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10 years of carbon pricing in Europe

A business perspective



The Prince of Wales's Corporate Leaders Group

CISL's longest standing business platform, The Prince of Wales's Corporate Leaders Group (CLG) is a select club of European business leaders working together, under the patronage of The Prince of Wales, to advocate solutions to climate change to policy makers and

business peers at the highest level, both within the EU and globally.

The CLG has commissioned this report with the support and engagement of the We Mean Business Coalition and the World Bank Carbon Pricing Leadership Coalition.



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Copies

This document can be downloaded from CISL's website: www.cisl.cam.ac.uk

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Executive summary

This report, produced to mark the ten year anniversary of the EU Emissions Trading System, is based on a series of interviews with companies covered by this cornerstone climate policy who have made notable progress to reduce their carbon emissions during its lifetime. Jos Delbeke, Director General of DG Climate Action, was also asked for his insights on how the EU ETS has developed over this period.

Nine companies were included covering a variety of sectors ranging from energy companies and energy intensives, to those for whom the carbon price in Europe is more marginal in impact. The interviews were free ranging discussions focusing on what action companies had taken and the drivers behind these actions, whether and how the European carbon price had impacted on these actions and what other carbon reduction policies were relevant. Interviewees were asked to identify what was helpful and what was more problematic in climate policies and how they hoped these would develop in the future.

Whilst some of the responses were in line with previously well-articulated views on climate policy, there were many surprises and some new insights on the benefits of focusing on carbon reductions:

- The ownership structure of companies is important, particularly in some of the less energy-intensive sectors, where the right structure allows a longer term commitment to deliver investment and carbon reductions. Unlocking carbon reductions often required extending the normal payback periods for investments.
- The leadership and vision of the CEO or senior management was crucial. Some of the companies would not have acted to reduce their emissions without this.
- The CEO and senior management drive to reduce carbon is usually based on a desire to ensure their business and products continue to have a place in a carbon constrained economy.
- Reducing carbon has made these companies more efficient, and becoming more efficient has reduced carbon. This symbiotic relationship came through again and again.

As companies focus on carbon they seem to steadily move away from a compliance approach to regulation, towards more creative, and more productive, forms of emissions reduction. Because of this change in approach it is clear that the low hanging fruit have not all been picked.

There were also a number of key insights on the role of the EU ETS and carbon-regulation more broadly, which can help inform future policy design:

- The presence of the ETS (and other regulations) acts to reinforce the benefits of emission reductions. Companies are saving money through greater efficiency and then getting a carbon bonus over their competitors – either by being able to sell allowances or not needing to buy them.
- Energy intensives who have been most concerned about the impact of the ETS have nevertheless derived benefits from it, such as being better able to manage and reduce their emissions. Some would like changes to the allocation method to recognise the lower life time emissions of products which are infinitely recyclable.
- Although the recession in Europe caused the carbon price to drop very low, carbon reductions continued as companies strove to improve efficiency to stay afloat.

This snapshot of companies who have been actively reducing carbon is both encouraging in the level of reductions that can be uncovered and the benefit to their businesses, but also cautionary – this level of success indicates a continued downward pressure on the European carbon price as companies become more and more successful at reducing their emissions.

Chapter one

Introduction

It is ten years since the EU Emissions Trading System (EU ETS) began operating in Europe.

Over the last ten years the EU ETS has weathered the 2008 financial crisis and subsequent EU downturn, the rise of emerging economies (with the competing attractions of investing in these new markets), and the global volatility in energy prices – including the rise of shale gas in the US.

At its inception there was nervousness amongst some industry and governments that being a ‘first mover’ in pricing carbon would damage competitiveness and affect growth in Europe. High carbon prices were the major concern at the time, but in reality the system has been dogged by low prices caused by depressed production and demand in Europe and by companies covered by the system adapting their operations to reduce their greenhouse gas emissions.

During these ten years the EU ETS has continued to implement lessons learned along the way – having recently agreed to the introduction of a Market Stability Reserve to avoid very high and very low prices. There is encouraging evidence to suggest it has helped shape business attitudes in Europe or beyond, being a key influence on the many trading systems that have emerged at a national and sub national level around the world. It has also contributed to the ‘decoupling’ of greenhouse gas emissions and growth.

Jos Delbeke, the Director General of **Climate Action for the European Commission** notes:

“Since 1990 economic growth [in the EU] is up 45% and emissions are down 19% – that has been a very important achievement. We know that the biggest [carbon] reductions have been in the ETS sectors. Agriculture, transport, households – all have made some improvements but the ETS has been responsible for a big chunk in delivery.”

The Prince of Wales’s Corporate Leaders Group (CLG) was also established just over 10 years ago. Today the Group has 23 members and brings together business leaders from a cross-section of UK, EU and international businesses. Not all its members are covered by the EU ETS and their cross-sectoral nature highlights the different challenges in decarbonising the different parts of our economies. The CLG represents a progressive business voice in Europe and commissioned this work to bring forward the voices of business across Europe after 10 years of European climate policy.

This report is based on a series of conversations, giving an insight into some of the attitudes of European business to climate policy, the drivers that motivate them, and the obstacles to further action.

What is the EU Emissions Trading System (EU ETS)?

The EU ETS is a carbon market operating across 31 countries in the EU and the European Economic Area, covering more than 11,000 greenhouse gas emitters – power stations and manufacturing plants, plus some EU flights – and addressing about 45% of EU greenhouse gas emissions.

The market works by capping the total amount of greenhouse gases that can be emitted by all the facilities covered by the system. Facilities in the system are required to surrender ‘allowances’ each year that match their emissions. Emissions allowances can be bought at auction or from other participants or traders.

For some trade exposed sectors there is a limited annual allocation of ‘free allowances’ to help compensate for any competitiveness impacts of the carbon price.

Chapter two

Companies interviewed for this report

Interviewees were selected from companies that are participants in the EU ETS and who appear to have taken an active approach to carbon reduction. They were identified either through raw ETS data, by being recipients of relevant awards for action, or were recommended by sector associations or other companies. Responses should be interpreted as illustrative of different company perspectives, rather than as representative, and there were sectors (such as paper and pulp) where we were unable to secure contributions within the time available.

Nine companies contributed their views either through face to face or telephone interviews, and were asked broad questions about the action their companies were taking, the drivers for those actions, and whether or not the EU ETS had a significant impact.

All of the companies interviewed are covered by the EU ETS, but not all are impacted in the same way. Some, such as EDF Energy and Shell, are well known supporters of carbon pricing. Others, however, come from industrial sectors where the benefits are not always so apparent and competing with global players can undermine enthusiasm for the principle of regional carbon pricing.

Despite these differing company experiences, some of the views expressed may surprise readers and perhaps illustrate how much industry has learned from and adapted to a new policy framework over the last ten years. Some of the companies are members of the CLG, but some are not, and all were chosen to share their experience in reducing carbon emissions – the purpose was to provide some inspiration and insight for others.

There are company profiles at the end of this report, in Appendix 1. In addition Jos Delbeke, Director General of DG Climate Action for the European Commission was interviewed.

The companies and representatives interviewed for this report were:

- **Italcementi** – Carlo Pesenti, CEO of the Italcementi Group was interviewed by telephone
- **GlaxoSmithKline** – Matt Wilson, Head of the Global Environmental Sustainability Centre of Excellence was interviewed face to face
- **Tata Steel Europe** – Tim Morris, Head of Public Affairs for Tata Steel in Europe was interviewed face to face
- **ArcelorMittal** – Karl Buttiens, Director of Environment and CO₂ Strategy was interviewed face to face
- **Jaguar Land Rover** – Jonathan Garrett, Director of Corporate, Social Responsibility was interviewed face to face
- **EDF Energy** – Denis Linford, Director of Special Projects at EDF Energy was interviewed face to face
- **Shell** – David Hone, Shell's Chief Climate Change Advisor, provided his thoughts by email and face to face
- **Owens-Illinois (O-I)** – Rens de Haan, Country Group Executive for the Netherlands, UK and North West Europe was interviewed by telephone
- **Encirc** – Adrian Curry, Managing Director of Encirc was interviewed face to face.

Chapter three

What do companies think of the EU ETS?

It would have been unthinkable 10 years ago to have the breadth and depth of corporate thinking on carbon reduction that has been exposed in this brief study. The interviews collectively give the sense that responses to carbon policy have deepened over this time; moving from a compliance mentality to a much more creative attempt to unlock more difficult carbon reductions.

The EU ETS does not affect all companies it covers in the same way because of the differences in reliance on energy and their production methods. For some it is vital in setting an investment framework, for others it supports what they already do, and for some it is of relatively minor significance. Some companies take issue with the early allocation process and others continue to be concerned about the need for support for decarbonisation in industrial sectors and protection against international competition.

Despite being in an energy intensive industry, Carlo Pesenti of **Italcementi** is generally welcoming of the effect of the EU ETS on the company:

"I am in favour of the ETS... Europe has been able to create a market that is working more or less... with limitations and weaknesses, but I think we are positive and it's supported our investment policies. Carbon leakage is, of course, a risk, but I think that our investment policy is in fact reducing such risk within the ETS scheme."

GlaxoSmithKline's [GSK] Matt Wilson also believes:

"It reinforces the good work that we are doing. Because we [have been able to] sell our [allowances] I think we have benefited by £1 million."

Their research division has now used up their allocated, or free, allowances, and GSK are starting to buy EUAs, but the company is not overly concerned:

"Possibly we were over-allocated, but we've also done a huge amount in this space, and we've been motivated to do something in the space because it makes really good financial sense to do it."

O-I, the glass container manufacturer, discusses the ETS on a regular basis as part of its sustainability strategy.

Encirc had issues with initial allocations as a new entrant to the industry:

"One significant barrier to building a new glass plant has been the allocation system for new entrants. It's OK now, but as a new entrant we had no history so the allocation was very low."

Today they still find the EU ETS to be a significant cost on business, even with a low carbon price, but acknowledge:

"It's probably a larger cost to our competitors, so we accept that, but that's off the back of £500 million of investment to get where we are."

The steel industry has been vocal in expressing concern about the impact of an EU carbon price on a globally traded commodity and would prefer a global response. However, Tim Morris explains that **Tata Steel Europe** are:

"...in favour of a market based solution. We are, in general, believers that markets are better resource allocators than government diktat. And we are certainly in favour of reducing CO₂ and creating a more resource efficient, resilient economy."

He also explains that Tata are not arguing with charges for companies that are emitting CO₂ above the levels of best practice and that they support a price incentive to improve. Specifically on the EU ETS, Morris comments that:

"We certainly wouldn't want to scrap it and start again; that would be a nightmare from an investor credibility point of view – and from our side as well – we have spent a lot of time getting our global board familiar with the current framework."

ArcelorMittal believe that the EU ETS has been a good policy for the energy generation sector but is not convinced that it is right – in its current format – for the steel sector as they cannot pass on the additional cost of a carbon price. They are competing in a world market and do not yet have the technology to decarbonise.

Karl Buttians explains that, like Tata, ArcelorMittal "fully accept" that the company should pay for inefficiency. However, they also believe that, beyond best practices benchmarks, "internalizing the externalities" of carbon emissions is a cost that should fall on the consumer.

He would be happy to see serious benchmarks used for determining the level of free allocation of allowances, but not those:

"...that have to meet so many constraints that they are not really benchmarks any more, as they are economically and technically not reachable even for the best plants."

"What counts are the total emissions. If the benchmark is well designed, people will act accordingly and do what is necessary to reach it. Under the EU ETS people are focusing on direct emissions, but that's wrong – they should be looking at their total emissions."

Buttians supports the ETS's role in requiring carbon measurement that helps manage emissions.

However, he thinks that the carbon market is not 'smart' enough to reflect the opportunities and difficulties in reducing the carbon content of steel through reuse and different technologies, so believes technology will be the driver in the long run.

For **Jaguar Land Rover** [JLR] the EU ETS has driven reductions in operational CO₂ emissions. Jonathan Garrett explains:

"The product is where the lion's share of impact is, but we don't ignore operations. Operational CO₂ reduction of 28% per vehicle in 2014 was achieved from a 2007 baseline."

But many of the in-house policies at Jaguar Land Rover to cut CO₂ emissions are not covered by the ETS. So has the ETS been important for them? Garrett's view is:

"Without the EU ETS we probably would have done some of these things anyway – but it creates an added impetus to focus on CO₂."

As an energy company, **EDF Energy** have experienced a much more direct impact from the carbon price. Denis Linford recalls:

"I don't think we could have got [nuclear] back on the agenda unless climate change was important. It may not have been economically justified without that, therefore the carbon price was a very important signal."

EDF Energy have supported the introduction of other measures, such as the UK carbon floor price (which sets a minimum level in the event the market price for carbon falls) and Contracts for Difference (CfDs), (which guarantee a 'strike price' for electricity generated). This is because they have seen these measures as necessary in the absence of a stronger European Carbon Price – the carbon price signal affects operational decisions as well as investment:

"It is true that Electricity Market Reform (EMR)¹ has rather removed or replaced the price signals with the CfD strike prices but it was seen as a positive way to improve the market to encourage the investment to take place."

EDF Energy remain supportive of the EU ETS and of reform that will increase and stabilize the carbon price:

"The main driver should be the carbon price and we want the market to work".

Shell has a clear position in support of carbon trading. David Hone elaborates:

"The simple concept of a finite and declining pool of allowances being allocated, traded and then surrendered as carbon dioxide is emitted has remained. Despite various other issues the EU ETS has done this consistently and almost faultlessly year in and year out; the mechanics of the system have never been a problem."

However, Hone believes that multiple carbon reduction policies have undermined the impact of the ETS.

"Its effectiveness has slowly eroded over time. This is partly due to the recession and the abundant crediting allowances, but there is a policy design cause arising from the superimposition of multiple layers of policy..."

The proliferation of carbon reduction policies has been raised by others too and is a problem where individual European Member States have added policies, usually with more specific objectives than just CO₂ reduction, that have overlaid the EU ETS without being accounted for in the EU ETS cap setting process. Added to the impact of the recession and of the effectiveness of companies in reducing their emissions, a huge surplus of allowances has built up in the system, suppressing the price.

David Hone points to the inconsistency of businesses responses to this problem:

"As the ETS has weakened, this process of policy layering has accelerated and therefore compounded the problem. The business community is split over what to do about this with various proposals involving the removal of allowances favoured by some, but others arguing that the system is naturally responding to events and should be left to find its own way. The problem with the latter position is that it could result in an ETS that becomes politically and economically irrelevant, leaving a regulatory based approach as the way forward."

Throughout the 10 years of the ETS, policy makers have been treading that perilously thin line between providing a long term investment framework for business and allowing themselves the flexibility to revise and improve on this very new policy.

Jos Delbeke acknowledges the problem, and says with hindsight he would have done some things differently:

"We hesitated a long time – some would say too long – to come forward with proposals to deal with the surplus [allowances]."

"If we had known what we know today, we would have incorporated an MSR² type of provision in the modification of the ETS."

Responses to the ETS have developed – from a large amount of concern and negativity before it began to a more clearly defined divide between those who need a high price to justify the right investments now and those for whom the position is much more complex.

For many industries in Europe carbon policy has coincided with the rise of the Asian economies and incumbent European industries with plants that are half a century old are battling against new competitors with state of the art technology and low labour costs in the east. Even these industries have found that tackling carbon is to their benefit – it helps them address their cost base, making them as efficient as they can be, whilst differentiating them from their less climate aware competitors in emerging economies.

The next chapter will look at what these companies are doing to address their carbon emissions and why they are doing it.

Chapter four

Why are companies acting – and what they are doing?

Jos Delbeke has highlighted the role of carbon policy and the EU ETS in decoupling emissions from growth in Europe; our interviewees sketch a fuller narrative on how this is being done. These are the developing responses of companies to a carbon regime. Whilst many of these approaches are company specific some common themes have emerged.

The initial response to the EU ETS was undoubtedly, for most, a purely compliance approach to the new regime in 2005. Since then, however, other factors have come into play and for many a virtuous circle of emissions reduction and cost reduction is emerging.

The companies interviewed for this study were approached for their relative success in reducing carbon and are therefore not typical. The factors they identified that contribute to that success are not, however, solely based on a sense of responsibility to the environment.

Issues that recurred throughout the interviews were the benefits of measuring emissions, the positive impact on the bottom line, the ownership structure of companies – and the impact that has on long term planning, the ability to differentiate from competitors and to engage a supply chain in a new relationship and how extremely important was the leadership provided from senior management.

Compliance and Regulations

The starting position for all of the companies interviewed for this report was compliance. The EU ETS is mandatory for them though the degree to which it affects them varies from being fundamental for the energy companies, deeply important to the energy intensives such as the steel industry, and relatively marginal for companies such as **GSK** who have only 11 installations covered by the trading system.

The compliance aspect of the EU ETS has been extremely important. The measurement required by participants in

the system has provided important information. As Karl Buttiens of **ArcelorMittal** acknowledges:

“For us the biggest contribution of the ETS is that we got very involved in monitoring, benchmarking, measuring our CO₂ emissions. You cannot manage what you don’t measure and measuring gave us a lot of insights.”

It is clear that this measurement of emissions has, of itself, been enormously helpful for companies in managing their emissions, but also for taking a fresh approach on where they can be more efficient and where they can cut their costs – an aspect that will be dealt with in more detail below.

For some of the companies interviewed CO₂ is not the only greenhouse gas and the EU ETS is not the only policy driver.

For **GSK**, because of their product range, fluorinated greenhouse gases (known as ‘F-gases’, with a very powerful global warming impact) have been an important element in reducing their greenhouse gas emissions. Matt Wilson explains:

“Not only the Montreal Protocol and EU ETS, but the F-gas regulations also have had an impact on the business. If you think of all our estate – all the air conditioning units, refrigeration plant; it’s been really challenging. Our direct operations have reduced [greenhouse gas] emissions by 20% over the last five years.”

ETS compliance

ETS compliance: All of the facilities that are covered by the EU ETS have been required to monitor, report and get independent verification of their CO₂ emissions every year since 2005. Each of these facilities have been responsible for surrendering European Allowances (EUAs) equal to their emissions each year. The energy companies now have to buy all of their allowances whilst companies in sectors that are exposed to international trade receive a proportion of allowances (based on benchmarks of the best performing facilities in the sector) to protect them from some of the economic impacts of regional carbon pricing. The benefit of reducing emissions for some is to reduce the amount of allowances they buy, and for others it may leave them with allowances to sell.

Other companies interviewed indicated the value of regulation to drive both carbon emissions and innovation. But what differentiates many of these companies is how they have used the regulations and mandatory requirements as a starting point for taking action that has an economic benefit.

Economics of cutting carbon

The evidence that cutting carbon can cut costs was a running theme in the interviews, and **Italcementi** in their annual report identify:

“CO₂ intensity, related to direct or indirect emissions, is a representative indicator of global efficiency, as it combines most of the key levers to industrial excellence.”

For some the opportunities were surprising. In 2007/8 **GSK** embarked on an energy reduction campaign with central funds identified to:

“...catalyse energy reduction, on the promise of some really good paybacks... energy was less than 2% of costs and sites weren't going to focus on these over and above other efficiencies [without these central funds].”

Energy teams were established for each section of the business. Matt Wilson recounts:

“There were so many 2 year payback projects it was unreal – all the things that had never been looked at before – leaving lights on, not fully utilising office space. [Teams] typically identify between 30% and 40% carbon reduction opportunities, and then two or three years later when they revisit they typically find the same size of opportunities again, despite having made good progress in that time.”

He believes that the level of success they achieved by focusing on energy efficiency has changed investment

decisions. When replacing buildings or equipment they are now far more imaginative, for example considering light wells instead of replacing light fittings. And this creativity has paid off – in addition to the cash they have realised by selling unneeded EUAs – they have also:

“...saved huge amounts of money. I think, cumulatively, we're saving about £90 million a year now, globally.”

O-I cite economic concerns as a major driver for efficiency and decarbonisation. Glass is easily recycled and there are strong incentives to do so, but they now also look at other measures such as reducing the weight of their products, or 'light weighting'. And when upgrading they are thinking more creatively about what will be most effective. For example, Rens de Haan explains, furnaces are now replaced with oxyfuel furnaces that consume 50% less energy and also make it easier to use the waste heat, which is used:

“...to pre-heat raw materials. We also use it to generate electricity and we can use it to heat the floor in the plant ... It's healthy to reduce our energy bill, so there's an economic business driver to it.”

It is often said that innovation comes from new entrants to sectors that are not hidebound by existing technology or traditional thinking. As a new entrant to the glass sector **Encirc** needed to differentiate their business and keep costs very low in order to build market share. They built what they describe as the largest furnaces in the global industry for container glass. Adrian Curry elaborates:

“We converted the furnaces being used to make float glass in America into container glass furnaces. We built a large EPⁱⁱⁱ to reduce the emissions and to reduce the NOx we introduced an SCR^{iv} catalytic converter.”

They also looked for new opportunities and business models – importing wine from Australia for bottling in

Why are companies acting – and what they are doing? *continued*

the UK reduced energy and CO₂ over the previous model of importing ready bottled, and is a model that they have now replicated for many other products. They also, like others in this report, look for efficient resource use:

“Next door we have Kemira (Kemira GrowHow UK Ltd) who produce fertiliser and one of the by-products is ammonia, so we use the ammonia from Kemira to scrub our emissions.”

Although Encirc concentrate on reducing other emissions more than CO₂:

“Our CO₂ emissions in this plant are the lowest in the UK and arguably the lowest in Europe for NOx and SOx. CO₂ is very low but not something we focus on except for reporting reasons to the EU ETS.”

The recession in Europe accounted for a drop in production and consequently a drop in demand for the EU carbon allowances (EUAs). This in turn caused the price of carbon to plummet. But there were other things going on to reduce demand for carbon allowances at this time. For **Tata Steel Europe**, the recession focused minds on the need for efficiency. Tim Morris explains:

“People have done things during the bottom of the recession to stay afloat that would previously have been felt to be unacceptable or impossible. We are an energy intensive business; the steps that have been made in terms of energy efficiency improvement have been remarkable and a lot of that is due to the need to pull every cost lever you possibly can against low European demand and rising international competition.”

JLR set up a Carbon Working Group to look at where carbon savings could be made. Like GSK they had a central pot of money for the purpose. The multi-disciplinary team and the central funding were complemented by shifting the rules on investments – moving the payback period from 2 to 4 years and including the amount of carbon saved in assessment of the rate of return.

Beyond the economic drivers there are some more complicated relationships being built that are also driving down carbon emissions.

Customer and Supplier engagement

A key factor for action that was identified is customer and supplier leverage. Some of these companies are responding to the demands of their increasingly ‘sophisticated customers’ – many of the companies noted the need to identify what they were doing and how, when bidding for work.

Tim Morris of **Tata Steel Europe** described the importance of the customer as a driver:

“Broader sustainability concerns are an increasing part of procurement decisions for the more sophisticated customer. We’ve just won a big contract with a major infrastructure project and their procurement process has some very strong sustainability elements to it, running the full gamut from CO₂, waste, responsible supply chains – up to and including community engagement.”

“The future is about making better steel for sophisticated customers, and, to be frank, being able to charge a more differentiated and reflective price than [imported steel] from sources such as China. Because we are never going to win on cost alone.”

Others, such as **GSK**, explained how they drive this from the other direction. They now engage their supply chain and share knowledge. Matt Wilson explained that they have a 2050 aspiration to be carbon neutral, with:

“...no net increase in CO₂ as a result of our operations.”

But they have some specific obstacles to achieving this:

“Our value chain footprint is about 15 million tonnes of CO₂ equivalent annually... [and a] third sits in our supply chain. We know that most of our suppliers individually contribute less than 1% to our supply chain carbon footprint. To have any meaningful impact on the supply chain we’ve got to engage an awful lot of suppliers over an awfully long time to try to move the dial.”

This challenge has required new approaches:

“The first thing we did was to ask our suppliers to disclose their environmental impact. We’ve still got a fair way to go to get everybody disclosing, but we believe we’re engaging more suppliers than any other pharmaceutical company.”

They also run a 'supplier exchange' with about 180 of their suppliers participating in an online collaboration platform where they set each other challenges and share knowledge. Matt Wilson's target is to increase the number of their suppliers participating to between 500-1,000 this year.

However, **GSK** noted that whilst corporate customers have become more sophisticated, many end consumers are not sufficiently interested or informed to be 'willing to pay' for more environmentally sound products.

Ownership structure

The structure of ownership of companies makes a huge difference to whether they can develop a long term strategy, or whether they need to manage their profitability and returns on a very short term basis. Given that the companies here describe some of their most successful strategies for reducing carbon as requiring slightly longer pay back periods, this becomes very important. Most of the companies raised this issue, but particularly **Encirc**, **Tata** and **JLR**.

Adrian Curry of Encirc identified the ownership structure of the company as significant in allowing the long term decision-making that is required for tackling CO₂ and other emissions. Between the original entrepreneur and their current owners, Vidrala, the company was owned by private equity investors where the daily 'bottom line' was much more significant, and planning for the future more difficult:

"...with private equity, unless it has an ultimate 5 year payback and for some investments even 18 months... [it] means you just don't make long term strategic investment decisions."

Jaguar Land Rover's approach on environment and society is strongly aligned to that of its parent company. The Tata Group's core purpose is to improve the quality of life of the communities it serves. 60% of the equity of Tata Sons (the Tata group holding company) is held by philanthropic trusts, thereby returning wealth to society. And Jonathan Garrett describes a long term view in the Group that recognises that:

"Resource scarcity and CO₂ are going to get more important."

Leadership / senior management

The vision and engagement of senior management - usually the CEO - is vitally important in setting the agenda within the company when it comes to emissions reductions, and makes the difference between a company taking a compliance approach, or strategically looking to the future.

Carlo Pesenti, of **Italcementi**, identified his father, the previous CEO, as a major instigator of action:

"I think that sustainability, one way or the other, is part of the DNA of the company... I think that everything started in recent years with the approach... of my father... then I, together with my colleagues here, we were the driver and the catalyst."

But it is not all philanthropic:

"It's the risk management approach. The company - the group - were fully aware that there were risks related to our industry ... and we are trying to hedge that risk in the long term. So sustainability, in my view, is a good way to hedge and mitigate business risks."

Similarly at **GSK**, Matt Wilson identified the crucial intervention from the CEO, Sir Andrew Witty, to refresh GSK's approach to environmental sustainability in 2007. Sir Andrew had said:

"We should be taking all our major facilities off the power grids. We should be building wind turbines in all our remote sites and we should be investing in green chemistry to fundamentally change our emissions profile over the next ten or twenty years."

Rens de Haan from **O-I** also believes that:

"Successful sustainability depends on a combination of company commitment and senior executive support. Our senior leadership played a role, as they wanted to challenge us to incentivise innovation solutions for the company. [They] anticipated future market trends which were likely to favour sustainable suppliers."

Senior management leadership and vision has been crucial in setting out the long term agenda - such as GSK's aspiration for carbon neutrality, but also for focusing resources on cutting carbon - either for cost reasons or to differentiate the brand and retain or increase market share.

Chapter five

Comments on the future

As these companies discussed the future their concerns included developing the new business models that will allow them to operate in a low carbon economy, incentives for the necessary R&D, and the hope for a simplified regulatory framework.

O-I is moving to more imaginative ways of cutting carbon – using waste heat is just one example of how they have moved from mere compliance approaches. Like others interviewed for this report they are now partnering with customers and suppliers. They have joined forces with one of their biggest clients, the brewers Carlsberg, in the ‘Carlsberg circular community’. The aim of the community is to rethink the design and production of traditional packaging and develop materials that can be recycled and reused indefinitely while maintaining the quality and, importantly, profitability.

Encirc, a relative newcomer to the container market, have attracted interest in their new business models. Their innovative approaches (including developing fill lines that fill locally produced bottles and jars with imported contents for local distribution) has created a new income stream for them; the Encirc Academy, where they are acting as international consultants sharing their knowledge and approach to energy efficient glass packaging. Adrian Curry’s concerns for the future include the unintended impact of waste regulation on the quality of recycled materials they work with and the impact on their energy use:

“Over the last 10-15 years the amount of recycled container glass available has increased but the amount that goes back into bottles has plateaued or even reduced slightly because of quality.”

This follows the effort to increase the overall level recycling, where mixed recycling has been expanding and the quality of the glass ‘cullet’ has declined through contamination.

Karl Buttiens believes that the **ArcelorMittal** role in enabling their customers to be more resource efficient is a major step to solving the problem. Karl elaborates:

“Professor Allwood of Cambridge University opened our eyes to that. Half the scrap in the world is scrap that has never reached the [end] customer. If [manufacturers] produce a car door they throw away 40% of our steel. Design, to use materials optimally, will be a large part of the solution.”

He thinks that the price signal is not the best option. He describes the mindset of the managers who make decisions over production processes in ArcelorMittal:

“They will shift of course [with a carbon price] but if you give them a signal on their total energy or their total CO₂ emissions, that’s much clearer.”

Matt Wilson at **GSK** has concerns about customers and consumers acknowledging the issues:

“The biggest thing we want at the moment is some recognition from our payers, customers, consumers, sending us the right indicators that they want products with a lower environmental impact.”

He warns:

“There are lots of competitors waiting in the wings making less environmentally conscious choices that ultimately drive the prices down. This makes it harder to justify investments that reduce environmental impact over the long term.”

Tata Steel Europe would like greater recognition of the need to fund the technologies that will help to decarbonise industry, and the scale of the funding required:

“Steel is unfortunately one of the industries where, like the power sector, increments don’t come in small steps. In order to make progress you need great lumps of capital for things that are still very much within the development phase ... European funds at this point, particularly the ones that steel can access, are not sufficiently large for this type of project – it would take a huge proportion of some funds.”

This concern, echoed by **ArcelorMittel** does not fall on deaf ears. Jos Delbeke agrees that:

“We want jobs in the EU for the creation of wealth”

and he recognises that:

“we have to support [industry] in creating and employing the technical breakthroughs.”

Member States agreed in October 2014 that the 'free allocation' to trade exposed industries should remain in place, beyond the deadline in the current legislation. Delbeke cites this decision as particularly important.

Tata Steel Europe is also worried about the complex legislative environment in which they operate and about additional measures introduced by Member States. Tim Morris noted:

"The Board are disappointed when things happen like carbon price floors – they thought they'd bought into one thing then something else happens."

And whilst they wouldn't want to scrap the ETS they are interested in changes that would, they believe, protect industries such as theirs, pointing to work on Dynamic Allocation^v that would take account of actual production levels.

Jaguar Land Rover would also like the environmental regulatory framework streamlined, where many of the additional measures are at the Member State level. In addition to tailpipe emissions and the EU ETS, Jonathan Garrett said:

"We have Climate Change Agreements (CCAs) and we're also covered by the Carbon Reduction Commitment^{vi} (CRC) – the whole range, which is complicated. You'll have a site where bits are covered by CRC and bits by the EU ETS, and we don't need it. We don't need more legislative drivers to tell us that CO₂ is important – we get that."

David Hone at **Shell** believes that there are severe cost implications from this complicated regulatory framework:

"An emissions trading system that is free of policy overlay can do the job that is needed across an economy, but it will take time. It is a forty-year policy and as such should be left to perform the role intended. If the real intention of the policy maker is to pre-determine the energy system outcome for an economy seeking a sharp reduction in emissions, then a cap and trade approach becomes largely redundant, but the cost of implementing the desired emissions outcome potentially soars. This is the real lesson from the EU ETS."

Conclusions

These interviews demonstrate how creative some businesses in Europe have become over the last 10 years in responding to decarbonisation. Given that the price in the ETS has been low for much of this time; it seems likely that the very existence of the ETS and its reporting requirements has helped some focus attention on carbon.

For many of these companies reducing carbon required some changes to the way they looked at their investments and the pay back periods. Both the ownership and leadership of the companies affected this change. Leadership and vision from the top were critical in kicking off a process in the less energy intensive industries where carbon may have otherwise been overlooked. CEOs took the decisions they did because they wanted their companies to be able to compete in a low carbon economy – and it seems that they have, largely, been rewarded for their foresight with reduced costs and a creative dynamic within the company.

Companies that have taken action to limit their emissions recognised that the carbon price created a valuable advantage for them over their competitors. Reducing CO₂ reduced their energy and compliance costs, whilst their competitors who had not taken the same route face both higher energy costs and the additional costs of compliance for higher relative emissions.

The biggest issue that the ETS has faced over the last ten years, as have other trading systems around the world, is that the price is too low to drive technical innovation. The low price is not just a result of economic downturn, but also of business success in reducing carbon emissions.

It is clear from the interviews that for many businesses the low hanging fruit have not all been picked. The carbon price and policies are, after an initial period, driving companies to ever greater innovation in changing the way they do business and work with their supply chain to drive down emissions. This will continue to put a downward pressure on the carbon price as more and more companies understand the benefits of action.

But industry in Europe is not homogenous and some of the energy intensive sectors face particular challenges. As the steel sector has outlined, the costs of decarbonisation technologies are not incremental – they come in big capital chunks and the policies must be designed to reflect this.

These energy intensive companies will welcome Jos Delbeke's recognition of the need to assist industry decarbonisation by providing 'temporary help'.

The carbon price in Europe does not operate alone. Industries face a raft of legislation – some at a European level such as tailpipe emissions standards, and some at Member State level. Whilst some policies are directed at very specific outcomes some are intended to overcome the impact of the low carbon price. This layering of legislation undermines the carbon price and leads to a complex legislative environment for business to operate in. There is clearly a desire from business to streamline these policies and to ensure they interact effectively –

which would point to more, rather than less, being developed at a European level rather than nationally.

There is also the sense of the journey that many of these companies have taken over the last 10 years. When the EU ETS was negotiated many industrial voices were against a regional carbon price. Over time those have been tempered to asking for help in decarbonising and for retaining and building the European manufacturing base.

Delbeke says he no longer encounters a 'no' camp who are against carbon pricing, but rather voices that say:

"...help us – we know how to make low carbon steel, cement, paper, glass etc, but this is generally more expensive and requires some temporary help to cope with international competition."

There is a question whether these companies would be so knowledgeable about how to produce low carbon products if they had not faced the constraint of the EU ETS and other policies.

In summary we conclude that it seems likely that:

- The existence of the EU ETS and its reporting requirements has helped companies focus on carbon;
- Despite initial concerns about high carbon price the level of the carbon price is too low to drive technical innovation;
- But companies that have shown leadership and recognised that the future is low-carbon have been rewarded with declining costs, and a driver for creativity and innovation;
- The results of this creativity and innovation will create an ongoing downward pressure on the carbon price;
- European businesses in general would like a much more streamlined and less overlapping climate policy framework, and energy intensive industries continue to identify the challenges they face in decarbonising.

But business voices in Europe have shifted from being cautious of, or opposed to carbon pricing to recognising its benefits, albeit with the need to continue to support manufacturing industries. The conclusions here are drawn from a small number of interviews with a few companies who were identified as being successful at reducing their emissions. There are many sectors that for reasons of time were not included in this study. However the development within these companies of carbon reduction strategies and in particular the success of altering pay back periods to uncover carbon reductions is worthy of further investigation. We hope that this snapshot of opinion in these companies will instigate some deeper research into what companies are doing and why.

Appendix

Company profiles

ArcelorMittal

Karl Buttiens is Director of Environment and CO₂ Strategy at ArcelorMittal, the largest steel maker both in Europe and globally. They have 110 steel sites and 30 mining sites around the world and approximately 45-50% of their total steel production is located in the EU, although they have no mines in Europe. They employ around 220,000 people around the world of whom around 100,000 are based in Europe.

Although they are preeminent in the sector Karl Buttiens warns that Chinese steel companies are catching up fast in terms of size and production.

EDF Energy

EDF Group is a major energy company with over 150,000 employees worldwide. It is partly owned by the French Government. The group generates, transforms, markets and distributes power.

Denis Linford is Director, Special Projects at EDF Energy, based in the UK, having previously been Policy and Regulation Director. In the early 2000s Denis was Director of Regulation at EDF Energy. Based on the group's extensive experience in developing nuclear energy in France, EDF Energy has significant interest in the development of nuclear energy in the UK at Hinkley Point.

EDF Energy is one of the largest energy companies in the United Kingdom with over 15,000 employees and produces around one fifth of the UK's electricity through its 8 nuclear plants, 2 coal plants, 1 gas plant and 25 wind farms.

Encirc

Encirc is a relatively new entrant to the glass container sector. The founding company was started in the 1970s, supplying sand and gravel originally and then building blocks and cement. As they were producing the raw materials for glass it was a natural diversification. There have been some ownership changes and Vidrala, a Spanish company with a controlling family interest, recently acquired Encirc.

The Encirc business is relatively small, employing around 1,200 people in the UK and Ireland. Adrian Curry is the Managing Director of Encirc having been with the company since it began glass manufacture in 1998. Encirc have a state of the art production plant, which Mr Curry explained was one driver for entering the container glass sector; there hadn't been a new entrant in the UK or Ireland since 1932, and there hadn't been a new factory built since 1968.

GlaxoSmithKline

GlaxoSmithKline (GSK) is a global healthcare business and Matt Wilson heads the Global Environmental Sustainability Centre of Excellence. 11 of GSK's sites in Europe are covered by the EU ETS but the rest are predominantly covered by national regulations such as the Carbon Reduction Commitment (CRC) in the UK and other local equivalents.

They are active in managing and selling EU Allowances where they have an excess due to reducing their emissions below their free allocation.

Italcementi

Carlo Pesenti is the CEO of Italcementi, a multinational cement company with its HQ in Italy. Italcementi last year celebrated 150 years of operations. It is a member of the World Business Council for Sustainable Development (WBCSD) and Mr. Pesenti is a co-chair for the Italcementi Group of the Cement Sustainability Initiative.

Italcementi clearly takes its commitments to increasing its sustainability seriously, with a variety of actions across its portfolio. According to Mr. Pesenti, their most recent plants in Morocco are "very efficient, employing waste heat recovery.". Their most efficient plant globally is the Pukrang plant in Thailand. They are implementing wind farm projects at plants in Egypt and have wind in operation in Morocco and Bulgaria and are developing a new generation of cement plant at Rezzato in Italy.

Jaguar Land Rover

Jaguar Land Rover (JLR) is the UK's largest premium automotive manufacturing business and is also part of the Tata group of companies. Tata acquired JLR in 2008 from Ford Motor Company.

JLR produces two iconic car brands: Land Rover and Jaguar. They employ 34,000 people globally and identify that they support more than 210,000 UK jobs through the supply chain, dealer network and wider economy.

In 2014/15, JLR invested £3.1bn in new product creation and capital expenditure, making it the UK's number one investor in the manufacturing sector.

O-I (Owens-Illinois) Group

O-I is the world's leading maker of glass containers. Founded in 1903 as Owens Bottle Company it merged with Illinois Glass Company in 1929 to become Owens-Illinois, Inc.

The company has 75 plants in 21 countries employing 21,100 employees worldwide. They have over 49,000 customers in 86 countries and manufacture over 10,000 products. In Europe O-I operates 35 plants in 10 countries.

Rens de Haan is the Country Group Executive for the Netherlands, UK and North West for O-I, and is responsible for 3 plants in the Netherlands and 2 in the United Kingdom. O-I has recently invested in a new Research and Development centre to focus on process innovation, in particular investigating more efficient ways of running furnaces and advancing melting technologies.

Shell

Shell, the global oil and gas giant, is comprised of energy and petrochemical companies with nearly 100,000 employees in more than 70 countries around the world. They describe themselves as "using advanced technologies" and taking "an innovative approach to help build a sustainable energy future." ^{vii} David Hone is Shell's Chief Climate Change Advisor.

Shell's approach to the challenge of climate change is threefold and described in its sustainability report:

'Encouraging countries to switch from coal to gas, which could slow the rate of CO₂ accumulation in the atmosphere;

Encouraging policy makers to set effective and meaningful pricing on CO₂ emissions; and

Encouraging governments to provide support over a limited amount of time for all lower-carbon technologies including carbon capture and storage (CCS) and renewables.

Shell is working on the development of biofuels, hydrogen solutions and wind energy projects and to reduce emissions from our existing oil and gas projects, refineries and chemical plants. We have emissions management plans in place but we recognise that we need to do more to reduce both our energy use and emissions' ^{viii}

Tata Steel

Tim Morris is Head of Public Affairs for Tata Steel in Europe. Tata Steel Europe is one of the more than 100 operating companies that make up Tata group. The group is headquartered in India with operations across six continents employing over half a million people worldwide.

Tata Steel Europe (formerly Corus) is Europe's second largest steel maker, with operations in the UK and mainland Europe. Formed in 1999 through the merger of British Steel and Koninklijke Hoogovens, the company was acquired by Tata Steel in January 2007.

The company produces 20 million tonnes of crude steel for the construction, automotive, packaging, aerospace, engineering and energy industries. It has manufacturing operations in many countries, with plants in the UK, the Netherlands, Germany, France, Norway and Belgium. Carbon steel is produced at four integrated steelworks, at Port Talbot, Scunthorpe and Teesside in the UK and at IJmuiden in the Netherlands. Engineering steels are produced at Rotherham, UK.

i Energy Market Reform – a UK measure which has included the introduction of Contracts for Difference.

ii Market Stability Reserve that takes some allowances out of the market in times of excessive surplus and returns them if prices spike.

iii Electrostatic precipitator

iv Selective Catalytic Reduction

v Ecofys 2014 by order of Dutch Ministry of Infrastructure & Environment and Dutch Ministry of Economic Affairs and Confederation of Netherlands Industry and Employers: Borkent, Gilbert, Klaassen, Neelis and Blok, 'Dynamic allocation for the EU Emissions Trading System' 24 May 2014

vi Climate Change Agreements and the Carbon Reduction Commitment are both UK national regulations.

vii See <http://www.shell.com/global/aboutshell.html> – viewed May 2015

viii See http://reports.shell.com/sustainability-report/2014/servicepages/downloads/files/entire_shell_sr14.pdf – viewed May 2015