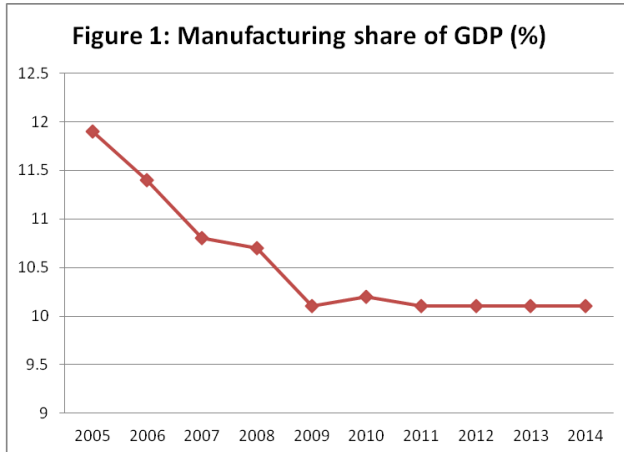


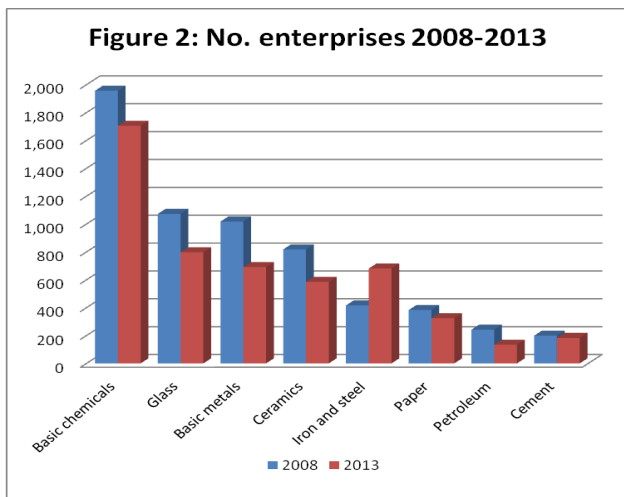
Manufacturing in the balance?

Executive summary

At the very time when manufacturing should be expanding its share of UK GDP, its contribution is now lower than in 2010 (figure 1). Evidence suggestsⁱ that our 'foundation industries', the industrial heartland of UK manufacturing, are facing a steeper decline than manufacturing as a whole.



Our 'foundation industries' - iron and steel making, chemicals, petroleum products, pulp and paper, ceramics, brick, glass, cement, basic and precious metals and related products - are shedding jobs and business capacity at a disturbing rate, with a net loss of over 1,000 enterprises and 36,000 jobs (one in seven of their workforce) between 2008 and 2013.



Foundation industries currently comprise a group of over 5,000 businesses with 210,000 employees across the UK – and more than four times this numberⁱⁱ in their extensive national supply chains.

There appears to be an emerging consensus that 'unprotected' government departments face major cuts in the new Parliament. But this is exactly at the time when a new era of government-led investment should be driving investment in low carbon technologies. In March 2015, the Department of Business, Innovation and Skills published eight sector *Roadmaps to 2050*ⁱⁱⁱ for energy intensive industries. They show that a multibillion technology investment programme is required for

their transition to a low carbon economy. Three issues for government stand out: support for industrial carbon capture & storage; innovation clusters focussed on energy efficiency and recovering heat from industrial processes, not wasting it; and where industries have technology and investment needs in common, creating new regional strategies in our industrial heartlands.

Foundation industries in 2013:

- Employed 210,000 people in 5,100 enterprises.
- Provided high skill, high wage employment: £7.8 billion in wages, salaries and other employment costs in 2013.
- Generated average employment costs of £37,000 per employee, 15% above the £32K manufacturing average.
- Generated £102 billion of combined turnover in 2013 - one-fifth (19.5%) of manufacturing's gross output.
- Produced £16.3 billion in Gross Value Added (GVA) in 2013, or about 10.4% of the value of goods and services produced by UK manufacturing.
- Spent £78 billion in sustaining their supply chains through the purchase of goods, materials and services in 2013, or one-fifth (21.8%) of all supply chains purchases in the UK manufacturing sector.

Our energy intensive industries have been at a sustained competitive disadvantage due to the relatively high cost of the UK's energy and its climate change policies compared with our EU and non-EU competitors. In *Walking the carbon tightrope*^{iv}, the TUC suggested that 'the government has not struck the right balance' between industrial competitiveness and energy policies. The loss of jobs and manufacturing capacity among our foundation industries is slipping towards a new phase of industrial decline which will require a new vision for manufacturing in a low carbon world in order to be reversed.

Between 2008-2013:

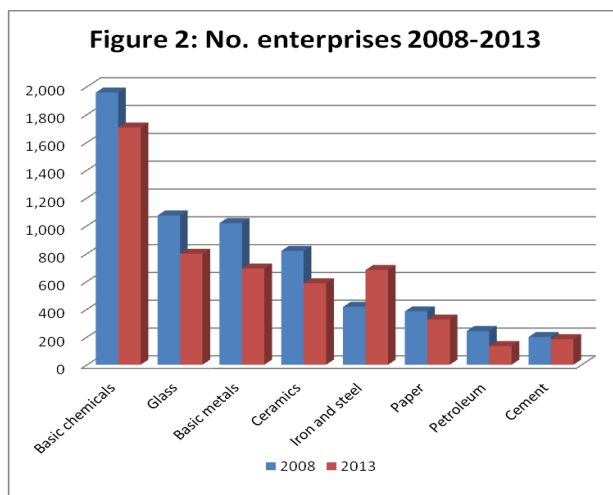
- Over 1,000 foundation sector manufacturers closed down (16.5%).
- Manufacturing as a whole lost 3,876 enterprises (2.9%) over the same period.
- A quarter of the net loss of UK manufacturers (26%) were energy intensive industries.
- The UK's manufacturing workforce fell by 10% (a loss of 283,000 jobs). The foundation industries workforce fell by 14.6% (36,000 jobs) over the same period.
- Net capital expenditure by energy intensive firms fell by £343 million (14.1%).
- Gross output fell by £7.9 billion (7.2%), with the steepest declines in the basic chemicals and iron and steel sectors.

Foundation industries: jobs, GDP and investment^v

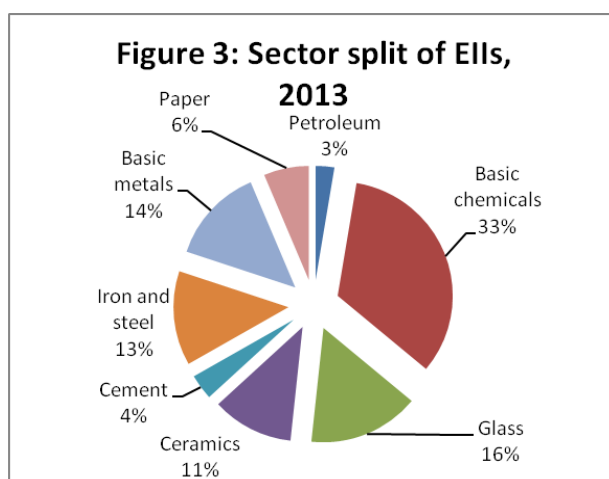
In July 2012 the TUC and the Energy Intensive Users Group (EIUG) produced *Building our low carbon industries^{vi}*, a joint analysis of the UK's energy intensive industries designed to counter a widespread belief that these industries "are labour intensive and heavily polluting remnants of a bygone era." We argued that "such a misconception of their role within the UK manufacturing sector and wider economy could not be further from the truth." Through sustained investment in research and development, UK EIs are often more energy efficient and less polluting than their competitors, and many of their products are essential to the delivery of a low carbon future.

Business activity

Yet official figures^{vii} suggest that industrial trends are heading in the wrong direction. In 2013, there were 5,000 energy intensive businesses in the UK, 1,006 fewer than in 2008. Businesses closed across all sectors except iron and steel. The UK's manufacturing base as a whole lost 3,876 enterprises (2.9%) over this period, so one in four of the net loss of UK manufacturers (26%) were concentrated in energy intensive industries.

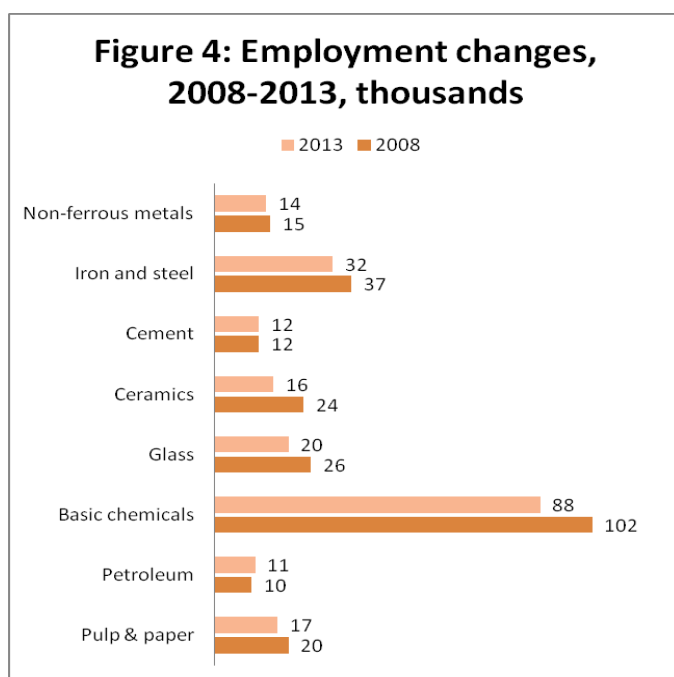


Some sectors involve significant numbers of relatively small enterprises (ceramics, glass, chemicals), while production in iron and steel, petroleum and cement and lime tends to be concentrated in much larger operations.



Employment

Against this background of plant closures, foundation industries lost 36,000 employees (14.6%), or one in seven of their workforce, between 2008 and 2013. Nevertheless, in 2013, energy intensive industries employed 210,000 people across the UK, with more than four times this number employed in their diverse supply chains^{viii}. These industries are capital rather than labour intensive, and account for about 7.9% of the UK's manufacturing workforce, but one fifth of manufacturing gross value added (GVA).



All sectors except cement and lime manufacture experienced job losses (table 1), most heavily in the ceramics and glass sectors, which lost up to a third of their 2008 workforce. The chemicals sector remains the largest employer among the energy intensive industries, with just under half of the total in the petroleum, refining and basic chemicals industries.

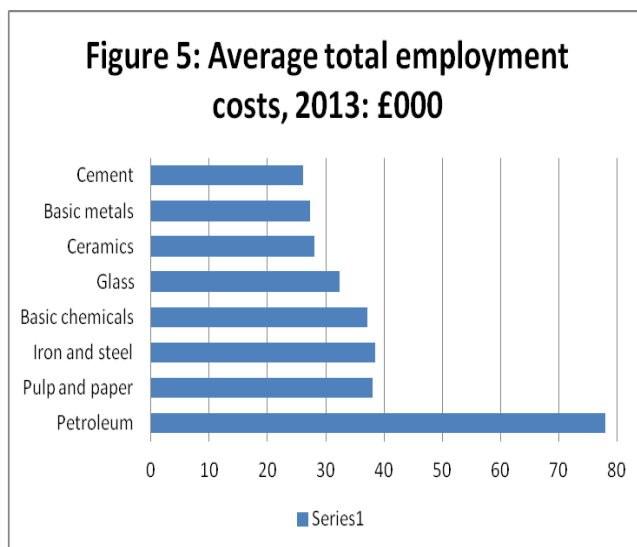
Table 1: Foundation industries: employees, 2008-2013

Sector	2008	2013	% change
Pulp & paper	20,000	17,000	-15.0%
Petroleum	10,000	11,000	+10.0%
Basic chemicals	102,000	88,000	-13.7%
Glass	26,000	20,000	-23.1%
Ceramics	24,000	16,000	-33.3%
Cement	12,000	12,000	0.0%
Iron	37,000	32,000	-13.5%
Non-ferrous	15,000	14,000	-6.7%
Total EIs	246,000	210,000	-14.6%
Manufacturing	2,749,000	2,466,000	-10.3%

In manufacturing as a whole, the workforce fell by 10% or 283,000 jobs between 2008 and 2013. As we noted in *Building our low carbon industries*, there are a number of explanations for this loss of heavy industry employment. During the study, “We encountered numerous examples of companies moving operations abroad to benefit from more favourable business environments, or of losing business to imports from countries that are subject to less stringent energy and environmental constraints. The ceramics industry provides a specific example.”

Wages, social security and pension contributions

Average annual employment costs at £37,000 per employee in 2013 were well above the manufacturing average of £32,000 per worker - a 15% differential in favour of the foundation industries. The total employment bill in the foundation industries was over £7.8 billion in 2013, including: wages (£6.4 billion), national insurance (£579 million) and pension contributions (£819 million).

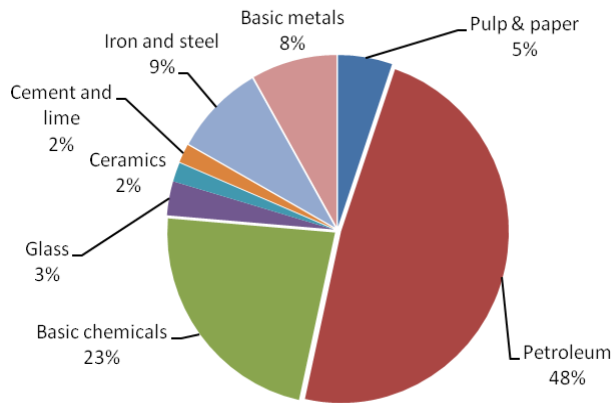


Petroleum industries provide the highest employment costs per employee at just over £78,000 a year (figure 5), of which 76% comprises wages and other employee costs. Employee costs were lowest in ceramics and glass industries, which are also below the UK manufacturing average.

Economic contribution to GDP

With a combined £102 billion turnover in the year ending March 2013 (table 2), the foundation industries make a strong contribution to national GDP, and include high value added sectors on a per employee basis. Their sale of goods and services accounted for one-fifth (19.5%) of manufacturing gross output. Petroleum is the largest of these (figure 6), accounting for £49 billion of GDP or just under half of their combined turnover - and about one-tenth (9.4%) of manufacturing's gross output.

Figure 6: Ells turnover by sector, 2013



However, in the period 2008-2013, the gross output of the foundation enterprises fell by £7.9 billion (7.2%), with the steepest declines in the basic chemicals and iron and steel sectors (table 2).

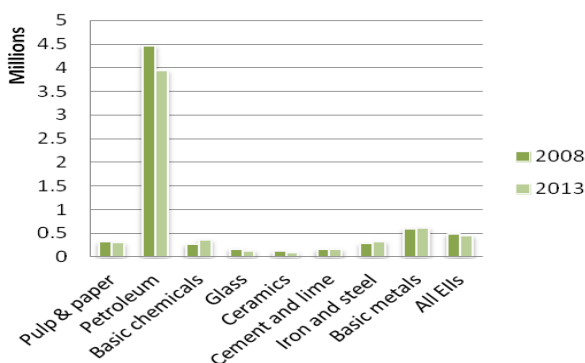
Table 2: Foundation industries turnover by sector, £million, 2008-2013

Sector	2008	2013	% change
Pulp & paper	5,870	5,310	-9.5%
Petroleum	39,320	49,120	+24.9%
Basic chemicals	36,119	23,279	-35.5%
Glass	3,358	3,281	-2.3%
Ceramics	2,140	1,834	-14.3%
Cement and lime	1,852	1,794	-3.1%
Iron and steel	11,860	8,834	-25.5%
Basic metals	9,241	8,367	-9.5%
Total	109,760	101,819	-7.2%

Employee productivity

Average turnover per employee is £446,000 across all foundation industries (figure 7; table 3).

Figure 7: Turnover per employee, 2008 - 2013 (£m)



Reflecting the high levels of capital investment in the foundation industries, turnover ranges from £89,000 in ceramics to £354,000 in the chemicals sector. All industries are dwarfed by the average turnover of approximately £4m per employee (2013) in the petroleum and related industries.

Table 3: Foundation industries, average turnover per employee, £000s

Sector	2008	2013
Pulp & paper	312	294
Petroleum	4465	3932
Basic chemicals	265	354
Glass	164	129
Ceramics	115	89
Cement and lime	150	154
Iron and steel	276	321
Basic metals	598	616
All EIs	485	446

Gross value added

In 2013, the gross value of goods and services produced by the foundation firms was worth £16.3 billion (table 4), or about 10.4% of UK manufacturing's added value.

Table 4: Foundation industries Gross Value Added by sector, 2008-2013

Sector	2008, £m	2013, £m	% change
Paper	1,121	1,728	+54.1%
Petroleum	1,420	1,046	-26.3%
Basic chemicals	8,489	6,903	-18.7%
Glass	1,160	982	-15.3%
Ceramics	826	625	-24.3%
Cement and lime	670	536	-20.0%
Iron and steel	3,045	1,943	-36.2%
Basic metals	2,490	2,575	-3.4%
Total	19,221	16,338	15.0%
All manufacturing	149,441	156,975	+5%

Gross Value Added (GVA) represents the amount that individual businesses or sectors contribute to the economy, measuring income generated less business costs including goods and services used to produce their output; labour costs including wages and salaries; and an operating surplus (or loss).

Employee productivity

The gross value added per employee (table 5; figure 8) ranged from around £100,000 in both the paper and petroleum sectors to £39,000 per employee in the ceramics sector and £45,000 in cement and lime manufacture. The benchmark for manufacturing as a whole was £64,000 per employee.

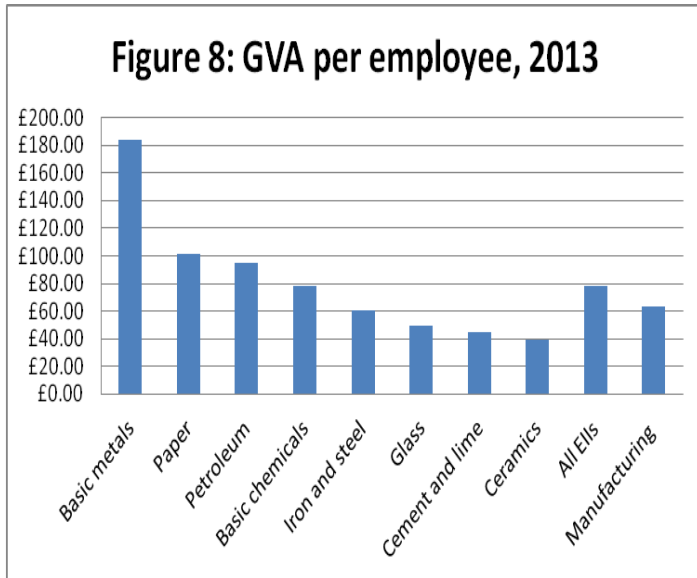
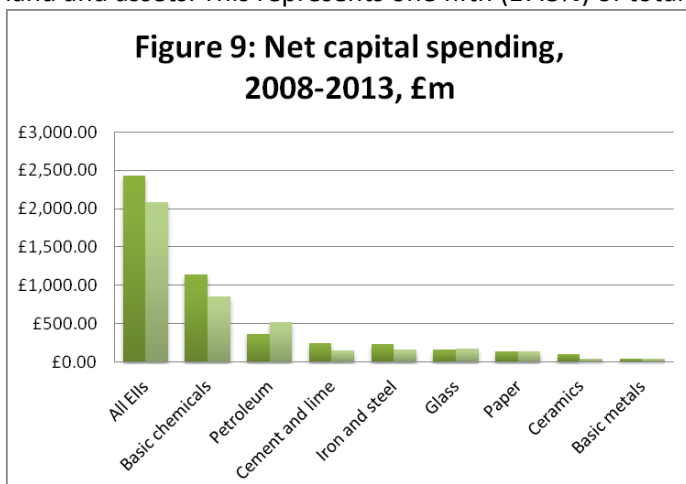


Table 5: Foundation industries, Gross Value Added per employee, 2013

Sector	GVA per employee
Manufacturing	£63.7
Paper	£101.6
Petroleum	£95.1
Basic chemicals	£78.4
Glass	£49.1
Ceramics	£39.1
Cement and lime	£44.7
Iron and steel	£60.7
Basic metals	£183.9
All foundation industries	£77.8

Capital investment

In 2013, energy intensive industries made an annual net capital expenditure of £2.1 billion (table 6), with investments in new buildings, vehicles, plant and machinery and property offset by disposals of land and assets. This represents one fifth (17.3%) of total manufacturing net capital expenditure.



However, over the period 2008-2013, net capital investment fell by £343 million (14.1%) across the energy intensive industries (figure 9), with reductions of £529 million in four of the eight heavy industries. The biggest falls were in the basic chemicals and cement and lime sectors, outweighing growth of £186 million in petroleum and glass industries.

Table 6: Manufacturers' net capital expenditure, £m, 2008-2013

Sectors	2008	2013	% change
Paper	134	138	+3.0%
Petroleum	359	515	+43.5%
Basic chemicals	1,146	859	-25.0%
Glass	156	179	+14.7%
Ceramics	103	39	-62.1%
Cement and lime	250	144	-42.4%
Iron and steel	237	165	-30.4%
Basic metals	42	45	+7.1%
Total	2,427	2,084	-14.1%
Manufacturing	11,625	12,063	3.8%

Purchase of goods and services

The foundation industries sustained their supply chains by purchasing £78 billion of goods, materials and services in 2013 (table 7), or a fifth (21.8%) of all supply chains purchases in the UK manufacturing sector. The petroleum, chemicals and metals sectors purchased the greater part (89%) of these supplies and services. Whereas the manufacturing supply chain activity grew by 4.3% overall between 2008 and 2013, foundation industries' purchases fell by 4.3%.

Table 7: Purchase of goods and services, £billion, 2008 and 2013

	2008	2013	
Manufacturing	342,619	357,419	+4.3%
Paper	4,846	3,673	-24.2%
Petroleum	27,050	39,572	+46.3%
Basic chemicals	28,675	16,635	-42.0%
Glass	2,218	2,352	+6.0%
Ceramics	1,367	1,202	-12.1%
Cement and lime	1,205	1,252	+3.9%
Iron and steel	9,006	7,030	-21.9%
Basic metals	6,863	6,166	-10.2%
All industries	81,230	77,882	-4.1%

As we argued in *Building our low carbon industries*, it remains the case that an ambitious government-led strategy is required, combining green innovation with measures to support these industries' commitments to decarbonisation in the transition to a low carbon economy.

ⁱ *Understanding the economic contribution of the Foundation Industries, 2014:*

http://www.tatasteleurope.com/static_files/StaticFiles/Functions/Media/Foundation_Industries_Report.pdf

ⁱⁱ <https://www.tuc.org.uk/sites/default/files/tucfiles/buildingourlowcarboninds.pdf>

ⁱⁱⁱ Industrial Decarbonisation and Energy Efficiency Roadmaps to 2050:

<https://www.gov.uk/government/publications/industrial-decarbonisation-and-energy-efficiency-roadmaps-to-2050>

^{iv} *Walking the carbon tightrope*, TUC 2014: <https://www.tuc.org.uk/economic-issues/industrial-issues/energy/manufacturing/walking-carbon-tightrope>

^v This profile of the employment and economic contribution of the energy intensive industries is based on the ONS Annual Business Survey (ABS), Section C – Manufacturing, November 2014.

^{vi} Building our low carbon industries:

<https://www.tuc.org.uk/sites/default/files/tucfiles/buildingourlowcarboninds.pdf>

^{vii} ONS Annual Business Survey (ABS), Section C – Manufacturing, November 2014.

^{viii} *Building our low carbon industries*, see above.