



Building our low-carbon industries

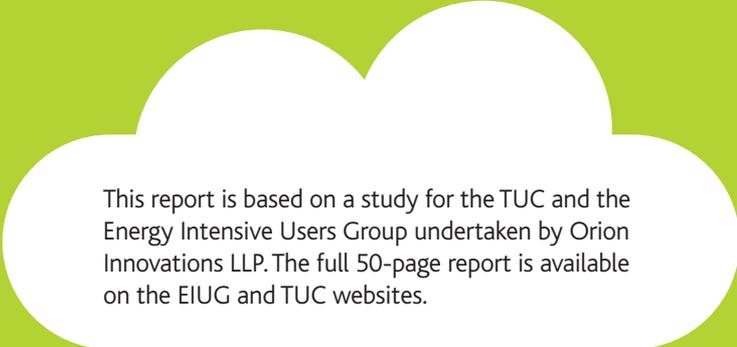
THE BENEFITS OF SECURING THE ENERGY-INTENSIVE INDUSTRIES IN THE UK



In association with the Energy Intensive Users Group

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This report is based on a study for the TUC and the Energy Intensive Users Group undertaken by Orion Innovations LLP. The full 50-page report is available on the EIUG and TUC websites.



Introduction

More than 800,000 people work in our energy-intensive industries and their supply chains. Iron and steelmaking, cement and lime manufacture, chemicals, ceramics, glass, non-ferrous metals, pulp and paper, coke and refined petroleum product industries form the bedrock of UK manufacturing.

The widespread belief that energy-intensive industries (EIs) are labour intensive and heavily polluting remnants of a bygone era could not be further from the truth. Iron and steelmaking, cement and lime manufacture, chemicals, ceramics, glass, non-ferrous metals (such as aluminium, zinc and lead), pulp and paper, coke and refined petroleum product industries form the bedrock of UK manufacturing. They are the core of the real economy. These industries produce primary inputs for much of what we manufacture and consume in some of the most advanced plants of their kind globally. They contribute hugely to the social and economic fabric of the country. And they are the key to our green and sustainable future, providing products that include steel for wind turbines, glass for double glazing and fibres for loft insulation.

By their very nature, these industries use large amounts of energy (electricity and gas) in their manufacturing processes or as raw material. They account for roughly half of UK industrial energy consumption. And they also account for 55 million tonnes of carbon dioxide (CO₂) emissions a year, equivalent to 66 per cent of the UK industry and a tenth of the UK's total greenhouse gas emissions.

Yet, as a result of decades of innovation and investment, the UK's heavy industries are often

more efficient and less polluting than competitor operations in other parts of the world. These mature industries, with the right policies and business environment, can continue to offer increased economic benefits to the UK, through both their own profits and the wider contribution they make by supporting smaller suppliers and boosting growth across the rest of the economy.

Surprisingly, their combined contribution to the UK economy has never before been brought together into a single report. Yet their combined turnover of £95bn provides for directly employing 160,000 people in well-paid, highly skilled jobs. An estimated four times that number work in their supply chains across the UK.



'The UK's heavy industries are often more efficient and less polluting than competitor operations in other parts of the world'

But the EIs are currently under enormous pressure as a result of both the general economic climate and UK and European environmental and energy policies. There is significant evidence that, unless immediate steps are taken, these policies will have a corrosive effect on the viability of individual businesses and entire industry sectors within the UK. As witness to these concerns, the closure of the UK's last remaining aluminium smelter in the north-east and the announced closure of a steel plant in north Kent are just two current examples of industries under intense pressure. The impact if any of these industries were to fail would be significant. Without EIs in the UK, their products would need to be transported, often great distances, to serve UK demand. This not only means a loss of UK jobs, output and tax revenues to the Treasury, but also an inevitable rise in global carbon emissions as we import goods from less efficient producers.

'More than 800,000 people work in our energy-intensive industries and their supply chains'

A key aim of this study has therefore been to demonstrate the vital employment, economic and environmental benefits of sustaining EIs in the UK – and therefore the potential impact if these industries were to be lost.

The research conclusions are wide ranging. The TUC and the EIUG (Energy Intensive Users Group) call for a new broad government strategy to align manufacturing and energy policy. We recommend the creation of a common vision for all EIs in the UK, one that brings together and is shared by

government, industry and trade unions. Given the importance of EIs to the UK we believe that this vision should be to develop and grow the world's most energy-efficient EIs in the UK. As Energy Minister Greg Barker recently stated, "decarbonisation must not mean de-industrialisation". We take this phrase further. We believe that decarbonisation should mean reindustrialisation. Both the EIUG and the TUC support the shift to a low-carbon economy as an essential response to the challenge of climate change, and believe that the EIs are vital to realising this transition.

Our research aimed to bring together for the first time official key economic and industrial indicators on the contribution of the EIs to the UK economy. Industry insights were sought through consultations with EIUG members and their trade association, together with the TUC and its affiliates Unite, Community, GMB and Unity. We focused on three industries and the regions in which they have a significant presence: ceramics manufacture in North Staffordshire; the glass container industry in Yorkshire; and the chemicals industry in the north-west of England, north-east of England and Scotland.

This summary report sets out our key findings and conclusions. A copy of the full report, *Building Our Low-Carbon Industries* and its industry appendices is available at: www.tuc.org.uk/lowcarbon



The importance of EEs to the UK economy

EIs make a direct contribution to the social and economic fabric of the UK, not only through their valuable industrial output but also through the skilled jobs they provide, the pay and benefits their employees receive and the significant fiscal contributions they make to HM Treasury.

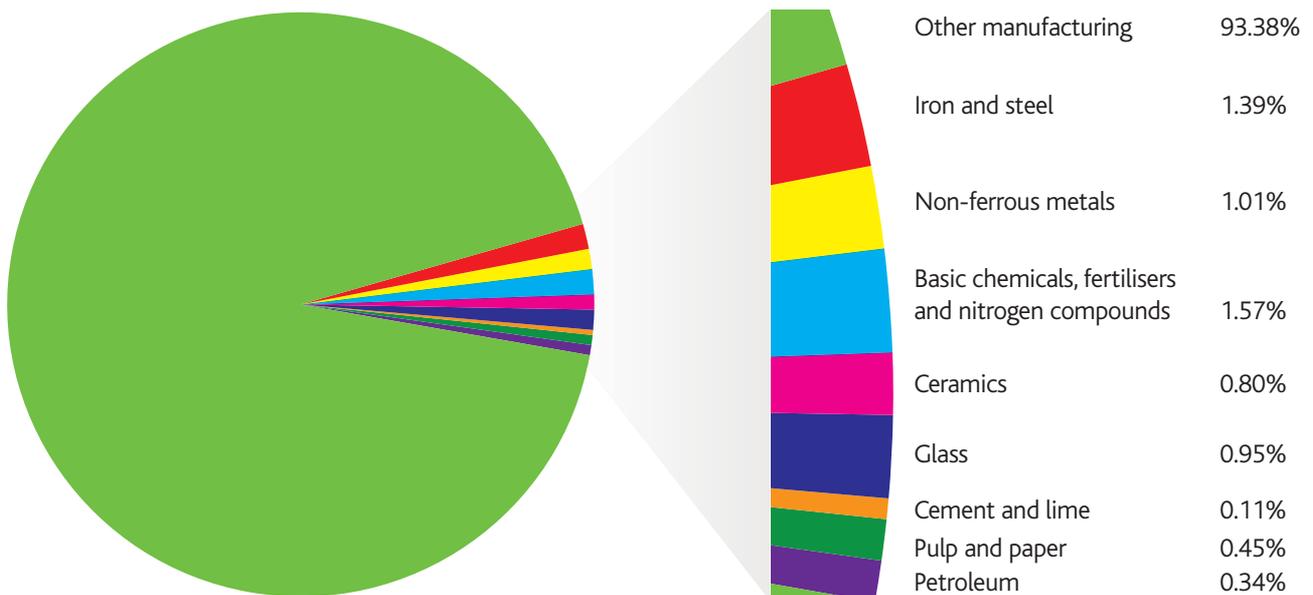
In addition, they sustain their suppliers through the purchase of goods, materials and services, and their customers through the provision of cost-effective products. Employers add further value to the local economy through their employees' wage spend. There is also evidence that EIs are important contributors to skills development and training. And they act as anchors for industry-wide innovations.

JOBS

- Direct employment: 160,000 workers in the UK.
- Total employment including supply chains: 800,000 workers.

Although EI sector employment is relatively low as a proportion of the UK manufacturing total, a far larger number are employed in downstream operations. Supply chain ratios vary by industry: for every employee in the chemicals sector five more work in the supply chain. The figure for the ceramics sector is a factor of three.

Figure 1: Direct EI employment as a proportion of total UK manufacturing – 2008
(Total manufacturing employment: 2,601,801)



Source: ONS Annual Business Survey, 2008

'Ells are among the largest contributors to our Gross Domestic Product (GDP), with a combined turnover of £95bn in 2008, or 20 per cent of UK manufacturing'

ECONOMIC POWER

- Ells are among the largest contributors to our Gross Domestic Product (GDP), with a combined turnover of £95bn in 2008, or 20 per cent of UK manufacturing total and 3 per cent of UK GDP as a whole.
- As capital-intensive industries, they generate higher added value in their production processes. Their combined Gross Value Added (GVA) was £14bn in 2008, or 11 per cent of the UK manufacturing total. And in most industries, value added is significantly above the UK average.

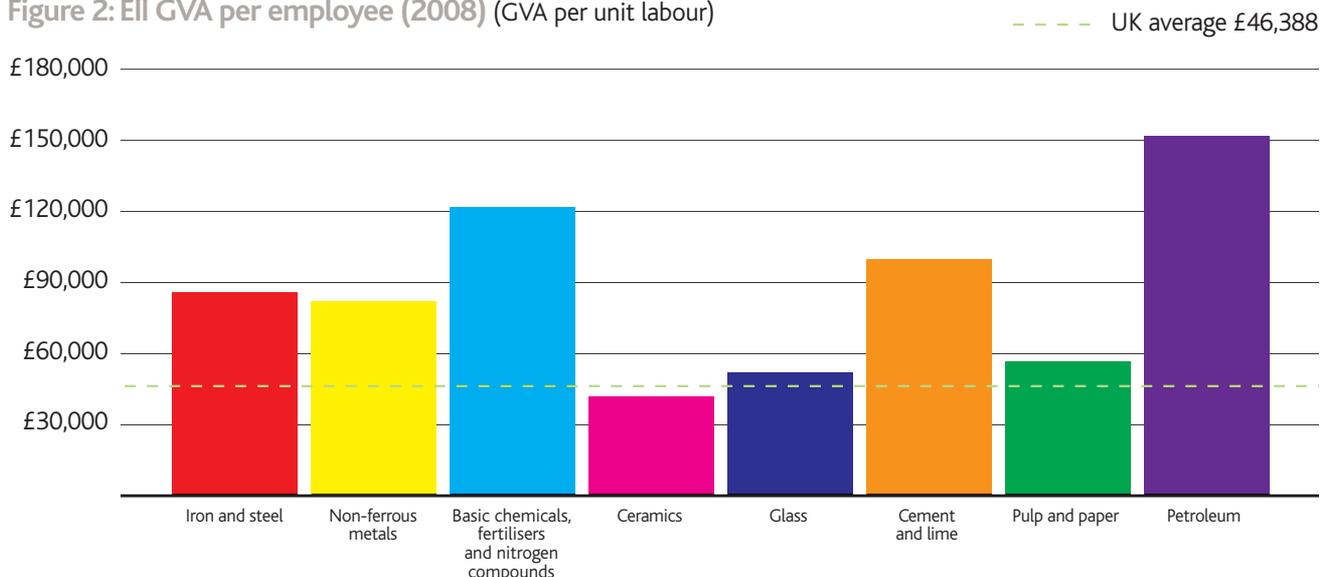
PURCHASING POWER

Ells play an important role in sustaining their suppliers through the purchase of goods, materials and services, with a purchasing power of £68.6bn (2008), or a fifth of the UK manufacturing total.

WAGES AND TAXES

- Employment costs: £6.6bn (2008) in wages, national insurance and pension contributions, or an average of £38,000 per employee.
- Corporate taxes and levies: £12bn in 2008 from the Climate Change Levy and other taxes, or around half (47 per cent) of all manufacturing taxes.

Figure 2: Eil GVA per employee (2008) (GVA per unit labour)



Source: ONS Annual Business Survey, 2008



Ells in the transition to a low-carbon economy

Energy intensive industries consume large amounts of energy as well as using gas and petroleum products in manufacturing processes:

- Energy: Ells consume 50 per cent of UK industrial energy.
- Carbon emissions: Ells emit 55 million tonnes of CO₂ a year – or 66 per cent of all UK industry emissions and over 10 per cent of the UK total.
- Some sectors, such as iron and steel and cement, comprise a relatively small number of large individual plants, some emitting over 500,000 tonnes of CO₂ per annum.

As the largest industrial energy consumers in the UK, there is often a mistaken assumption that Ells are energy inefficient. As a previous TUC-EIUG study showed,¹ by virtue of the importance of energy to their overall costs, most Ells have been driven to maximise the efficiency of their operations over several decades. In many instances

Ells in the UK are best in class in terms of energy efficiency and environmental impact, for example:

- Ceramics firms Dudson recently released a low-carbon range called Evolution, proven to have the lowest carbon emissions of any ceramic hospitality tableware manufactured anywhere in the world.
- For every tonne of CO₂ emitted by the chemicals industry, approx. 2.5 tonnes were saved as a result of products and technologies provided to other industries.
- In the UK, where steel is produced using the most commonly used blast furnace/basic oxygen furnace route, average carbon intensity is currently around 1.7–1.8 tCO₂ per tonne of steel.² While this is slightly higher than in some countries, such as Brazil (1.25 tCO₂) and Korea/Mexico ((1.6 tCO₂), it is noticeably lower than in many other economies such as India and China (3.1–3.8 tCO₂).

DUDSON LTD: GLOBAL LEADER IN ENERGY EFFICIENCY IN CERAMICS

Dudson (established in 1800) is a family-owned ceramics company based in Staffordshire. The company has been at the forefront of initiatives within the ceramics sector to reduce environmental impact and energy intensity.

Dudson invested in the recycling of waste materials as early as the 1960s. In more recent years, the company has made substantial investments in technical innovations that have, for example, enabled products to be fired once as opposed to multiple times, and for shorter periods.

Dudson is at the forefront of the development of low-carbon ceramics products and recently released a

low-carbon range called 'Evolution'. According to independent testing by Endeka Ceramics Ltd on kiln firing processes, Evolution has the lowest carbon emissions of any ceramic hospitality tableware manufactured anywhere in the world.

The company believes that it is as efficient as current technology and economic circumstances will allow, and describes itself as being in a position of 'diminishing returns' where only incremental improvements are possible. In a bid to mitigate the lack of step-change improvements, Dudson has sought to better integrate its production processes, enabling greater control over the environmental impact, emissions and costs associated with its suppliers.

'By virtue of the importance of energy to their overall costs, most EIs have been driven to maximise the efficiency of their operations over several decades'

Companies in all sectors claim to have exhausted most opportunities for operational improvements that deliver greater energy efficiency. Further gains are often only minor, and are dependent upon significant capital investment to replace manufacturing plants with between 10 and 20 years' operational life remaining. In the absence of opportunities to improve manufacturing energy efficiency, some companies are investing substantial sums in 'decarbonising' their energy supply through, for example, the use of biofuels, on-site power generation or potential use of carbon capture and storage (CCS). But achieving substantial shifts in energy efficiencies now relies upon significant levels of capital investment in new technologies that will enable change. This is expensive, and firms cannot invest on their own. These businesses are dependent upon active government support to assist them in making this important transition.

As well as their own potential to become even more energy efficient, these industries are also critical to realising a low-carbon economy. They provide the raw materials, products and infrastructure needed to manufacture, install, maintain and operate renewable energy generation technologies such as wind turbines and solar panels. They and their supply chains are responsible for products like insulation materials, low-energy lighting and lightweight plastics. Furthermore, innovation in EI-based products and applications will play an important role in delivering the innovative solutions needed in order to realise a low-carbon economy, such as lightweight glass and scientifically applied fertilisers.

MCKINSEY CHEMICAL INDUSTRY STUDY ON CARBON REDUCTION

A McKinsey study³ found that in 2005, the carbon emissions linked to the chemicals industry amounted to some 3.3 Giga-tons carbon dioxide (CO₂) on a global basis. A majority of these emissions resulted from the chemicals manufacturing process, the remainder from the use of gas.

By contrast, the emissions reductions resulting from the use of chemical products was estimated to be between 6.9 and 8.5 Giga-tons CO₂.

In effect, for every tonne of CO₂ emitted by the chemicals industry, approx 2.5 tonnes were saved as a result of products and technologies provided to other industries. The biggest savings included: insulation materials in construction, chemical fertilisers, fluorescent lamps, low-temperature detergents, engine-efficient lubricants and plastic piping.

This shows the need to take into account the many uses of the products EIs manufacture when assessing their environmental impact.



Regional jobs and supply chains

Although Ells exist throughout the UK, specific sectors are often dominant in particular regions, reflecting factors such as access to important local raw materials, ports, supply-chain opportunities and investor initiatives. Detailed sector and geographic data is available in the full report.

- Pulp and paper: the UK has 55 paper mills, predominantly in the north-west and south-east, producing half the paper used in the UK.
- Cement and lime production is concentrated in twelve cement kilns and eight blending sites, plus seven producing commercial lime. Ownership is dominated by international companies and one UK-owned company.
- Ceramics plant are spread across the whole of the UK, with 160 sites in concentrations around the West Midlands, notably Stoke-on-Trent, the north-west and the south-west.
- Chemicals plant are found across the UK, but with concentrations in the north-west, West Midlands and south-east. There are a small number of key players, yet chemicals firms can be found in almost every area.
- Glass industry employers comprise a range of different sized companies, with much production concentrated in Yorkshire and the north-west. There are 10 comparatively large companies operating 18 sites across the UK.
- Iron and steel is dominated by global players such as Tata Steel Europe and is concentrated in the north-east and Wales, with three integrated steel making plants and five secondary



steelmaking sites. All are foreign owned except Sheffield Forgemasters.

- Non-ferrous metals, including aluminium, lead, zinc, tin and copper, are concentrated in the Midlands, north-west, north-east and South Wales.
- Coal and refined petroleum products: UK refineries are based along the coast, with the south-east, Wales, north-west and north-east being the main hubs.

Overall, Ells are highly interconnected, with the products and outputs from one sector being used by another. This is particularly true of the chemicals sector, which feeds into a network of interrelated industries.



The importance of government policy

There is significant concern among those industry representatives spoken to in the course of this study that government policy, both current and historic, risks jeopardising the well-being of these industries as well as failing to deliver emission-reduction objectives.

Current government policies rely heavily on increasing the cost of carbon emissions, for example, through the EU Emissions Trading Scheme and the new carbon tax,⁴ to encourage firms to invest in alternative, low-carbon and energy-efficient technologies. But in practice this approach reduces the capacity of these industries to invest, and if applied unilaterally to the UK could distort international competition to the detriment of the UK. The resulting loss of manufacturing to both developed and developing world economies not only costs UK jobs but can also give rise to an increase in global energy use and emissions through the use of inferior processes, more carbon-intensive electricity, and greater transport of goods.



Given the capital and energy intensity of the EIs, and the international nature of their markets, the TUC and the EIUG believe that policies are needed that address the following key challenges:

- maintaining international competitiveness, in particular with regard to energy price
- encouraging investment for energy efficiency and emissions reductions
- avoiding carbon leakage (the loss of jobs, investment and carbon controls to countries with weaker (or no) climate change policies).

MAINTAINING INTERNATIONAL COMPETITIVENESS

EIs are sensitive to energy price, and in particular to prices relative to those available to competitors in the UK, Europe and the rest of the world.

Energy intensity, in terms of energy cost relative to manufacturing cost, GVA or turnover, is an important indicator of a sector's sensitivity to changes in energy prices. Energy cost is the most significant variable used by industries and countries to ensure the international competitiveness of their EI sectors.

There is significant concern that current UK government policy, as it relates to energy prices, will seriously undermine the competitiveness of British industry. UK costs are already higher than European neighbours. Previous TUC and EIUG research⁵ estimates that for the employers surveyed the increase in overall energy bills as result of UK and European climate change policies will be between 18 per cent and 141 per cent in the period to 2020.

In response to these concerns, the government took steps to alleviate some of the impact of energy

'UK companies have to fight to ensure that the government maintains a 'level playing field' with international competitors'

policies in its 2011 Autumn Statement. But this is nowhere near enough. The £250m support package is spread over the current spending review period. It includes £75m in relief from the Climate Change Levy up to 2017, worth about £20m a year. While there is broad consensus that this is a step in the right direction, there is concern that decisions are being made based on inaccurate data on company energy use, that measures do not encompass all types of energy and energy use, such as gas, and that they remain highly inadequate relative to the support given to EIs in other countries.

A perception among EI stakeholders interviewed in the course of this study was that UK companies have to fight to ensure that the government maintains a 'level playing field' with international competitors. By contrast, it was felt that competitors in countries such as Germany start with the knowledge that their governments will work in partnership with them to maintain an internationally competitive position. This perception is important when it comes to UK subsidiaries of international conglomerates seeking investment in competition with subsidiaries in other countries. Put simply, the UK Government needs to do far more to support our EIs if they are to retain their ability to compete internationally.

ENCOURAGING INVESTMENT IN ENERGY-EFFICIENT TECHNOLOGY

Improvements in energy efficiency and reductions in the carbon footprint of industrial plants typically arise due to operational improvements, regular plant maintenance and investment in new and more efficient processes and technologies.

Improvements in operational practice and plant maintenance can have incremental benefits within

the constraints of an existing plant. However, most UK EIs have already responded to high energy and carbon costs and made these improvements. The greatest energy efficiency and emissions abatement impacts now result from investment in significant new processes, technologies and equipment.

For example, a modern ammonia plant uses 30 per cent less energy per tonne of product than one constructed 40 years ago, and 10 per cent less than one built 10 years ago. The same trends exist across all EIs.

EXTRACTS FROM THE CHANCELLOR OF THE EXCHEQUER'S AUTUMN STATEMENT⁶

The Government intends to implement measures to reduce the impact of policy on the costs of electricity for the most electricity-intensive industries, beginning in 2013 and worth around £250 million over the Spending Review period:

- The climate change levy discount on electricity for climate change agreement participants available from 1 April 2013 will be increased to 90%.
- Up to £100 million over the Spending Review period to mitigate the impacts of the carbon price floor on electricity costs to businesses that are electricity intensive and operate in internationally competitive markets from April 2013.
- Compensation for the indirect impacts of the EU Emissions Trading System on electricity costs from January 2013 of up to £110 million over the Spending Review period, from existing departmental budgets. Eligibility will be based on EU rules, which are due to be agreed in 2012.
- Government will explore options for reducing the impact of electricity costs arising as a result of electricity market reform policies, including the Feed-in Tariffs, on electricity intensive industries, where this significantly impacts their competitiveness and subject to value for money and state aid considerations.



'UK government policy ... risks jeopardising the well-being of industry and could fail to deliver emissions-reduction objectives'

Realising greater energy efficiency is therefore intimately linked to policies that encourage significant capital investment. Investment decisions are made with the long-term prospects of a particular business in mind. Energy policy matters, but so do broader industrial strategies and the stability of the business and policy environment. Realising energy efficiency therefore requires a stable and competitive business environment that encourages capital investment and innovation.

Under these circumstances, perception matters and many industrial stakeholders contacted in the course of this study expressed concern that UK government policy, both current and historic, risks jeopardising the well-being of industry and could fail to deliver emissions-reduction objectives.

Broader industrial policy is a key factor influencing whether companies invest in new and more efficient plants. On this, the UK is seen as lagging behind key competitors in mainland Europe and elsewhere, with a number of respondents reporting a reluctance to invest in the UK due to negative business environment, uncertainty over government commitment to industry, and the long-term fiscal, regulatory and policy environment.

Many EILs are multinational concerns, with UK companies competing internationally for capital investment. Often these capital investment decisions are made by international headquarters outside of the UK. We encountered several instances where companies had moved UK activities abroad at the time when investment in new plants was needed, due to more favourable conditions, with significant impact on UK employment and the UK economy, and negligible or negative impact on global carbon emissions.

AVOID CARBON LEAKAGE

'Carbon leakage' – the loss of jobs, investment and carbon controls to countries with weaker (or no) climate change policies – is a common concern across the EILs. They produce primary inputs for much of what we manufacture and consume. Without EILs in the UK, businesses would import their products (as well as those products that are made from EILs' primary outputs).

In 2010, Civitas looked at the threat of British energy policy to the manufacturing industry,⁷ and included specific mention of Ineos Chlor. The company is one of the UK's largest consumers of electricity, in particular for the electrolytic manufacture of chlorine and caustic soda from brine. It concluded that if the Ineos Chlor plant in Runcorn were to close, either in part or in full, many more industries would close too. Chlorine is not readily transported so downstream businesses would migrate to countries and regions where chlorine is produced. The UK would continue to consume products containing chlorine, such as derivative plastics, polyvinyl chloride (PVC) or disinfectants, but these would simply be made abroad. The same logic applies to most, if not all, other EILs.

In order for carbon leakage not to be detrimental to the environment, it would be necessary for imports to result in fewer emissions than domestic manufacture. But there is significant evidence that the reverse is likely to be the case. In many instances, loss of UK manufacturing will be to countries that use more carbon-intensive energy, and produce products with fewer carbon-efficient processes. Furthermore, loss of these industries to the UK results in greater transport of goods, with resulting emissions impacts.



The risks of failure

Loss of any individual energy-intensive business can have a far-reaching impact on other businesses. It can undermine the economic viability of:

- companies down the supply chain that have historically procured its products
- companies up the supply chain that have historically supplied raw materials and other inputs to its processes
- companies that share supply chains or infrastructure
- other companies within the sector, in particular those that share physical and human resources or are reliant on critical mass to sustain services, training, education and innovation
- companies providing services to the sector.

The recent closure of Dow Chemical's ethylene oxide plant in Teesside provides an interesting example, the impacts of which are not yet fully established.

In many instances, the wider impacts of the decline or closure of a particular plant or business is not immediately obvious. But a series of small closures have a gradual and corrosive impact on the long-term viability of the sector. These include the disappearance of, for example, sector-specialised education and training, and key technology and service suppliers.

The failure of a single plant or company can undermine the viability of many others, or indeed the sector as a whole. Only government, through sector strategy and industrial policy, can take a more holistic view of industry and so influence the interests and decision-making of individual companies.

THE CLOSURE OF THE DOW ETHYLENE OXIDE PLANT⁸

The chemicals sector is one of the most highly interdependent sectors of all the EIs. Hundreds of products are created, with multiple process plants highly dependent on one another. For example, an ethylene cracker may feed dozens of wider plants. Historically these crackers and their derivative operations will have been developed and owned by a single commercial entity. While this situation prevails in many parts of the world, in the UK, with the demise of large corporates such as ICI, these plants have been sold into separate businesses. These individual businesses then make decisions that are optimum for their operations, but which may be sub-optimal for interrelated businesses. In doing so, an individual business can undermine the long-term prospects of many others.

Dow Chemicals closed its ethylene oxide plant in Teesside in 2009 with a loss of 75 jobs, and consolidated manufacture at its plants in mainland Europe. At the time the company said that "the closure of its ethylene and ethylene-derivatives production plants fit into its strategy of reducing its reliance on cyclical and commoditised basic chemicals production, and increasing its focus on less volatile higher-value speciality chemicals".⁹ Although this decision may have been entirely appropriate for Dow, it has had a significant and lasting impact on a number of related businesses.

Croda International, reliant on ethylene oxide supply from the Dow plant, was forced to close, with the loss of 125 jobs. Other derivative operations are now dependent upon ethylene oxide shipped from Europe. Ethylene oxide is hazardous and carcinogenic, and is not transported great distances if at all possible. Given this, import is not likely to be a long-term solution and all linked UK operations are to some extent blighted.

Sabic, which owns the ethylene cracker, and other businesses that shared processes and utilities supplies with the Dow ethylene oxide plant, were also impacted.

'Official data suggests that there has already been a 7 per cent decline in employment numbers across all EIs between 2008 and 2011, and a 9 per cent reduction in turnover'

In Autumn 2011, Alcan announced the closure of its aluminum smelter in Lynemouth, Northumberland, with the loss of more than 500 jobs. The company cited the UK's high energy costs. The TUC and unions in the industry had been warning government about this risk for two years. The Alcan smelter was Northumberland's biggest private sector employer. It had been a mainstay of good-quality and well-paid employment for 40 years in an area still working hard to recover from the devastating closure of deep coal mines. Unemployment in the north-eastern region currently exceeds 11 per cent. Sited just two miles away from Ashington, once known as Europe's biggest pit village, Alcan had made a considerable contribution to the local economy during the toughest of times.

Official data, set out in the full 50-page report of this study, suggests that there has been a 7 per cent decline in employment numbers across all EIs between 2008 and 2011, and a 9 per cent reduction in turnover.

Both industry and trade unions stakeholders contacted within the context of this study talked about a tipping point, where investment in new plants is made unattractive by energy prices and industrial policy, and existing plants become uneconomic. They also talked about whole industry sub-sectors being undermined through loss of critical mass and associated specialist resources and infrastructure.

Average EI GVA, wages, social payments, taxes and levies per employee (2008) (excluding the petroleum sector)

| | LOW | AVERAGE | HIGH |
|--------------------------------|----------------|----------------|-----------------|
| Gross value added (GVA) | £39,963 | £77,146 | £122,292 |
| Wages | £24,246 | £31,694 | £41,931 |
| Employer National Insurance | £2,076 | £2,700 | £3,285 |
| Pensions contribution | £822 | £2,483 | £5,667 |
| Taxes and levies | £1,363 | £1,959 | £2,611 |
| TOTAL | £28,507 | £38,836 | £53,494 |

Notes: calculated by combining EI 2008 totals and identifying the low, average and high values. These figures exclude the petroleum industry, which pays substantial taxes and levies and which distorts the average.

The TUC and the EIUG estimate that the economic and fiscal costs associated with the loss of EII employment are significant: based on current EII averages, they amount to a loss of output of more than £77,000 per person.

It is also important to take into account the knock-on effect, both up and down the supply chain, of losing these industries: on average, more than £200,000 is spent on third-party goods, materials and services for each person employed within EII sectors. In turn, products worth in excess of £280,000 are sold to their businesses customers, who use them in their own production processes.

Where re-employment occurs following closure, historic evidence suggests that there is typically a long-term reduction in wages and GVA and a sustained increase in unemployment. Previous studies¹⁰ have shown that a manufacturing job in the steel or chemical industry contributes around £70,000 to the regional economy (GVA), while a replacement job in warehousing, for example, contributes only £30,000. On a per worker basis, output as measured by GVA is significantly higher in these industries than in the broader economy. Plant closures and relocations bring financial costs in terms of unemployment and social security payments and loss of revenues to HM Treasury, and, of course, significant social costs for the individuals affected and their communities.





Policy recommendations

The TUC and the EIUG fear that government is currently taking a laissez-faire approach to the threat of economic and fiscal losses from the closure of EIs. It assumes that market forces alone will produce the right solutions. However, evidence from this study suggests this is wrong, and that without effective government intervention important elements of EIs will cease to be viable in the UK, leading to further carbon leakage and wider job losses across the manufacturing sector.

Instead we need positive policy intervention that provides certainty to industry and creates long-term incentives that support ongoing energy efficiencies. And if we can support these industries to thrive, enabling them to become the greenest globally in their field, the prize is significant: more and better jobs, a stronger manufacturing sector and growing regional economies. Below we outline some of the short- and medium-term changes needed to achieve this ambition.

A COMMON VISION

We recommend the creation of a common vision for all EIs in the UK, shared by government, industry and other key stakeholders. Given the importance of EIs to the UK we believe that this vision should be to 'develop and grow the world's most energy-efficient EIs in the UK'.

As Energy Minister Greg Barker recently stated, "decarbonisation must not mean deindustrialisation".¹¹ We would go a step further. We believe that decarbonisation should mean re-industrialisation.

This vision should be reflected in a consistent approach by all government departments and other policy stakeholders.

In particular, industrial strategy needs to be linked to energy and environmental policy and to recognise the importance of policy certainty for business.

It should be supported by engagement with external stakeholders: a permanent policy advisory board should be established, comprising business and union representatives, to support the delivery of this vision for the EIs.

BOOSTING INVESTMENT

The Green Investment Bank (GIB) provides a vital potential new source of funds to support EIs to continue their transition to a lower-carbon future. But its scope for leveraging vital private sector investment into the new technologies that will provide future energy efficiencies is hampered by its inability to borrow until the Chancellor's borrowing targets are met. Until then, it is simply a welcome but extremely limited fund.

The UK has potential to become a world leader in the technological innovations that will be vital to a lower-carbon global economy. But if it is to do so serious investment has to start now. Government needs to give the GIB powers to borrow from the point at which it becomes operational from 2013.

'Maintaining EII competitiveness is vital to the delivery of a low-carbon economy. However, this will be made possible only with cross-stakeholder cooperation and inclusion'



Now that the government has published draft legislation establishing the GIB, it must ensure that:

- the GIB's mandate can make a real, immediate contribution to securing funding for the technological innovations that could make the greatest difference to the EIs, including lending to small- and medium-sized businesses with scope to innovate but currently facing real barriers to accessing capital
- legislation enables and anticipates substantial borrowing accompanied by a state guarantee
- the GIB's 'green' mandate enables it to play a key role in green economic growth.

The tax system could also do far more to incentivise investment. While the government has recently cut corporation tax, this has been at the expense of tax allowances that provided relief on capital investment. These allowances should be reinstated and expanded. They could be designed specifically to boost investment in technological innovations for the green economy, and would help create a far more favourable climate for the business investment the EIs and our wider economy desperately needs.

SUPPORT WITH ENERGY PRICES AND COSTS

Recent government policy has piled costs on the UK's EIs. The poorly thought through carbon price floor and electricity market reforms have hit EIs hard. But at the same time our competitor industries in Europe and further afield receive significantly more government support with energy costs.

The UK government needs to recognise the strategic economic benefits of maintaining an EII manufacturing base in the UK, and provide significantly more tax relief on energy costs than is currently being provided. As a first step, in consultation with stakeholders, BIS should lead an assessment of the optimal level of transitional support on energy costs and technology investment for the full range of the UK's EIIs over the next decade, including an assessment of support programmes provided by our European competitors, notably Germany.

DEVELOPING NEW TECHNOLOGY

There are several key innovations that we know could make a difference to industry now, most prominently CCS technology. Government needs to commit both to the development of this technology and to doing so in a way that builds the industrial links which will enable its sustainable development.

The Department of Energy and Climate Change (DECC) launched a new competition¹² for the first full-scale CCS project in April 2012, with indications for the first time that government is linking energy and industry policy. Its roadmap for a sustainable CCS industry aims to "capture emissions from clusters of power and industrial plants linked together...". The potential for power and industry clusters sharing expensive carbon capture technology is already well known in industrial regions like Yorkshire & Humber, Teesside, the East Irish Sea and east coast of Scotland.

However, DECC has some work ahead to clarify just how it will support CCS for industry. The consultation merely comments that: "We will consider incentives that might drive deployment of industrial CCS following completion of the work we intend to take forward to identify the current state of innovation and the barriers to deployment." No further details are

available. DECC needs to develop a series of options to incentivise CCS for industry, ideally within the framework of energy policy incentives due to feature in the forthcoming Energy Bill 2012.

SKILLS FOR THE NEW ECONOMY

In the longer term continual innovation and development can be achieved only if skilled workers are available to develop and grow these industries, and the new technologies and processes that their futures will depend upon. This means taking a far more strategic approach to skills development.

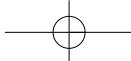
The TUC welcomes the decision of the Green Economy Council (GEC) to prioritise work on a skills strategy for the low-carbon economy. Joint discussions between the GEC and the Sector Skills Councils' Green Economy Steering Group should help to clarify the essentials of a strategy. Given the Business Secretary's recent comments on the development of industrial policy, government should assume single-point leadership at Ministerial level. Measures to motivate skills providers and educators with a green skills strategy should include a review of the nature and level of funding. And a willingness to work jointly with employers and other stakeholders in a whole-economy approach to skills and training provision would help drive forward the employment and skills opportunities needed to build our low-carbon industries.

NOTES

- ¹ *Technology Innovation for Energy Intensive Industry in the United Kingdom*, July 2011.
- ² Ibid, page 11.
- ³ Mckinsey and the ICCA (International Council of Chemical Associations), *Innovations for Greenhouse Gas Reductions: A life cycle qualification of carbon abatement solutions enabled by the chemical industry*, July 2009.
- ⁴ The Carbon Price Floor, or 'carbon tax', starts in April 2013 at £9.55 a tonne of CO₂.
- ⁵ Waters Wye Associates, *The Cumulative Impact of Climate Change Policies on UK Energy Intensive Industries – Are policies effectively focussed?*, July 2010.
- ⁶ HM Treasury, *Autumn Statement 2011*, 2011.
- ⁷ Civitas, *British Energy Policy and the Threat to Manufacturing Industry*, April 2010.
- ⁸ Telephone interviews conducted between November 2011 and January 2012.
- ⁹ www.dailyfinance.com/2009/07/01/dow-chemical-announces-plant-closures-says-its-savings-plan-is/
- ¹⁰ *Technology Innovation for Energy Intensive Industry in the United Kingdom*, July 2011, page 4.
- ¹¹ www.decc.gov.uk/en/content/cms/news/gb_art_0911/gb_art_0911.aspx
- ¹² www.decc.gov.uk/en/content/cms/news/pn12_040/pn12_040.aspx



'This vision should be to develop
and grow the world's most
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Published by:
TUC
Congress House
Great Russell Street
London WC1B 3LS
June 2012

Design: www.design-mill.co.uk
Print: Mastercolour plc, Tunbridge Wells.

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CarbonNeutral[®] publication

