, as a standard will require all industrial producers to meet certain requirements. This means **early movers will be rewarded rather than disadvantaged by investing in technologies that reduce emissions and increase resource efficiency.**

2.3 Supporting innovation at dispersed industrial sites

Dispersed industrial sites are responsible for roughly half of the UK's industrial emissions, but will face far greater difficulty accessing low carbon infrastructure, such as hydrogen pipelines and CO₂ transport and storage networks, than producers operating in industrial clusters. **Government must provide tailored support to increase the rate of fuel switching for off-cluster sites that may not be able to utilise the same methods for decarbonisation as producers based in industrial clusters.**

CASE STUDY 2: UTILISING COMPETITIVE STRENGTHS IN THE UK'S CERAMICS SECTOR

Stakeholders in the ceramics sector have remarked that producers of advanced technical ceramics have been able to maintain capacity in the UK by investing in improved technology and skills over the last two decades. This has enabled companies operating in the sector to scale-up production in specialist markets.

Critically, this has been facilitated, in part, by innovation and deployment support from government, such as the £18m provided to the Midlands Industrial Ceramics Group through the Strength in Places Fund administered by UKRI. This funding has since been matched and exceeded by a £24m investment from industry partners, which will expand the UK's participation in a global industry set to be worth £143bn by 2023.⁴²

This will allow the UK's ceramics sector to safeguard existing jobs and create 4,200 more by 2030.⁴³



42 > Midlands Industrial Ceramics Group (22 July, 2021) <u>£18.27 Million Investment</u> Puts Midlands Firmly on the Map for Advanced Ceramics [accessed 09/02/2022]
43 > UKRI (22 July, 2021) <u>£127m of R&D</u> Funding Will Boost UK Economic Growth [accessed 09/02/2022] Glassmaker Encirc, is currently pursuing on-site biomethane production to fuel its Northern Ireland plant,44 which would allow it to displace fossil fuels with an independent source of low carbon fuel, while also reducing its electricity demand. The Aldersgate Group welcomes the government's recent commitment to support four similar schemes in the distillery industry with £11.3m of funding from the NZIP,45 which will explore options for displacing fossil fuels with wind power, hydrogen and biogas; storing hydrogen onsite; and developing more efficient electrolysers for use in green hydrogen production. However, in some areas of the UK, fuels such as biomethane are subject to levies that can only be reclaimed in the transport sector through the Renewable Transport Fuel Obligation (RTFO); not by industrial producers utilising the same fuel. Such levies place industry at a comparative disadvantage and could have a perverse effect on the UK's progress towards net zero by disincentivising the uptake of lower carbon fuels in lieu of the wider availability of renewable/low carbon options at dispersed sites.

With alternative biofuels also available to the transport sector, alongside hydrogen and electric vehicles, government should create a level playing field for the utilisation of biomethane in industry, especially if it will result in a greater reduction of emissions. Similarly, under the RTFO, producers of eligible renewable and development fuels for transport, such as tyre pyrolysis oil, receive significant subsidy support. This is due to the complicated reprocessing involved. However, similar support is not available to those recycling old tyres into carbon black (a material produced by reducing old tyres via pyrolysis to then be used in the production of new tyres), which is a form of material recovery that sits higher on the waste hierarchy. Consequently, recycling tyres into fuel (a form of energy recovery, which sits at the bottom of the waste hierarchy) receives greater support.

With hundreds of off-cluster industrial sites across the UK, including many that are key local employers in areas central to the levelling up agenda, the removal of such barriers is equally important to the aims of the Levelling Up White Paper.

Alongside the removal of such barriers, government support for new technologies such as low carbon hydrogen and CCUS should be extended to be more accessible for dispersed sites. **The government business models being developed for low carbon hydrogen and CCUS will exclude dispersed sites, on the grounds that they will be unlikely to have access to a viable transport and storage solution** (one of the eligibility criteria for the private law contracts being considered by BEIS).

More detailed policy support is needed to outline how off-cluster industrial producers will access low carbon alternative fuels, affordable electricity, and the means to increase circularity and resource efficiency.

Recommendation 8:

In addition to supporting the decarbonisation of industrial clusters and the development of new technologies, government must establish a credible plan for decarbonising off-cluster industrial sites. This should involve basing subsidies on avoided CO₂ emissions to incentivise more circular practices, removing existing barriers to fuel switching, such as levies on alternative fuels that cannot be reclaimed by industry, and creating business models for low carbon hydrogen, waste biomass, and CCUS, for which dispersed and clustered sites will be eligible. Dispersed industrial sites will have decreased access to low carbon infrastructure, such as hydrogen pipelines, in comparison to firms operating in industrial clusters. To develop robust low carbon supply chains across UK industry, it is vital that dispersed sites are able to utilise all decarbonisation options, such as switching to more accessible low carbon fuels, including sustainable biomethane produced on-site.

2.4 Encouraging skills development for a low carbon industrial sector

The development of low carbon skills rests in part on the demand for their application in industry. Once available, these skills can feed into the expansion of low carbon industrial capacity, forming a mutually beneficial feedback loop between industry and academia.

45 > BEIS (24 November, 2021) *Funding Helps UK Distilleries Fuel a Greener Future* [accessed 09/02/2022]

^{44 &}gt; Impartial Reporter (8 November, 2021) Encirc Chief to Attend Summit on Climate Change [accessed 09/02/2022]

Beyond this, **by working with industry** and LAs, government should design skills centres for the training or reskilling

of workers for real employment opportunities to ensure that the UK benefits from its research and development, while also growing its increasingly efficient low carbon industrial base. The government can use the placement of such centres to advance its levelling up agenda and stimulate the growth of high-paid high-skilled jobs across the UK. Local businesses and LAs have a good knowledge of local SMEs and supply chains, meaning they are best placed to understand the needs of industry at a more granular level.⁴⁶

Recommendation 9:

To deliver the skills needed for a net zero economy, BEIS and DfE should work with industry, unions, and LAs to design skills centres to train and reskill workers. Central government should work closely with local experts to identify areas in the UK that are best placed to develop particular industrial supply chains due to local strengths, and would therefore benefit most from the establishment of relevant skills centres. The Midlands Industrial Ceramics Group, for example, draws on the region's history as a hotspot for the production of ceramics, establishing a world-leading research and innovation centre to support the competitiveness of the sector, while developing innovative new technologies for rapid marketplace adoption. As recommended by the Green Jobs Taskforce, government should work with employers, sector bodies, unions and workers to ensure that business and skills plans for the net zero transition are in place to support such developments.47

2.5 Enhance the Apprenticeships Levy and Lifetime Skills Guarantee to upskill the UK workforce for low carbon production

Many employers have found that the Apprenticeship Levy follows an inconsistent approach, generating additional work and perverse incentives as regards recruitment and access to training. Additionally, with the scheme largely employer-led there is a risk that training is broad and focused on shortterm demands and in-house priorities.48 With specific skills needed to support the development of low carbon industry, it is vital that existing skills support is flexible and open to workers that already hold high level qualifications but need new skills to transition from high to low carbon industry.

Learning from the UK's transition away from coal in the 1980s, during which 250,000 jobs were lost in mining communities across northern England – with around 43% of these areas still among the most deprived areas in Britain today⁴⁹ – it is essential that the government support workers in declining high carbon industries. With appropriate support to access new training opportunities, government can ensure that **the transition to low carbon production raises living standards across regions and communities, particularly in industrial regions.**⁵⁰

Recommendation 10:

To maximise the opportunities for workers to gain low carbon skills and/ or transition from carbon intensive sectors, government should simplify and expand the Apprenticeships Levy and amend the Lifetime Skills Guarantee to allow participation from people who already have a Level 3 qualification, and remove restrictions that limit participation to Level 3 or below. This would increase the efficacy of the Lifetime Skills Guarantee, ensuring that workers needing additional qualifications to transition from high to low carbon industrial sectors can acquire them. By simplifying the Apprenticeships Levy, government can increase uptake of the scheme, and use standards that directly refer to climate change, circular economy and biodiversity to ensure that businesses have the flexibility to train their workforce for the delivery of low carbon industry. As recommended by the Green Jobs Taskforce, skills vouchers, training sabbaticals and paid-time-off-to-train arrangements would provide workers with the flexibility needed to these green skills.⁵¹ The additional funding allocated to the National Skills Fund in the last manifesto should be used to finance workers taking on courses and, where needed, compensate employers for temporarily losing employees taking on reskilling opportunities.52

47 > Green Jobs Taskforce (July 2021) Report to Government, Industry and the Skills Sector, p.10 **48** > Aldersgate Group (October 2020) Upskilling the UK Workforce for the 21st Century

49 Sheffield Hallam University (July 2019) *The State of the Coalfields*

50 > Green Jobs Taskforce (July 2021) Report to Government, Industry and the Skills Sector, p.65

51 > Ibid p.64 **52** > Ibid p.62

⁴⁶ > Aldersgate Group (October 2020) Upskilling the UK Workforce for the 21st Century

3. INCREASING THE RETENTION AND REPROCESSING OF SECONDARY MATERIALS TO MITIGATE SUPPLY CHAIN WEAKNESSES AND BOOST CIRCULARITY

Many of the UK's heavy industries are able to meet a majority of their raw material needs with domestic supply. Clays for ceramics, lime for cement, and sand for glass are all generally indigenous and located near manufacturers. Although the steel sector cannot meet its demand for iron ore domestically, as a relatively abundant, globally traded commodity, it is sold at low cost, with supply not currently an issue.

This said, the UK faces a number of major supply chain vulnerabilities with critical raw materials, such as the lithium and cobalt used EV batteries,53 soda ash in glass making, and aluminium, magnesium and silicone oxides central to the production of technical ceramics. As deposits are not found in abundance in the UK,54 industry is heavily dependent on imports for these critical raw materials, often from a limited number of countries. and therefore vulnerable to fluctuations in global supply. Despite this, where these materials exist in the UK market, many are shipped abroad as bundled wastes, only to be imported back into the UK in the form of expensive reprocessed products.

Shortages of these materials make the UK vulnerable to fluctuations in global supplies, the effects of which have been demonstrated in recent months by the economy-wide effects of the global semiconductor shortage – from Samsung's reduced production of electronics,⁵⁵ to the halting of automotive manufacturing

in the UK.⁵⁶ This is further complicated by the fact that **the global net zero transition will see a rapid increase in domestic and international demand, and therefore competition, for critical raw materials** (under its current net zero pathway, the UK is set to consume its global share by just 2035, and could exceed it fivefold by 2050⁵⁷).

Many critical raw materials also have long and complex supply chains, with significant environmental and reputational risks, from increased mining and deep seabed extraction⁵⁹ to the involvement of child labour.⁵⁹ By increasing the retention and recycling of critical raw materials already in the domestic market, the UK can mitigate against these risks and reduce its dependence on imports.

Poor retention of recyclable materials, such as scrap steel and rubber tyres, also prevents the UK's heavy industries from expanding their production of secondary and recycled products, which not only deliver benefits in terms of emissions reductions, but offer industry a productivity gain. For example, the most efficient steel plants – predominantly producing secondary steel products in an EAF – are up to four times more productive (in terms of both labour and capital intensity) than the average steel plant.⁶⁰ As a result, **displacing carbonintensive production processes can increase the UK's heavy industries' productivity and competitiveness, even if markets for low carbon goods have not yet emerged.**

3.1 Increasing the retention and reprocessing of critical raw materials to increase secondary production and resource efficiency

Recent analysis by Green Alliance found that in 2019, the UK's electric vehicle fleet contained over 1,400 tonnes of lithium and 800 tonnes of cobalt, worth £26.3m and £31.5m respectively.61 If recovered and retained at the end of the vehicle's lifetime, this could be used to manufacture 220,000 battery EVs - 10% of projected sales in 2035.62 Once their efficiency drops to 80% and they have to be removed, EV batteries could then be used in the solar panel manufacturing sector or for stationary storage. Across the economy, improved recycling of materials on the market could provide up to 88% of the UK's demand for lithium and up to 100% for cobalt.63

58 > WWF (31 March 2021) <u>'Brands back</u> call for moratorium on deep seabed mining' [accessed 24/11/2021]

59 > The Guardian (3 January, 2021) <u>Child.</u> Labour, Toxic Leaks: The Price We Could Pay for a Greener Future [accessed 09/02/2022]

62 > Ibid

63 > Ibid

⁵³ > BEIS (October 2021) *Net Zero Strategy* p.237

⁵⁴ > British Geological Survey (August 2020) *Directory of mines and quarries*

⁵⁵ Financial Times (April 29 2021) <u>Samsung</u> says chips crunch hitting TV and appliance production [accessed 26/11/2021]

^{56 &}gt; The Guardian (October 22, 2021) <u>Jaguar</u> Land Rover pauses <u>Halewood car production</u> amid chip shortage [accessed 26/11/2021]
57 > Green Alliance (November 2021) Critical

Point: Securing the raw materials needed for the UK's green transition p.3

⁶⁰ > OECD (March 2016) Research and Development, Innovation and Productivity Growth in the Steel Sector

⁶¹ Green Alliance (November 2021) *Critical Point: Securing the raw materials needed for the UK's green transition* p.15

CASE STUDY 3: THE SOCIAL AND ECONOMIC BENEFITS OF RETAINING SCRAP STEEL IN THE UK MARKET

In the UK steel sector, a major route to decarbonisation is using recycled scrap steel, which can be melted and reprocessed into secondary steel products. Scrap steel carries no additional embodied emissions, as they have already been accounted for when the steel was first made. As scrap steel is most commonly used in an EAF, powered by electricity, the energy consumption is also far less carbon intense than primary steel production using coking coal and/or gas – and set to decline further as the UK decarbonises its grid.

Scrap steel itself is recovered from car bodies, retired shipping containers and buildings that have been demolished, or as large slabs and bars from within a steelmaking facility that may have been damaged during primary steel production, or left over at the end of a production run. Currently, the UK generates around 10 million tonnes of scrap each year.⁶⁴

Despite its low cost, this scrap steel is primarily exported to other countries, such as Turkey. who sort and reuse it to produce higher value steel products which they then export at a profit. The UK imports many of these goods at this higher price, rather than producing them itself. Where scrap is used within the UK, to-date it has typically been manufactured into low value goods for export,⁶⁵ meaning the UK is failing to maximise the profit potential of its most emissions intensive material, as it does not meet its own demand for high-value goods.

This presents a clear economic and social opportunity: were the UK steel industry to retain low-cost scrap and increase its production capacity, it could produce high value secondary products to supply both domestic and global demand, thereby adding value to the UK economy and its balance of trade. This also provides an opportunity to create futureproof jobs in areas with major steelworks, such as Port Talbot and Scunthorpe, both of which are critical to the government's levelling up agenda. Through the recycling of decommissioned wind turbines alone, the UK could recover over 1.4 million tonnes of recyclable materials, most notably steel, by 2050.⁶⁶ Research by the Offshore Renewable Energy Catapult shows that a spin-off circular economy from offshore wind could provide an additional 20,000 jobs.⁶⁷

Liberty Steel, one of the UK's largest steelmakers recently announced a \pounds 60m investment into their South Yorkshire plant in Rotherham. Supported by the UK Government's \pounds 100bn infrastructure plan, the investment will double the plant's EAF capacity to reduce the UK's reliance on imported steel.

To replicate this benefit across the sector, it is important that government provide support to bring down electricity prices to strengthen the business case for investment in EAF capacity.



- 66 > Zero Waste Scotland (April 2021) The future of onshore wind decommissioning in Scotland
- 67 > Offshore Renewable Energy Catapult (April 2021) Wind Turbine Blade Recycling p.16

68 > Liberty Steel (15 December, 2021) <u>LIBERTY Steel to make further investments at its South</u> Yorkshire <u>GREENSTEEL plant doubling production</u> [accessed 28/11/2021] In the glass sector there are similar opportunities. Despite a significant increase in demand for glass reinforced plastic (GFRP) over the last decade, the UK currently sends 67% of its GFRP to landfill, of which only 13% is recycled and 6% reprocessed. Increasing recycling rates to just 20% could generate millions, or potentially even billions of pounds in revenue, depending on the end product.⁶⁹

3.2 Incentivising the retention of valuable waste and scrap materials

At current, many waste management and sorting companies are drawn to the export market as **it is simpler and cheaper to ship waste to other countries, rather than sort and resell on the UK market.** Such practices have recently come under fire from environmental, humanitarian and civil society organisations,⁷⁰ who argue that **richer nations are shifting the responsibility of responsible waste management onto poorer nations.**

In some cases, such as end-of-life tyres and scrap steel, sorting waste materials is not an issue, there are simply insufficient incentives to retain these materials in the UK market. On the one hand, Government must therefore create a business environment more conducive to investment in waste recovery and sorting practices, and develop incentives for the retention of these materials in the UK market on the other. To this end, the Aldersgate Group welcomes the recent extension of Phase 2 of the IETF to companies specialising in the recovery and recycling of materials. It is essential that complimentary policy mechanisms create incentives for these companies to invest in the UK market and direct valuable resources to the UK's heavy industries and manufacturing sectors.

Recommendation 11:

To stimulate investment in the more efficient sorting of valuable resources that already exist within the UK, government should offer tax relief on investments that create cheaper, more efficient materials recovery and sorting practices. Beyond providing incentives to sell to the UK market, government can increase circularity and resource efficiency by facilitating technological development in the waste management sector. At current, valuable materials such as scrap steel, precious metals, and rare earth elements (such as cobalt and lithium) are shipped abroad as bundles of waste, due to expensive sorting processes, such as the verification of purity and material integrity. Cheaper, more efficient processes are needed to incentivise waste management and sorting companies to handle and sell recyclable materials to UK industry, who would benefit from greater availability of recycled materials. To ensure that such investments lead to intra-UK trade across value chains, government should utilise its position as an intermediary - or 'matchmaker' - to establish collaboration between manufacturers and waste management and sorting companies.

This could be achieved by utilising the industrial cluster framework, as sorting facilities could be established near the foundation industries they service. Should these also be located near the end users of industrial materials. such as the automotive sector, benefits could be shared across the value chain. For example, a sorting facility could supply a nearby steelmaker with high quality scrap steel, which would then be used to produce green steel for the manufacturing of low carbon car bodies. At the end of their product lives, these car bodies would re-enter a sorting facility, allowing the cycle to continue. The same could be true of recovered lithium and cobalt for EV battery production. If established in close proximity, this would reduce transport costs and emissions, while providing increased resilience to fluctuations in global materials supplies. In their Choisyle-Roi site. French carmaker Renault have adopted elements of this model. establishing capacity for the reprocessing of waste materials to produce new automotive parts for their car production facility at the same location.71



69 > Offshore Renewable Energy Catapult (April 2021) *Wind Turbine Blade Recycling* pp.16–18

70 > Reuters (18 October, 2019) <u>Trading Waste:</u> How the West fuels a waste crisis in Asia [accessed 09/02/2022] 71 > Renault Group (25 November, 2020) Groupe Renault creates the first European factory dedicated to the circular economy of mobility in Flins [accessed 08/12/2021] As discussed in **Recommendation 9**, local businesses and LAs will play an important role in linking this infrastructure, especially to dispersed industrial sites. As the specific needs of individual sectors and sites are complex, central government should work closely with local experts to ensure that the benefits of infrastructure deployment can be maximised and replicated in a fast, costefficient manner.

Recommendation 12:

To incentivise waste management and sorting companies to supply valuable scrap and waste materials to UK industry rather than the export market, government should use tax incentives, such as reduced business rates on waste materials sold in the UK market. This should be a part of wider tax reform aimed at bringing the UK's tax system into alignment with net zero. For example, where resource efficient products struggle to compete on upfront cost, VAT should be adjusted to ensure greater price competitiveness with high carbon alternatives, reflecting their longer-term environmental and economic benefits. Such measures would make it easier for consumers and companies to make a greener choice, while incentivising greater circularity in the UK economy.

Alongside adjusted business rates, government should implement complimentary measures such as a Deposit Return Scheme (DRS) and further roll-out the Extended Producer Responsibility (EPR) scheme to actively incentivise the design and remanufacture of more circular products. It is vital that these schemes expand their focus beyond packaging to include industrial products/ wastes, and resources that can be used in broader manufacturing sectors. For example, incentivising the retention of end-of-life tyres in the UK market rather than shipping them abroad for reprocessing or burning⁷² – would allow domestic manufacturers to re-tread tyres already available locally, thus creating lower carbon tyres for use in the automotive sector.

By extending the responsibility of a product's end-of-life treatment to manufacturers, government can incentivise the design of more easily recyclable products. In tandem, a DRS can help to ensure that waste prevention and re-use are prioritised.

Recommendation 13:

Implement an expanded Deposit Return Scheme (DRS) and accelerate the roll-out of Extended Producer Responsibility (EPR) schemes to incentivise the design and greater B2B trade of recyclable waste

products. To increase the retention of valuable materials where they already exist on the UK market, a DRS should be clarified in the near future, with a focus on introducing schemes in areas where progress may not be sufficiently made by the introduction of EPR schemes and eco-design criteria. Government should explore the options for expanding the DRS to cover products, such as tyres, to incentivise the remanufacture of materials often burned or shipped abroad as waste. The roll out of EPR schemes should be accelerated beyond packaging to incentivise the development of industrial products that are easier to re-use and recycle. To be effective, EPR schemes will need ambitious fee modulation mechanisms that charge more for products that are harder to sort and recycle, alongside close monitoring of performance. Beyond packaging, the DRS and EPR should be expanded to tyres and batteries.

More information on the role of EPR and a DRS can be found in the Aldersgate Group's report on resource efficiency, <u>Closing the Loop</u>, which includes a detailed analysis of circularity in the construction and automotive sectors (two major consumers of intermediate industrial products).

3.3 Applying sustainability criteria to exports of waste and scrap materials to create a level playing field for the domestic market and reduce the UK's global environmental impact

Within the UK market, scrap materials have to meet certain quality controls, such as a level of material purity, to be sold to UK industry. Many companies follow the grading criteria established by the British Materials Recycling Association (BMRA), with some applying additional standards within their procurement contracts.

Applying sustainability criteria to exports of scrap materials and waste would not only create a level playing field between the domestic and export market, therefore incentivising increased intra-UK trade of recyclable materials, but also reduce the UK's contribution to the export of waste to third countries.⁷³

Recommendation 14:

To create a level playing field between the domestic and international market, government should work with the **BMRA** and major industrial players to establish mandatory sustainability criteria for exports of waste and scrap materials. Currently, waste materials sold as indiscriminate bundles to other countries do not have to meet the robust sustainability criteria that are necessary when selling scrap materials directly to UK industry. This can make the export of indiscriminate bundles of waste cheaper than meeting the regulatory standards needed to sell to the UK market. By working with industry and waste management and sorting companies to develop similar criteria for exported materials, government can improve the UK's reputation for the responsible handling of its own waste, while incentivising the retention and reprocessing of valuable materials.

In Closing the Loop, the Aldersgate Group also suggested that **aovernment** should simplify waste regulations to avoid valuable industrial materials being classified as waste, unless no other safe use can be determined. This would enable greater re-use of reliable building materials and precious metals. For example, by accelerating the roll-out of the Extended Producer Responsibility (EPR) scheme. It is vital that the UK's EPR scheme establish rules for batteries and electrical wastes to reduce the UK's dependency on foreign imports of precious metals with long and complex supply chains

3.4 Apply cross-sectoral recycled material targets and regulations on embodied carbon

As discussed in **Policy Recommendation 4, mandatory standards on embodied carbon, lifecycle emissions, and recycled content can drive demand for low carbon products.** By applying targets and standards on the level of recycled content in goods sold in the UK, **product standards can also increase demand for domestic sorting and retention of waste materials,** as the UK becomes a larger market for secondary products.

This could drive demand along the value chain and increase businesses' resilience by improving cross-supply chain collaboration. For example, were the UK automotive sector subject to a target for the embodied carbon and/or recycled content of its vehicles, it would require large supplies of recycled steel, glass and rubber. Similar standards and targets in the construction sector would increase demand for low carbon concrete and glass to achieve greater resource efficiency and insulation. It is vital however, that standards on recycled material content be applied to materials that exist in abundance or are presently being exported or sent to landfill. This will ensure that inefficient waste handling is discouraged, without creating unrealistic standards on materials that are scarce. To this end, standards should reflect the availability of different materials on the UK market and be introduced over time to maximise levels of compliance.

Standards and targets should also tighten over time, as options for decarbonisation become more readily available. This would ensure that emissions are reduced in line with the UK's net zero target, while leaving enough room for learning and development in industry.

The opportunities of more robust environmental regulations have been explored in a paper the Aldersgate Group commissioned from Buro Happold, Fostering Prosperity, which shows that moving towards a circular, cross-sector approach to waste management could create up to 500,000 additional jobs, adding £75bn to the sector.⁷⁴

For more information on the role of product standards in creating demand for low carbon industrial products, please see **recommendation 4**.

⁷³ > The EU recently proposed new rules under which companies can only export waste to non-OECD nations if the recipient country explicitly notifies the EU of its willingness to import green-listed waste, and demonstrate their ability to treat it sustainably: European Parliament (17 November, 2021) <u>Proposal for</u> <u>a Regulation on Shipments of Waste</u> [accessed 24/11/2021] p.8

⁷⁴ > Buro Happold, Commissioned by the Aldersgate Group (March 2021) Fostering Prosperity: Driving innovation and creating market opportunities through environmental regulations p.5

SUMMARY OF POLICY RECOMMENDATIONS

Steps government should take to establish strong UK supply chains for low carbon industrial products.

Competitiveness and Industrial Decarbonisation:

Provide robust sectoral pathways for the decarbonisation of the UK's foundation industries to incentivise investment in low carbon production processes.

Government should build on the Industrial Decarbonisation and Net Zero Strategies to give a clear idea of the extent to which renewable electricity, alternative fuels and CCUS will be available to industry, and at what cost. While their availability remains limited, a 'priority use framework' for low carbon fuels and technologies, such as green hydrogen and CCUS, should be established. To enable businesses to meet operational costs, Government should also finalise the business models for CCUS and hydrogen, ensuring that both clustered and dispersed sites are eligible for funding.

Put in place measures to reduce UK industrial electricity prices by accelerating investment in grid development and low cost renewables (such as solar and on- and offshore wind), supporting continued growth of interconnection and storage, and establishing a market for long-term, zero carbon and tradable electricity contracts.

Electrification is a low regret, established route to industrial decarbonisation. However, the UK's heavy industries pay 25–44% more for their electricity than key European competitors.⁷⁵ To address this, the Government needs to take measures to cut both the wholesale price and carbon intensity of electricity in the UK, whilst also taking bespoke measures targeted at making electricity prices more affordable for heavy industry.

To deliver affordable, low carbon electricity prices in the UK, the Government must maintain a policy framework that attracts investment in low cost renewable energy, whilst supporting timely and coordinated grid development. The confirmation of annual CfD auctions for renewable energy projects is welcome. Going forward, the investment climate could be further improved by providing forward visibility on the volume of projects being auctioned each year, and greater clarity on the timing of the next Crown Estate leasing round. Finalising the review of the Energy

National Policy Statement is key in enabling timely planning consent for the transmission infrastructure needed to support the connection of new offshore wind projects. In addition, improving co-ordination between the planning process and the roll-out of future transmission and generation infrastructure (both onshore and offshore) will be key to minimise delays in project delivery.

Accelerating investment in interconnection and storage would also be beneficial as it can lower wholesale electricity prices, as well as boost energy security. Each 1GW of interconnection capacity can reduce UK wholesale electricity prices by 1-2%.76 Meanwhile, standardised structures of long-term, tradeable zero carbon electricity contracts should be made available to industrial consumers. These long-term, zero carbon and tradable electricity contracts can mitigate exposure to the indirect costs of carbon prices and the volatility of fossil fuel prices, whilst creating certainty of demand for low carbon generators.

76 > Ibid p.22

⁷⁵ > UCL, commissioned by the Aldersgate Group (September 2021) *Delivering Competitive Industrial Electricity Prices in an Era of Transition* p.7

Put forward tangible proposals for a CBAM to prevent high carbon imports from gaining a growing market share at the expense of low carbon goods produced by UK firms.

As border adjustments are complex policy mechanisms that may take time to be implemented, **in the interim the UK should collaborate** with industry to review and restore relevant tariffs on imports of **industrial products that were lost upon the UK's departure from the European Union,** as has been done with quotas on steel imports. Government should investigate a range of options to grow the demand for low carbon products. Alongside the development of a proposal for a CBAM, government should finalise the consultation on product standards with a view to introducing mandatory product standards with targets on embodied and lifecycle emissions, and the recycled content of products sold on the UK market.

Careful consideration is needed to understand how a CBAM and product standards can interact with one another. This will ensure that the UK has a range of options at its disposal to drive demand while creating a level playing field between domestic and international producers.

It is also vital that standards on recycled material content are applied to materials that exist in abundance. or are presently being exported/ sent to landfill. This will ensure that inefficient waste handling is discouraged, without creating unrealistic standards on materials that are scarce. To this end, product standards should reflect the availability of different materials on the UK market, and be introduced over time to maximise levels of compliance. Standards and targets should be tightened over time, as options for decarbonisation become more readily available. To ensure we can measure lifecycle emissions by the time a target or standard is introduced, it is vital that government expedite the introduction of mandatory carbon reporting and verification mechanisms.

In public and private procurement contracts, implement requirements for a higher percentage of goods procured to be low carbon in order to drive demand for low carbon goods and incentivise the UK's heavy industries to pivot to low carbon production.

These requirements should place a maximum threshold on the embodied carbon level and lifecycle emissions of goods and services procured. With UK firms well-poised to deliver low carbon industrial products ahead of international competitors, low carbon procurement rules can maximise the opportunities for domestic workers and firms. To ensure that domestic projects developed with taxpayer funding continue to benefit the UK, public procurement contracts should include a clause for the retention of a share of the intellectual property developed by projects in receipt of taxpayer funding and/or tax relief.

Innovation:

Increase innovation funding to facilitate fuel switching and the development of new low carbon technologies where routes to electrification and low carbon production do not yet exist.

This should build on existing mechanisms such as UKRI's Transforming Foundation Industry fund, and BEIS' Net Zero Innovation Portfolio (NZIP), which have kickstarted industrial innovations such as the ultra-low carbon glass produced by Glass Futures. In particular, this should address options for decarbonisation and fuel switching where they are currently limited or unproven at scale, such as in the production of chemicals (including ammonia for hydrogen, which is vital to the broader decarbonisation of the UK economy).

To support the greater adoption of best practices across industry, HM Treasury should hypothecate revenue from the sale of UK ETS emissions allowances to fund low carbon production methods.

Many of the UK's industrial and manufacturing sectors receive comparatively less public funding than firms in key competitor countries (as discussed in Section 1). By using the revenue raised by the sale of emissions allowances in the UK Emissions Trading Scheme (ETS) to facilitate decarbonisation in that sector (for example by investing in grid development, fuel switching and electrification, or to directly cover OpEx spending), government can increase the pace and cost-effectiveness of industrial decarbonisation and improve competitiveness. An industrial base able to decarbonise more quickly will also enable ETS market participants to better comply with a more ambitious ETS, with fewer free and overall emissions allowances. As BEIS looks to consult on aligning the UK ETS with net zero, it is vital that industrial producers are able to respond to the carbon price signal (thereby preventing carbon leakage). In addition to supporting decarbonisation of industrial clusters and the development of new technologies, government must establish a credible plan for decarbonising off-cluster industrial sites.

This should involve basing subsidies on avoided CO2 emissions to incentivise more circular practices, removing existing barriers to fuel switching, such as levies on alternative fuels that cannot be reclaimed by industry, and creating business models for low carbon hydrogen, waste biomass, and CCUS, for which dispersed and clustered sites will be eligible. Dispersed industrial sites will have decreased access to low carbon infrastructure, such as hydrogen pipelines, than firms operating in industrial clusters. To develop robust low carbon supply chains across UK industry, it is vital that dispersed sites are able to utilise all decarbonisation options, such as switching to more accessible low carbon fuels, including sustainable

biomethane produced on-site.

Skills:

BEIS and DfE should work with industry, unions, and LAs, to design skills centres to train and reskill workers in areas that are essential to delivering a net zero economy.

Central government should work closely with local experts to **identify areas in the UK that are best placed to develop particular industrial supply chains due to local strengths,** and would therefore benefit most from the establishment of relevant skills centres. As recommended by the Green Jobs Taskforce, government should work with employers, sector bodies, unions and workers to ensure that business and skills plans for the net zero transition are in place to support such developments.

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Simplify and expand the Apprenticeships Levy and amend the Lifetime Skills Guarantee to allow participation from people that already have a Level 3 qualification, and remove restrictions that limit participation to Level 3 or below.

It is crucial that government maximise the opportunities for workers to gain low carbon skills or transition from carbon intensive sectors. Expanding the Lifetime Skills Guarantee can increase the number of workers able to gain the qualifications needed to transition from high to low carbon industrial sectors. As recommended by the Green Jobs Taskforce, skills vouchers, training sabbaticals and paidtime-off-to-train arrangements would provide workers with the flexibility needed to learn these green skills. The additional funding allocated to the National Skills Fund in the last manifesto should be used to finance workers taking on courses and, where needed, compensate employers for temporarily losing employees taking on reskilling opportunities.77

Resource Efficiency:

Offer tax relief on investments that create cheaper, more efficient materials recovery and sorting practices to stimulate investment in the recovery of valuable resources that already exist within the UK.

To ensure that such investments lead to intra-UK trade across value chains, government should utilise its position as an intermediary – or 'matchmaker' – to establish collaboration between manufacturers and waste management and sorting companies, who would benefit from a guarantee of supply and demand for recycled materials, respectively.

⁷⁷ Green Jobs Taskforce (July 2021) Report to Government, Industry and the Skills Sector, p.62



Use tax incentives, such as reduced business rates on waste materials sold in the UK market, to incentivise waste management and sorting companies to supply valuable scrap and waste materials to UK industry rather than the export market.



This is particularly important where materials are recovered at a high rate (such as scrap steel), but not retained in the UK market. Such measures should be a part of wider tax reform aimed at bringing the UK's tax system into alignment with net zero. For example, where resource efficient products struggle to compete on upfront cost, VAT should be adjusted to ensure greater price competitiveness with high carbon alternatives, reflecting their longer-term environmental and economic benefits.



Implement an expanded Deposit Return Scheme (DRS) and accelerate the roll-out of Extended Producer Responsibility (EPR) schemes to incentivise the design and greater B2B trade of recyclable waste products.

To increase the retention of valuable materials where they already exist on the UK market, a DRS should be clarified in the near future, with a focus on introducing schemes in areas where progress may not be sufficiently made by the introduction of EPR schemes and eco-design criteria. Government should explore the options for expanding the DRS to cover products such as tyres, to incentivise the remanufacture of materials often burned or shipped abroad as waste.

The roll out of EPR schemes should be accelerated beyond packaging to incentivise the development of industrial products that are easier to re-use and recycle. To be effective, EPR schemes will need ambitious fee modulation mechanisms that charge more for products that are harder to sort and recycle, alongside close monitoring of performance. Beyond packaging, the DRS and EPR should be expanded to tyres and batteries. Work with the British Metals Recycling Association and major industrial players to establish mandatory sustainability criteria for the export of waste and scrap to create a level playing field between domestic and international markets for waste materials.

At present, waste materials sold as indiscriminate bundles to other countries do not have to meet the same sustainability criteria as those sold directly to UK industry. This can make exporting specific materials or indiscriminate bundles of waste cheaper than meeting the regulatory standards needed to sell to the UK market. By developing similar criteria for exported materials, government can improve both the UK's reputation for the responsible handling of its own waste, and incentivise the retention and reprocessing of valuable materials. Greater access to locally supplied secondary materials would benefit domestic manufacturers, who could grow their range of low carbon products such as re-treaded tyres, recycled glazing, or goods made with scrap steel.

THE MISSING LINK ESTABLISHING STRONG UK SUPPLY CHAINS FOR LOW CARBON INDUSTRIAL PRODUCTS

