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Tata Steel context

Tata Steel is one of the world's top ten steel producers. The combined group has an aggregate crude steel capacity of more than 28 million tonnes and approximately 80,000 employees across four continents.

The European operations of Tata Steel (formerly known as Corus) comprise Europe's second largest steel producer. With main steelmaking operations in the UK and the Netherlands, they supply steel and related services to the construction, automotive, packaging, material handling and other demanding markets worldwide.

Tata Steel's UK operations directly employ 20,000 people and indirectly support more than 100,000 jobs nationally. In many cases it is the largest local private sector employer and the development of its activities have been, and continue to be, integral to surrounding local communities.

Carbon pricing is a deeply important consideration for Tata Steel UK ("TSUK") from a number of perspectives:

- *Caring for communities*: Social responsibility is a core value of the entire Tata group of companies worldwide and engrained in the vision our founders. Tata Steel is deeply committed to reducing its carbon footprint. It has some of the most carbon efficient plants globally and reducing carbon intensity is one of its top four corporate goals. TSUK has identified incremental and step change opportunities to significantly lower carbon emissions. But realizing these opportunities requires capital investment and the battle for capital is both fierce and global. Even without additional requirements Tata Steel Europe is anticipating investing hundreds of millions of pounds on environmental and

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energy efficiency related projects in the next five years, for which we will receive no subsidy.

- *A vital supply chain link*: Steel is vital for a low carbon and energy secure economy, whether it's foundations for wind turbine towers, PV installations, undersea pipes, generation and transmission infrastructure, or lighter weight vehicles. Tata Steel is a global leader in these applications and we want to see the necessary capabilities, skills and jobs further developed in the UK. There are a number of factors that will support this aim, but underlying all of these is the need for the right operating and investment environment for manufacturers.

- *Competitively priced energy and carbon prices*: Steel is a globally traded product. It is relatively easily transported internationally. The large majority of global production is based in locations subject to less onerous environmental and social regulation and taxation than Europe. In a number of cases steel producers in such locations are also co-located with readily accessible local raw materials. UK steel companies therefore face an uphill task on competing with such players and passing through UK-only cost increases to customers is extremely difficult, as recognized in the extensive work done in assessing carbon leakage for Phase III of the EU ETS. Regional and nationally specific measures further tip the playing field away from UK manufacturers on a day-to-day basis and endanger the prospects of longer-term sustainability of our UK operations.

General observations on the consultation

TSUK is therefore pleased to be able to respond to the Carbon Floor Price ("CFP) consultation. Before addressing some of the specific questions you pose in the consultation document it's worth highlighting a number of important observations on the CFP as proposed.

- *Reducing global emissions and securing the UK's energy supply*: TSUK fully supports efforts to combat climate and is very actively engaged across a range of areas to be part of the solution. We are concerned that the CFP will only have limited impact on reducing carbon emissions and securing the UK's energy supply because of its indirect nature, the interrelationship of other factors and the political risk factor that investors are likely to apply. At the same time, the costs of the measure would be real and direct. There are better means to achieving the strategic goals of lower emissions and more secure energy.

- *Capturing the supply chain opportunity for UK business*: As steel is a vital component of a low carbon, secure energy economy TSUK is excited about the opportunities that large-scale investment in the UK's energy infrastructure would offer. In addition to the national opportunity, such an investment program would give UK companies the chance to further develop the jobs, skills and capabilities to compete in this industry globally. However, the concerns over the

effectiveness of the CFP highlighted above, plus the impact of its costs on competitiveness weigh against UK business. Consideration needs to be given for sensible means for mitigating disproportionate costs and of seeing the CFP and Electricity Market Reform in the context of a broader UK industrial policy.

- *Fairly sharing the risks and their costs*: Significantly reducing the risk for generators and their capital providers, in some cases massive global utilities and financial institutions, does not eliminate these risks and their associated costs – it redistributes them elsewhere. Under the CFP and many other energy taxes and levies these costs are redistributed to electricity consumers, both residential and business. We would question whether a high degree of this redistribution is fair and appropriate given the implications for social justice and international competitiveness.

- *Impact on energy intensive sectors*: The consultation document acknowledges that energy intensive sectors such as steel will be impacted unusually adversely by the proposals, increasing the risk of carbon leakage, i.e. where the UK exports jobs but imports higher carbon emissions. The impact on TSUK of the CFP alone could run into tens of millions of pounds of costs that our European competitors will not have to bear. But despite this, the effect is not quantified in the impact assessment and the full impact on these important sectors for the UK economy hidden.

- *Potential alternative solutions*: TSUK is disappointed by the apparent lack of support for alternatives to a CFP-type energy tax that would still provide incentives to low carbon generation investment and which in some cases mitigate the negative impacts on electricity consumers:
    - The Government has actually included an alternative, the Feed-in Tariff with Contracts for Difference, in its Electricity Market Reform proposals. The apparent duplication of these measures is confusing, unhelpful and inefficient.
    - Other alternatives which increase developer certainty could include long-term offtake consortia contracts, planning reform, proposals on long-term infrastructure provision (nuclear waste storage, carbon transportation and storage) and low carbon obligations
    - Win-win alternatives which benefit (or at least less adversely impact) many stakeholders are more support for energy efficiency and demand side response, targeted recycling of energy tax revenues and appropriate adjustments to the new Climate Change Levy arrangements

- *Time frame for consultation*: For a mechanism with a time horizon out to 2030 and with a substantial impact, a 9 week consultation period, including the Christmas period seems inadequate and inappropriate. We would very much like to see an extension to allow fuller impact assessments and deeper consideration, especially the effect on energy intensive and globally competitive manufacturing sectors.

- *Fragmented and duplicative consultations*: The CFP is being positioned as an integral part of a broad package to restructure the electricity market to deliver the political goals of a lower carbon generation mix. It's therefore not helpful or efficient to split the package over two consultations. We imagine this is as much the case for the executive and legislative branches of Government as it is for consumers and their representative groups. The duplication of consultations is in fact reflective that there's an unhelpful degree of duplication between some of the measures proposed.

Responses to specific questions raised in the consultation document

TSUK has responded only to questions where we have an informed perspective and our responses are therefore targeted in particular areas.

Investment

3.A1: What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?

The expectation of TSUK is that the carbon price will in any case increase significantly during the period under review, a perspective shared by many of the analysts who scrutinize the market.

Carbon pricing is an important factor in how TSUK makes decisions right now. Carbon implications are already factored into some of our key day-to-day operational decisions making. An expectation of future carbon prices (at a significantly higher level than today's) is an explicit part of our capital investment assessment process. It also feeds through into the massive efforts currently being put into dramatically increasing our energy efficiency and how we think about different ways of doing business, including investments for new low carbon products and technologies to benefit our customers and low carbon generation for our own use.

3.A2: If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.

Carbon is one factor in assessing the attractiveness of investment opportunities. Other factors, such as planning regulations, the availability of suitably skilled labour, transport and distribution infrastructure and electricity market demand, liquidity and market access are also likely to be highly important in influencing investment decisions. Carbon pricing on its own is unlikely to be sufficient and without action in some of these other areas. Indeed, it risks being an expensive irrelevance.

Steel, like several other important, capital-intensive industrial sectors, has to take a long-term perspective. A blast furnace, for example, operates continuously for 8-12 years between major overhauls with each overhaul costing around £100m per furnace. TSUK is currently planning a rebuild of one of its blast furnaces at an investment of £180m with a 25-year time horizon. Yet the price of steel has been highly volatile, a

pattern that shows little sign of changing. Certainty is therefore an unachievable luxury for the steel industry, as it is for the vast majority of the private sector, and risk-bearing is inherent.

3.A3: How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?

The CFP proposal appears to behave like a tax on electricity generation. Taxation is subject to political pressures and open to change on an annual basis. It's not clear to TSUK what assurance the Government can give on the long-term continuity of the CFP in such a context. Inevitably investors will apply a 'political risk discount'. There is therefore the risk to the consumer and the nation as a whole that whilst they pay for the CFP as generators will pass the CFP cost increments through to end users, as they have successfully done with other environmental levies in the past, only a fraction of that cost will be factored into investment decisions, reducing new build.

In fact we see no additional certainty being brought into the decision-making process for new low carbon electricity generation as a result of this proposal.

3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

The UK Government clearly feels that is the case as the CFP has been brought forward as part of a broader package of measures. Our own experience of the assessment of major investment opportunities is that it is very rarely the case that any single factor is sufficient alone to make decisive differences. More frequently, it is the combination of factors that positively impact investment approvals.

<u>Types of generator</u>

4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.

Not all types of electricity generation fulfill the same role. For example, TSUK's main steel plants capture 'waste' gases generated during the various stages of the steel making process. Rather than released to the atmosphere (i.e. flaring) these gases are combusted either for heat or power generation and steam that is consumed on site. Not only does this recycling process substantially reduce our waste emissions to atmosphere it also has a significant impact reducing the demand on the external electricity network. TSUK receives no subsidy for this recycling and generation of 'renewable' energy and further is actualized penalized under the benchmarking approach of Phase III of the EU ETS.

Acknowledging both the nature and uses of TSUK's own generation it would seem fair to treat it in a different way from that based on primary fossil fuels aimed at supplying customers on a commercial basis.

We'd therefore support the separation of auto generation as a category in the consultation and its exclusion from the CFP for on-site generation. It should also be highlighted that generating is generally not the primary business of those who have auto generation and therefore streamlined regulation and administration for this category is essential.

Carbon price support mechanism

4.E1: How should the carbon price support rates be set in order to increase certainty for investors, in particular over the medium and long term?

As the CFP consultation document states at its outset: "The trading of EU carbon allowances (EUAs) has created a dynamic market in carbon so that emissions across the EU can be abated at least cost" (2.8). A Government set price trajectory therefore seems to be fundamentally incompatible with the concept of 'abatement at least cost'.

TSUK also takes little encouragement from the record of success from governments intervening in commercial markets to attempt to force particular political policy outcomes, with some notable examples in the power sector (power being 'too cheap too meter', for example). Significant subsidies (e.g. ROC revenues) have already been directed towards the low carbon generation market with apparently disappointing effect.

More important for TSUK than these conceptual concerns are the fact that the UK will not be attempting this policy instrument in an economic vacuum. Other European steel makers will be likely to remain operating under an 'abatement at least cost' regime, therefore exposing TSUK to a different cost pressure and impacting our ability to compete even inside the Single Market.

TSUK feels that there has been insufficient consideration of alternatives that have been successful elsewhere for reducing the risk profile for large-scale low carbon generation investment, such as long-term offtake consortia, planning reform, proposals on long-term infrastructure provision (nuclear waste storage, carbon transportation and storage) and low carbon obligations.

We are disappointed that the Government is focused on directing a vast amount of subsidy to the generation sector when, in TSUK's calculations based on its own operations, relatively modest amounts of additional incentives could unlock considerable efficiency and abatement through energy efficiency and demand response, thus creating a win-win for a range of stakeholders. This is not to suggest that these measures replace certain amounts of generation but we believe they form a more cost effective source of abatement than some generation types or broad-brush measures such as the CFP.

TSUK also notes the reported €64bn the UK Government could potentially to generate from carbon allowance actions over the period to 2020. Directly recycling this revenue, or more of this revenue, into low carbon incentivisation should increase investment whilst reducing the cost impact on UK power consumers.

Future price of carbon

4.F1: Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?

As we've set out in our response to 4.E1, TSUK is highly cautious on the economic efficiency and competitive distortions from fixing target carbon prices, particularly on a national basis if these are at a significant deviation from the traded market impacting other European manufacturers.

4.F2: What is the most appropriate carbon price for the UK to meet its emissions reduction targets in the power generation sector? How would this be affected by changes in the structure of the electricity market?

TSUK's own experience of long horizon capital investment appraisal suggests that there is rarely one overwhelming input – rather decisions are made on a combination of factors.

Other factors, such as planning regulations, and the availability of appropriate supply chains and skilled human capital, will also play roles. And perhaps as or more importantly the 'right' carbon price will be a consequence of the interplay between international commodity prices, notably oil, gas and coal.

Therefore it is not clear to us that there is one long-term carbon price or price trajectory that will act as a 'magic bullet' to guarantee a generation mix that delivers a politically mandated level of carbon intensity. In fact, by implicitly favoring the economics of certain types of generation a risk arises of diverting funds from other forms of low carbon generation, therefore reducing diversity of mix.

The proposal in the Electricity Market Reform consultation on a Feed In Tariff using a Contracts for Difference mechanism seems to acknowledge the importance of dealing with uncertainty and mitigating the expected volatility in the electricity market. This seems to TSUK a better way of addressing incentivising certain types of generation in an uncertain environment. The CFP therefore appears to be duplicative in terms of aim, and unnecessarily cumulative in terms of impact on electricity consumers. It also risks being more likely to result in competitive distortions for UK manufacturing for uncertain gain in terms of energy security.

4.F3: When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?

If a CFP was to be implemented it would seem most appropriate to introduce it at the time new large scale low carbon generation comes on line, i.e. the end of the current decade at the earliest. Earlier introduction would be an unnecessary burden on UK end users whilst doing little to give the income certainty those investors in such generation projects demand.

<u>Electricity price impacts</u>

5.D1: How do you currently manage fluctuations in the wholesale electricity price?

TSUK manages wholesale electricity price fluctuations through a combination of forward fixing prices in line with product sales to hedge the margin impact of input cost movement and flexing underlying power demand. However there are very real limits to the amount of fluctuation that can be managed, e.g. the true baseload levels associated with production processes and the ability to flex production quickly in a controlled manner.

5.D2: What difference will supporting the carbon price make to your business?

TSUK, as a member of the Tata family of companies, welcomes efforts to combat global climate change. TSUK also welcomes efforts to grow investment in the UK's energy infrastructure. Such investment represents an important opportunity for the UK supply chain, of which steel is a critical part.

However, we are deeply concerned that the CFP will not deliver the desired investment growth, being an indirect influence amongst other important factors and having very significant implementation issues. At the same time it will be a real cost to UK electricity consumers, the impact of which we cover more fully in our response to 5.D5. Therefore global carbon emissions will see minimal impact, the local supply chain opportunity will be lost and UK businesses will face an additional cost disadvantage when they compete in global markets.

5.D4: As a business, how much of the cost of energy bills do you pass on to customers?

The steel industry and market is global. Steel products are relatively easy to transport and national / regional pricing closely follows global trends. Producers in Asia, South America and the former Soviet Union relative to their European competitors generally benefit from lower labour costs, less environmental regulation / costs and in some cases ready access to low cost raw materials.

In this context it is extremely difficult for European producers to pass on significant regionally specific costs, let alone nationally specific costs.

The exposure of the European steel sector to international competition has been extensively tested and demonstrated during the debates on 'carbon leakage' that have surrounded Phase III of the EU ETS.

5.D5: How might your company or sector be affected and would be there any impact on your profit margins?

The introduction of UK specific energy taxes, such as the CFP as currently set out, increases our cost base relative to European and global competitors, therefore reducing our product sales and increasing the longer term risk to the sustainability of our UK operations.

We make the assumption that the impact of the CFP on the costs of marginal generation plant will be largely or fully passed through to consumers as that has been TSUK's experience to date.

The level of impact risks being substantial. We note from Chart 3 in the consultation document that the difference between the Baseline and Scenario 3 carbon costs is approximately £8/MWh in 2020. That represents several of tens of millions of pounds of incremental costs to TSUK, costs not faced by our European competitors, let alone globally. The impact on other UK steel makers and related manufacturing business is likely to be relatively higher given their more electro-intensive processes.

Of course the CFP if implemented will not operate in isolation. It will be accompanied by the other EMR proposals and add to the rising tide of existing taxes, levies and charges associated with environmental and climate change goals. DECC itself in its "Estimated impacts of energy and climate change policies on energy prices and bills" publication has estimated that the current climate policies will result in electricity prices for "non domestic" consumers in 2020 being 43% higher than today. The current proposals will add substantial cumulative costs again to customer bills, residential as well as industrial and commercial, raising substantial concerns over social justice and the competitiveness of UK business.

Yet there would be ways of mitigating these costs. Greater incentives for energy efficiency and demand response at least allow some sections (but not all, particularly for demand response) to play an important abatement role whilst also supporting the sustainability of their operations. A sensible reform of the Climate Change Levy / Agreements architecture could also produce a win-win for a range of stakeholders.

5.D6: Do you have any comments on the assessment of equality and other impacts in the evidence base of the Impact Assessment, included at Annex D?

We are deeply disappointed that, despite acknowledging the risk to energy intensive industries (e.g. 5.33) there is no quantification of this impact in the consultation document to demonstrate the impact these measures will have on important sectors of the UK economy. Unsubstantiated comments such as "In reality, businesses are likely to pass on some of those costs to consumers and the effect on their profit margins might be smaller" are naïve and deeply unhelpful.

Yours sincerely

[redacted]

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Tees Valley Unlimited response to the consultation on the carbon price floor: support and certainty for low-carbon investment

Tees Valley Unlimited is a partnership of public, private and voluntary bodies, that coordinates activities, appropriate to a city region level, designed to improve the economic performance of the entire Tees Valley. We are pleased to have the opportunity to respond to this consultation, and will work closely with Government to ensure the Tees Valley contributes to low carbon economic growth in the UK.

The Tees Valley is home to the largest integrated chemical complex in the UK, the largest hydrogen network in Europe; Teesport which is one of the largest ports in the UK, pipelines connecting the Tees Valley with the rest of the UK, and large advanced engineering companies. Approximately 12,000 people are directly employed in the process industries in the Tees Valley. These organisations operate in global markets and contribute significantly to export led growth.

There are a range of renewable energy and low carbon projects that have already gained planning consent or are in development as investment proposals. These known projects could contribute over 2,000 additional jobs, and £6 billion worth of capital investment in the low carbon sector in the medium term. Currently, there are approximately 18 installations currently covered by the European Union Emissions Trading Scheme (EU ETS) in Tees Valley, but this will increase as new sectors and processes are included in EU ETS Phase 3.

We have based our response on research we have commissioned and internal analysis, as well as the experience and views of our partners, including the North East Process Industry Cluster (NEPIC), which is a stand-alone company created and owned by its member companies that represents the companies and supply chain of the process industry in the region. We fully endorse the response provided by NEPIC and have used it to inform our own.

We have responded to the appropriate questions individually below, but the key points we wish to emphasise through our response to this consultation are the following:

1. We do not have any specific expectations regarding the level of the carbon price. However, we are aware that it will be a very important factor in informing investment decisions in the Tees Valley. It is critical that the carbon price is stabilised at a level that provides both clarity and longevity to investors, while maintaining a balance that allows industry to remain competitive and contribute to low carbon economic growth in the UK. Public policy that gives ambiguous or only short term signals serves only to increase

risks, regulation and costs and therefore acts as a disincentive to invest in either low carbon or conventional projects. The Government must be very careful to avoid increasing investment risks through introducing measures that distort markets, with unintended consequences.

2. The Government should urgently assess and carefully monitor the impact of the carbon floor price on industries that have been assessed as vulnerable to carbon leakage under Phase 3 EU ETS, and create a mechanism that prevents the full costs of the carbon floor price being passed on to business customers, specifically where there is a known threat of carbon leakage. Developing this evidence base would also support the revision of sectors vulnerable to carbon leakage in 2014[1]. TVU is willing to assist in any way it can towards the joint project between BIS and DECC that will look at the cumulative impacts on energy intensive industries in the UK. We need a decarbonisation strategy that considers the decarbonisation of energy intensive sectors such as petrochemicals, intermediate chemicals and fertilisers, rather than the current focus solely on the decarbonisation of power.

3. The Government should assess and carefully monitor the impact of EU wide benchmarking under Phase 3 EU ETS on UK industries vulnerable to carbon leakage, and provide resources to support these industries to invest in carbon reductions in the UK. The proceeds of up to 300 million allowances will be invested across Europe to help stimulate Carbon Capture and Storage, and innovative renewable technologies. The Government must ensure that UK industries are supported to access investment to reduce carbon emissions in the UK to allow them to contribute to legally binding carbon budgets while maintaining low carbon economic growth.

4. In order to ensure energy security and facilitate investment in new energy supply across the UK, the Government and energy regulators should provide a level playing field as the current system of grid transmission charges may deter investment in low carbon as well as fossil fuel electricity.

5. TVU does not believe that the reform of the electricity market by itself will attract electricity suppliers and wind farm manufacturers to the UK because our current financial offer for new investment compared with the rest of the world is poor. We consider the government should consider tax incentives such as 100% capital allowances or 50% reduction/ exemption from corporation tax over 10 years for the developments. Given that renewable energy power stations have a long life of 40 – 60 years, tax incentives would help to ensure our financial offer was competitive with the rest of Europe and other worldwide competitors, result in the UK being more attractive to foreign investment giving us a competitive advantage over our competitors but ensuring that future tax returns would come to the UK.

6. One mechanism for implementing this policy would be an enterprise zone. In the Tees Valley we could create one enterprise zone for the North/South Tees area, our main industrial heartland. Within this zone tax incentives would only be available for new/replacement electricity power stations, renewable energy developments including wind farm fabrication, port developments and demonstration of novel technologies to decarbonise the existing petrochemical sector, building on the unique strengths that currently exist within the Tees Valley. This would earmark the area as a low carbon development cluster, in sectors for which the area is best suited.

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1 http://www.decc.gov.uk/assets/decc/what%20we%20do/global%20climate%20change%20and%20energy/tackling%20climate%20change/emissions%20trading/eu_ets/phase%20iii/1016-euets-preparing-phase-III.pdf

3.A1: What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?

We do not have any specific expectations regarding the carbon price in 2020 and 2030. However, it will be a very important factor in informing investment decisions in the Tees Valley. Our evidence demonstrates that it is critical to stabilise the carbon price at a level that provides both clarity and longevity to investors, while maintaining a balance that allows industry to remain competitive and contribute to low carbon economic growth in the UK

The Tees Valley Economic and Regeneration Statement of Ambition sets out clearly the ambition to drive the transition to a low carbon economy and to support existing and future industries as they seek to reduce carbon emissions.

Through the Tees Valley Industrial Programme (TVIP), a number of studies have been funded examining the feasibility of a carbon capture and storage (CCS) network for the Tees Valley, as part of a North East network, which could be a major component of the drive to reduce carbon emissions in the area.

In recognition of the need to look at reducing carbon emissions, industrial partners, led by the North East Process Industry Cluster (NEPIC), have formed a collaborative forum called PICCSI – the Process Industries Carbon Capture and Storage Initiative, to provide a strong business-led voice in the debate on how best to achieve carbon reductions without affecting the viability of existing and future industries.

At a meeting of the PICCSI consortium on 29 November 2010, industrial partners were presented with the findings of the most recent TVIP-funded report from Element Energy that considers the economic case for a CCS network in the Tees Valley[2]. This report incorporates a number of the outputs from a parallel study by Amec into the engineering feasibility of developing an onshore CCS network in the Tees Valley[3].

The Element Energy report concludes that a CCS network is technically feasible and could deliver up to 8% of the UK's required CO_2 reduction for 2030. The report also concludes that a CCS network offers the opportunity to transform the Tees Valley from an area threatened by tightening carbon regulation to a preferred location for industry with high emission rates.

The Element Energy report also identifies that for a scenario based on a medium sized network in the Tees Valley, connecting 8 point sources, the average cost of abatement could be £48/tonne CO_2. This needs to be viewed against the anticipated charge for carbon emissions through the ETS to determine whether the network will be an attractive investment for industrial partners. Current forecasts in the early years of the ETS suggest a carbon price in the range €30-50/tonne of CO_2. In other words, a medium sized network does not become economically viable for wholly private sector delivery within the likely ETS price range.

The PICCSI members considered that the uncertainty over the ETS pricing regime would be likely to prevent private sector investment in a CCS network being committed in the short term. The view was also expressed that, if the carbon price were set at a level some way above the

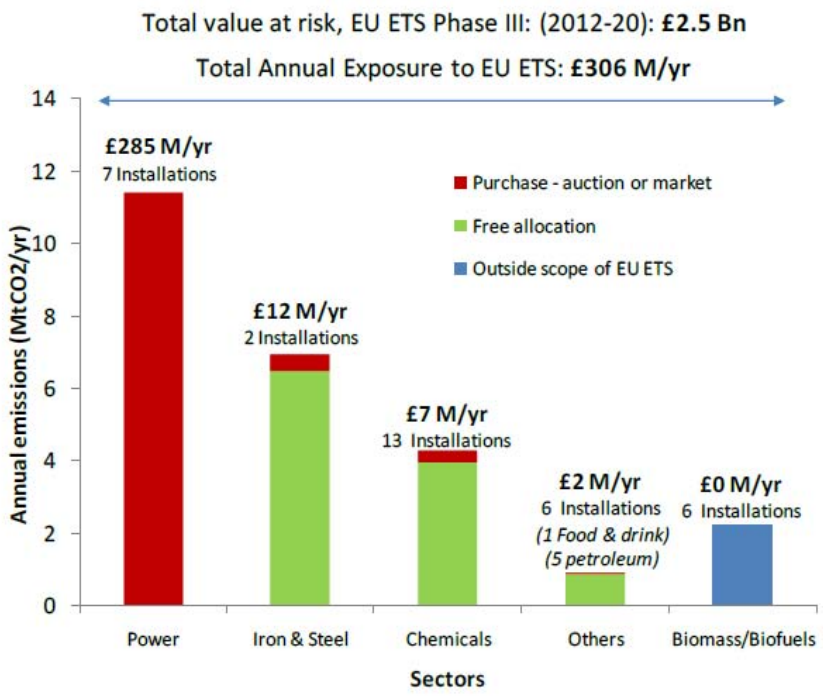
[2] Element Energy. 2010. Developing a CCS network in the Tees Valley Region: Final report
[3] Amec. 2010. Engineering Design and Capture Technologies for Carbon Capture and Storage in the Tees Valley

£48/tonne tipping point, then industrial partners would be likely to consider relocating outside the EU as opposed to taking mitigating action with the associated financial risk.

It is clear from the Amec and Element Energy reports that around 80% of the cost of a CCS network lies on the offshore transport and storage facilities. As the North East identified some time ago, it is this part of the network that is likely to require public subsidy. The change in emphasis of both UK and EU demonstration projects, combined with the current lack of an anchor power station tenant for a CCS system, suggest that it will be difficult to secure an offshore network in the North East in the short to medium term without public subsidy.

However, due to a lack of certainty regarding the impact of implementing Phase 3 of the European Union Emissions Trading Scheme, we do not have a precise carbon price range that we are confident accurately represents the level at which industry in the Tees Valley would balance a decision on significant low carbon investment or relocation. Due to significant integration of the supply chain in the Tees Valley, the decision to relocate or cease operation could damage key supply chains for Tees Valley industries which could undermine the UK economy without resulting in emissions reductions at a global level.

It is also vital for areas such as the Tees Valley that if a carbon floor price is introduced, it occurs in a way that does not create disproportionate impacts on industries regulated by the EU ETS. Figure 1 shows the risk to Tees Valley industries from the total annual exposure to EU ETS Phase 3[4].



Further analysis by TVU, based on actual 2008 emissions data, shows that a carbon price over €20 per tonne of CO2e would have severe consequences for industry in the Tees Valley. Even if 85% of emissions were covered by free allowances, the annual cost of allowances at €50 per tonne could be €123,440,000).Table 1 shows significant costs for the Tees Valley associated with implementation of Phase 3 EU ETS across a range of potential carbon prices.

[4] Ibid. These figures assume a carbon price of €20 per tonne of CO_2e and that 30% of allowances are issued for free.

Table 1: Potential annual impact of EU ETS Phase 3 on Tees Valley industry

Million tonnes CO_2 regulated under EU ETS	Proportion allowances allocated free	Annual cost of purchasing allowances (thousand €)				
		€30	€40	€50	€60	€70
17.04	85%	74,064	98,752	123,440	148,128	172,816
17.04	40%	350,661	467,548	584,435	701,322	818,209
17.04	30%	409,105	545,473	681,841	818,209	954,577

Under the revised 2008 EU ETS Directive, certain energy-intensive industries vulnerable to carbon leakage, including steel and chemicals, may be issued with up to 100% free allowances during phase 3. However, free allocation will be based upon sector benchmarks for 53 industry product groups covering 75% of industrial emissions under the EU ETS. Only the top 10% most carbon-efficient firms in a sector or subsector are likely to receive the full amount of free allowances to cover their emissions. Additionally, the benchmarks could be tightened in the event of a global climate deal if the EU moves from a 20% to a 30% emissions reduction reduction by 2020.

The Ends Report states "*In practice, it is unlikely that even the most efficient plants under any benchmark will get 100% free allowances. Allocations eventually decided by member states will be subject to a downward cross-sectoral correction factor by the commission, to ensure fairness in distribution of allowances between sectors and consistency with the overall EU ETS cap. They will also be affected by the 1.74% annual reduction in the overall EU ETS cap through phase III*[5]*."*

The methodologies used to determine the sector benchmarks[6] may result in Tees Valley industries known to be highly vulnerable to carbon leakage being unable to receive sufficient free allowances to allow them to invest in achieving carbon reductions. Businesses are already subject to the Climate Change Levy, indirect costs associated with FITs and ROCs, and Phase 3 EU ETS will create significant direct and indirect[7] cost burdens on industries in the Tees Valley that are known to be at significant risk of carbon leakage[8][9]. Paragraph 2.13 of the consultation document states that:

"The levy applies to taxable commodities when they are supplied to a business or public sector consumer. The supplier is required to register with, and pay the levy to HMRC, generally quarterly. The suppliers usually pass on the cost of the levy to their customers, although this is not mandatory".

[5] ENDS Report 432, January 2011, pp. 48-49
[6] http://ec.europa.eu/clima/documentation/ets/docs/decision_benchmarking_15_dec_en.pdf
[7] Indirect costs are the carbon costs of electricity generation that are passed on to industry. See COMMISSION OF THE EUROPEAN COMMUNITIES. 2009. DRAFT COMMISSION STAFF WORKING DOCUMENT. Document accompanying the Commission Decision determining a list of sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage pursuant to Article 10a (13) of Directive 2003/87/EC. Impact assessment. [no url is available but source document can be provided upon request]
[8] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:001:0010:0018:EN:PDF

A House of Lords report on the EU ETS noted evidence that windfall profits were generated by some industries from phase 1 of the EU ETS[10]. This occurred for example when power generators that received free allowances during phase 1 nevertheless put up the price of their products or services to reflect the market price of those allowances[11]. It is clear that if market costs are passed on even when free allowances were received, it is extremely unlikely that electricity producers will absorb the costs of a carbon floor price. The Government must therefore ensure that the development of the carbon floor price in the UK does not indirectly (i.e. through passing on increased energy costs to business and commercial customers) create additional threats to vulnerable industries in the Tees Valley that are strategically important for the UK economy.

The recent economic assessment for the Tees Valley shows that the area contributes £10 billion to the national economy and has a population of 662,600 people. The Tees Valley economy is dominated by energy intensive industries which together with the public sector contribute half of our GVA and our employment[12]. There is a risk that the short and medium term additional indirect costs of the carbon floor price will damage nationally important industries already faced with direct and indirect costs associated with EU ETS and other regulation.

The North South Tees Industrial Framework[13] developed a considerable evidence base in relation to the assets contained within the heavily industrialised North and South Tees Area. The energy workstream report includes data on energy production and useBased on conservative data that underestimates the total electricity imported from the grid by Tees Valley industry, the following table shows that 'passing on costs' could indirectly cost an additional £2.5 million per year which equals some £20 million over the duration of EU ETS Phase 3. This is in addition to the indirect impact EU ETS will have on increasing electricity prices.

Table 2: Initial indication of the costs that could be passed on to industry vulnerable to carbon leakage in Tees Valley

MW average electricity imported by industry in the North South Tees area	GWh assuming 8000 hours of operation per year	Assuming electricity is generated from gas, the additional cost of removing the CCL exemption (pence per kWh)	Assuming electricity is generated from gas, the additional cost of removing the CCL exemption (£ per MWh)	Assuming full costs are passed from electricity producer to industrial consumer, the annual costs to industry in North South Tees Area
209	1672	0.164	1.64	£2,742,080

The Government should therefore urgently assess and carefully monitor the impact of the carbon floor price on industries that have been identified as vulnerable to carbon leakage under Phase 3 EU ETS, and create a mechanism that prevents the full costs of the carbon floor price being passed on to business customers, specifically where there is a known threat of carbon leakage. In addition, the Government should assess and carefully monitor the impact of EU wide

[10] Para 17 of House of Lords European Union Committee 33rd Report of Session 2007–08. "The Revision of the EU's Emissions Trading System: Report with Evidence": http://www.publications.parliament.uk/pa/ld200708/ldselect/ldeucom/197/197.pdf

[11] http://assets.panda.org/downloads/point_carbon_wwf_windfall_profits_mar08_final_report.pdf

[12] http://www.teesvalleyunlimited.gov.uk/information-forecasting/documents/economic_assessment/eaexecutive%20summary.pdf

[13] http://www.teesvalleyunlimited.gov.uk/economyplanningenvironment/documents/north%20and%20south%20tees%20industrial%20development%20framework.pdf

benchmarking under Phase 3 EU ETS on UK industries vulnerable to carbon leakage, and provide resources to support these industries to invest in carbon reductions in the UK.

We urgently need a decarbonisation strategy that considers the decarbonisation of industry and manufacturing, rather than the current focus solely on the decarbonisation of power.

3.A2: If investors have greater certainty in the long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.

Yes, greater certainty in the long term price of carbon would contribute to increasing investment in low-carbon electricity and the wider low carbon economy. As noted in our response to question 3A1, we are aware that it will be a very important factor in investment decisions in the Tees Valley. It is critical to stabilise the carbon price at a level that provides both clarity and longevity to investors. However, increasing reliance on public policy increases risks, regulation and costs and therefore acts as a disincentive to invest in either low carbon or conventional projects.

There are a number of significant barriers that need to be simultaneously tackled, including supply chain and skills constraints, access to finance, energy storage constraints, and public acceptance and perception of the risks associated with renewable and low carbon technologies as well as changing consumption patterns.

In the Tees Valley, a number of projects have already gained planning consent or are in development as investment proposals. These known projects could contribute over 2,000 jobs, and £6 billion worth of capital investment in the low carbon sector in the medium term.

Examples of these projects include:

- £300 million Northern Gateway Container Terminal, with deep water jetties and import centres, will result in a net saving of up to 38.5 million tonnes of CO_2 through reduction in road traffic from Southern ports to the North of England. It will also allow low carbon industries to access European and worldwide markets;

- Collective investment of £1 billion on two combined heat and power (CHP) plants (Thor and Conoco Philips);

- A £120 million expansion of the Energy from Waste plant, including a CHP;

- Three new biomass power plants, one of which will be the UK's second largest – collectively they could employ 250 people, invest over £904 million and supply low carbon electricity to over 760,000 homes (MGT, Gaia, BEI);

- A £50 million autoclave facility generating high quality recyclate (Graphite Resources);

- A £80 million plant to recycle tyres, which came to the Tees Valley because of its *"workforce's experience in the petro-chemical industry, excellent infrastructure and the support, encouragement and hard work of Renew Tees Valley and One NorthEast",* would be the UK's first full scale commercial used tyre plant of its kind (PYReco);

- Ineos Bio are constructing Europe's first waste to bioethanol plant at Seal Sands, helping to create 350 construction jobs and over 40 permanent skilled roles; and

- The Anaerobic Digestion Development Centre at the Centre for Process Innovation, and the spin off company Anaerobic Energy Ltd that offers clients in the agricultural and food manufacturing sectors a groundbreaking turnkey service of planning, developing and installing Anaerobic Digestion (AD) plants.

Low carbon projects in the Tees Valley alone could add £3.5 billion GVA to the UK economy over the next ten years, supply over 2200 MW of secure low carbon electricity to the national grid, almost doubling the amount of electricity currently installed in the North East, and create value from waste. While it is not clear what impact the carbon floor price will have on these projects, it is essential that the carbon floor price does not have unintended policy consequences for low carbon operations.

Energy from waste plants can make a significant contribution to renewable electricity where they generate heat as well as electrical power (e.g. CHP). They are currently exempt from the EU ETS and should also be exempt from paying the carbon price support levy where heat is used for district heating powered by energy from waste.

Generating plants using biomass fuel are also currently exempt from the EU ETS, including those that use fossil fuel for start up and shut down purposes. It would be an unintended policy consequence if biomass generation plants were not exempt from paying the levy on the renewable fraction of their fuel where sustainable sourcing and significant net greenhouse gas savings can be demonstrated using agreed industry protocols.

Biomethane produced by anaerobic digestion or gasification is a renewable fuel that can be used to achieve significant measurable emissions reductions. It is recognised as contributing to a low carbon and sustainable energy sector and Government is proposing to support it under the Renewable Heat Incentive (RHI). It is also a classified as a non-fossil fuel source in Climate Change Levy (CCL) legislation so it is imperative that biogas - whether consumed on site, injected into the grid, or used for transport fuel - be exempted from the carbon floor price to avoid unintended consequences that are in direct conflict with achieving the UK's carbon reduction targets.

3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

A lower carbon electricity supply will not reduce the indirect cost burden on energy intensive sectors who already operate to high efficiency standards. In the Tees Valley and nationally, the issue is not solely the need to decarbonise the power sector, and a decarbonisation strategy that considers different energy intensive industry sectors as well as the power sector is urgently required.

Companies may have the opportunity to develop private wire networks to stabilise the indirect costs associated with decarbonising electricity but this creates different costs and risks which could stifle economic growth.

In addition to responding separately to the consultation on electricity market reform, we would also request a reform of the market rules that disadvantage power generation in the North East. Paragraph 4.35 of the consultation document states that "*By 2012, interconnection capacity for the UK electricity market is expected to increase by around 1500MW, with new links to the Netherlands and Ireland. By 2020 it could increase by a further 4000MW. At the margin, carbon price support might increase incentives for imported electricity but they will remain relatively small compared with overall UK generation. Any potential future impact would need to be assessed within the wider context of differences in the electricity market across the EU*."

However, significantly higher transmission costs are borne by electricity producers in the North East due to transmission losses. Power stations in the North East have to compete against low cost European electricity supplied to the UK market as a result of low European demand, and cheap electricity produced at marginal cost from UK coal fired stations due for closure in 2013 because they cannot meet the CO_2 emission standards of the Large Combustion Plants Directive. These factors all discourage investment in electricity production in the North East. In 2009, areas such as Tees Valley had to pay an average national grid transmission charge of £9.85 per kw while plants located in Kent had to pay 25p per kw, this would mean that a 1000MW electricity plant would have to pay around £10 million per year to connect to the grid in Tees Valley, compared with nearly nothing in Kent[14]. These discriminatory charging mechanisms may deter investment in renewable as well as fossil fuel based electricity in the future.

In order to ensure energy security and facilitate investment in new energy supply across the UK, the Government and energy regulators should provide a level playing field as the current system of grid transmission charges may deter investment in low carbon as well as fossil fuel electricity.

There is recognition within Government that the UK is competing with the rest of the world for investment by global companies in new electricity capacity and the development of the low carbon economy. The recent consultation paper on electricity market reform recognises that there is a major issue of security of supply for electricity generation unless the UK can attract foreign investment. Work on the potential of the offshore wind fabrication and construction industry shows that the Tees Valley is an excellent location for the industry. The problem is that high levels of capital expenditure are needed in the infrastructure to manufacture and construct wind farms and associated turbines. UK companies are therefore reluctant to invest without the surety of an order. However buyers are unwilling to commit themselves to orders in the UK without the necessary infrastructure in place to allow delivery of the project. Consequently the UK supply chain is underdeveloped and wind farm buyers go to German and Danish suppliers.

TVU does not believe that the reform of the electricity market by itself will attract electricity suppliers and wind farm manufacturers to the UK because our current financial offer for new investment compared with the rest of the world is poor. We consider the government should consider tax incentives such as 100% capital allowances or 50% reduction/exemption from corporation tax over 10 years for the developments. Given that renewable energy power stations have a long life of 40 – 60 years, tax incentives would help to ensure our financial offer was competitive with the rest of Europe and other worldwide competitors, result in the UK being more attractive to foreign investment, and give us a competitive advantage over our competitors while ensuring future tax returns would come to the UK.

One mechanism for implementing this policy would be an enterprise zone. In the Tees Valley we could create one enterprise zone for the North/South Tees area, our main industrial heartland. Within this zone tax incentives would only be available for new/replacement electricity power stations, renewable energy developments including wind farm fabrication, port developments and demonstration of novel technologies to decarbonise the existing petrochemical sector, building on the unique strengths that currently exist within the Tees Valley. This would earmark the area as a low carbon development cluster, in sectors for which the area is best suited.

[14] Figures taken from Scottish Parliament Written Answers, 6 October 2009, Question S3W-27749

4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.

With reference to our previous answer, we would welcome a more equal distribution of transmission charges to be applied throughout the UK to prevent discrimination against electricity production in the North East.

4.C2: Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

Additional incentives, perhaps through the Renewable Heat Incentive are needed to discourage CHP plants from maximising electricity production to the detriment of efficient use of heat. In addition, where CHP plants provide heat e.g. through district heating systems, the proportion of fuel used to provide heat to consumers should not be liable for CCL duty to support a carbon floor price.

The energy intensive industries in Tees Valley have made extensive use of CHP to maximise their energy efficiency. However the proposal to remove the differential treatment for CHP schemes will have the effect of making electrical import with on purpose steam generation a cheaper option, with a penalty of some 10% on actual efficiency. CHP power should receive preferential treatment to meet previous government targets. A failure to secure additional savings from CHP plant will require additional savings to be sought from other, higher cost, CO_2 abatement options which will create additional pressures on vulnerable industries in the Tees Valley and risk carbon leakage.

4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

Tax relief should be considered as CCS is commercially untested so tax incentives may de-risk private sector investment in CCS generally once it has been proven at demonstration stages. The demonstration projects need special consideration or exemption from the carbon floor price due to the high risk associated with these investments and the need to demonstrate this technology so that it can contribute to decarbonising energy supply in the UK and globally.

However, there are wider issues associated with the decarbonisation of industry and the cost and risk associated with this. CCS in Tees Valley is not only seen as a method to deliver low carbon power, it is important to decarbonise our energy intensive industries, and subsequently the products we all use every day. The Government must develop a wider strategy to decarbonise industry, of which CCS should be a component.

4.E1: How should the carbon price support rates be set in order to increase certainty for investors, in particular over the medium and long term?

Given the investment lead times in the energy intensive sector the greatest possible certainty in forward prices would be desirable. The possibility that future changes to the mechanism can be made significantly increases investment risks and creates uncertainty. Of the options quoted as examples the annual adjustment options are likely to be less conducive to investment although all suffer from the uncertainty of the EU allowances value and hence the actual level of tax.

Tees Valley support the objective of moving to a low carbon baseload generation mix, but too complex a set of measures is being proposed. There is an urgent need for DECC and BIS to analyse the impact of these measures specifically on the energy costs of the UK's profitable and

export orientated energy intensive industries. Globally, the EU already has the highest energy costs and these proposals would push the UK‘s even higher which is not a sustainable environment for energy intensive industries

4.E2: Which mechanism (outlined above), or alternative approach, would you most support and why?

The main concern is the complexity of measures being proposed. Increasing reliance on future Government interventions, especially where these are complex, increases risks, regulation and costs and therefore acts as a disincentive to invest in either low carbon or conventional projects.

4.F1: Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?

See response to 3A1 and 3A4.

4.F2: What is the most appropriate carbon price for the UK to meet its emissions reduction targets in the power generation sector? How would this be affected by changes in the structure of the electricity market?

See response to 3A1 and 3A4.

4.F3: When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?

See response to 3A1 and 3A4.

5.C2: What would be the implications of supporting the carbon price for existing electricity generators and how should the Government take this into account?

See response to 3A1 and 3A4.

5.D6: Do you have any comments on the assessment of equality and other impacts in the evidence base of the Impact Assessment, included at Annex D?

Table 7 in the impact assessment shows the regional impacts of increasing electricity prices on households, but there is no regional assessment of indirect business impacts (as a result of passing on the costs of the carbon floor price).

Table 3: Data taken from the Location Metrics to Assess Applications for the Regional Growth Fund

Local Authority Area	Proportion of resident population aged 16-64 claiming out of work benefits April-June 2010	Public sector employee job share 2008	Private sector employee job growth 2003-2008
Darlington	15.0	22.8	4.3
Hartlepool	21.4	27.9	-13.2
Middlesbrough	20.9	32.7	1.5
Redcar and Cleveland	17.7	20.9	-10.5
Stockton-on-Tees	14.7	21.0	-2.0

Given the dependence of the Tees Valley economy on a few large industrial employers and the public sector, we would request the government urgently assess and develop mechanisms to minimise disproportionate sub-national impacts associated with regulation such as the carbon floor price and EU ETS Phase 3 on the Tees Valley economy[15] and thus allow the Tees Valley to contribute to low carbon economic growth.

Based on our initial assessment that assumes electricity is generated from gas, and full costs are passed on, the carbon floor price will cost energy intensive industries in the Tees Valley at least £2.7 million annually, in addition to the increasing costs they face as a result of the EU ETS.

Paragraph 82 of the impact assessment mentions a joint project between BIS and DECC looking at the cumulative impact of energy and climate change policies on energy intensive industries in the UK. The research will be used to advise Ministers on how to decarbonise the economy while maintaining the competitiveness of these industries. This must be completed urgently in consultation with companies vulnerable to carbon leakage, and TVU is willing to assist this in any way it can.

[15] http://www.info4local.gov.uk/documents/publications/1812897

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15 February 2010

Consultation on the introduction of a carbon price floor

We welcome the opportunity to respond to this consultation on the introduction of a carbon price floor.

We strongly support the Government's objective of reducing emissions in UK electricity generation and indeed the wider economy. As part of our climate change strategy, we have made a commitment that Tesco will be a zero carbon business by 2050, without purchasing offsets. We have also set interim targets to halve our direct emissions impact.

We believe the government should assess the case for a carbon price floor – and indeed any other existing or proposed carbon regulatory mechanisms – against the following principles:

- **Economic efficiency**: sufficiently incentivising carbon reduction to meet the UK's emission targets while minimising any undue risk to economic growth, productivity and competitiveness.
- **Sectoral fairness:** the burden falling fairly on all businesses across all sectors, providing a level playing field.
- **Long-term certainty**: providing the certainty businesses need if they are to make long-term investment decisions, including confidence in the policy framework.
- **Minimising regulatory cost:** seeking the simplest possible solution with the minimal bureaucracy and burden for business.

Measured against these principles, we would support the idea of a carbon floor price as an effective mechanism for helping the UK to meet its emissions reduction targets.

However, we believe very firmly that the introduction of a carbon floor price must be accompanied by the removal of other existing carbon tax mechanisms. As a major retailer we are currently faced with carbon taxation in three forms – the Climate Change Levy and the Carbon Reduction Commitment (CRC) as direct charges, and indirect charging for the EU ETS through our energy bills. This combination of charges falls very unevenly on different sectors, and falls particularly heavily on the retail sector, even though we are among the leading in the move to a low carbon economy.

If it is introduced as an addition to the existing system, a carbon price floor would therefore add a further layer of cost and complexity while retaining the burdens and distortions in the current market. It would be the fourth mechanism through which Tesco would be taxed for carbon.

Our view is therefore that the Government should look to create a transparent carbon price delivered through a single mechanism. If implemented properly an effective price for carbon offers the best prospect of delivering required emissions reductions in the most economically efficient and least regulatory way. It is consistent with the principle that government should set the framework within which desirable policy outcomes should be achieved, but should leave the detailed means of achieving those outcomes to individual players.

Given the Government's strategic desire to promote specific types of renewable or low-carbon energy generation, we support the case for maintaining some incentive mechanisms in addition to a carbon floor price.

Consistent with this approach, the Government should also fundamentally review the CRC. Following the decision in the 2010 Autumn Spending Review that revenue generated by the CRC will be kept by the Exchequer rather than recycled to participants, it is now simply an unfair additional tax on the non energy-intensive sector, which is already paying for its carbon emissions through other mechanisms.

We recognise that the Government is currently consulting on simplification of the CRC. However, rather than tinker with a fundamentally flawed mechanism, we believe the Government should abolish the CRC in its current form. Our preference would be to secure the equivalent revenue through the CCL, including extending it to reach more sectors, as part of the journey towards creating a single price for carbon.

I should be delighted to discuss these issues in more detail with you.

Yours sincerely

[redacted]

Response of the TUC's Clean Coal Task Group to the Consultation Document : *Carbon Floor Price , 11 February 2011*

1. Introduction

The Clean Coal Task Group (CCTG) is a joint trade union/energy industry body formed to promote clean coal technologies within the UK. Its terms of reference are: "To identify an appropriate policy framework and supporting economic instruments and regulatory framework that would take forward the research, development and promotion and initiation of clean coal burn and carbon capture and storage technologies".

In its reports to Government on behalf of the TUC, the CCTG has acknowledged the vital contribution of clean coal technology with carbon capture and storage in tackling the global challenge of climate change, not just to ensure the successful deployment of CCS in the UK, but for the major coal burning economies both within and outside the OECD. Equally, we argue that the UK's indigenous coal reserves have a key role to play within a CCS framework in providing us with secure, affordable and clean energy for the long term.

The CCTG has prioritised:

- developing a framework for the successful deployment of clean coal;
- security of supplies and energy costs (and their consequences for fuel poverty and costs to industry) as well as emissions; and
- employment opportunities and skills challenges in power generation, mining and equipment supply

The TUC CCTG welcomes the opportunity to participate in the consultation process. Answers to the specific questions are given below.

This response to the Treasury Consultation refers not only to the specific CO2 price floor proposal, but to the **CO2 price in the context** of the other major proposals in the DECC Electricity Market Reform consultation. We intend to also respond to the DECC consultation, and have, meanwhile, cross-referenced to the DECC proposals as appropriate. We would urge the Treasury to consider our comments on CO2 pricing in this wider context of energy policy reforms. Hence, the comments in this Preamble are as important as our responses to specific consultation questions.

2. Executive Summary

1. The CCTG understands the objectives of the government in seeking to establish a market framework which will ensure investment in low carbon electricity generation and has reviewed the proposals in the context of this and the governments declared wish to maintain coal within the generation mix.
2. UK coal production has risen by some 8% over the last three years and is currently around 18 million tonnes. *The industry believes the reserve base is capable of maintaining an output of* 20mtpa at internationally competitive costs. The industry provides just over 6,000 well paid jobs, in areas of high unemployment.
3. Indigenous coals provide a price hedge against imported coal and gas and can help meet the Government's targets on fuel poverty.
4. **The deployment of clean coal with CCS within the UK is important to ensure security and diversity of energy supply,** to maximise the use of economically advantageous indigenous resources and secure employment in the coal sector and coal fired generation. Clean coal with CCS will reduce the risks of over-dependence on imported gas, and ensure the UK has a voice of influence when negotiating with much larger users of coal around the world.
5. These objectives will only be achieved if
   i) CCS is successfully demonstrated as early as possible and then widely deployed in the UK and abroad
   ii) the UK infrastructure and skills for coal production and coal–fired generation are preserved at adequate scale
6. The TUC CCTG's comments are focussed on whether or not the proposals will achieve these objectives. Repeatedly we find that the challenge is unabated gas fired generation (without CCS) which is the alternative low risk option but which does not fit with the government's objectives on security, diversity or decarbonisation.
7. **The proposal for a *Carbon Price Floor* will have a very negative impact on generation from coal, major consequences for the coal industry and will not provide certainty for investment in CCS unless greater clarity is given.**
8 With regard to cross-references to the other three proposals contained within the EMR:
   i)**The CCGT is supportive of a Feed-in tariff for all low carbon electricity generation** based on a contract for difference with the wholesale electricity price. If necessary premiums can be envisaged for specific technologies or characteristics eg flexible low carbon generation (including CCS) or new, more expensive higher risk technologies such as offshore wind, wave and tide.
   ii)**The proposal for an Emissions Performance Standard as written has a very negative focus on coal** and fails to send any signals in the direction of reducing carbon emissions from gas fired power stations. The combination of the EPS levels and the policy on grandfathering at the point of consent appears to weaken the intent of the current government policy of requiring CCGTs to be designed to be CCR (carbon capture and storage ready).
   iii)**Capacity payments will be needed for three types of capacity shortfall, as explained below, which require different solutions.**

3. Achieving energy security

The two Consultations highlight that securing Britain's energy supply must be a national priority and the importance of coal fired generation.

Having coal-fired power stations in the electricity mix helps to increase diversity and prevents an over-reliance on a single technology. It is a flexible fuel source that can provide backup generation, which will be increasingly important with more intermittent renewables on the system. (DECC EMR consultation para 77)

We believe strongly that the UK should remain at the forefront in demonstrating CCS technology and should plan now for it's for deployment. The UK should develop its own economically viable coal resources where it is environmentally acceptable to do so.

Accelerating CCS and clean coal technology

In order to ensure that the UK remains at the forefront of international CCS development, the Government must accelerate progress to have four demonstration plants in operation by 2015 or as soon after as possible. A less rapid timescale would not be sufficient to maintain the UK's global leadership in this field nor to meet climate change targets. It is therefore essential that that the CCS competition is awarded early in 2011 and that the process for projects 2-4 is announced and completed as soon as possible.

The government has previously set out four key objectives for its policies on clean coal and CCS. The CCTG agrees with and supports the four objectives, but they will be only be achieved if the four demonstrations are executed now and quickly followed by a deployment programme - planned now - based on confidence in the success of the demonstrations.

1. *Advancing the global development of CCS technology*

   The CCTG supports the aim of placing the UK at the forefront of global technology, but the timeframe proposed is not sufficiently ambitious. As noted above, we need a firm timescale for progress which aims to have four demonstration plants in operation by 2015 or as soon after as possible. These four new stations when completed could deliver 6.4GW of new coal power plant with full CCS, which could cut UK emissions by 42 million tonnes a year, or 23% of emissions from power plant on 2007 levels. Developers should not be constrained by the 300/400 MW limit on clean coal technology demonstrations into doing less than they would otherwise set out to do, or doing it differently.

2. *Improving the affordability of CCS investment*

   It is important that the Government takes steps to ensure that the decisions on UK funding of four plants do not come too late for them to be eligible for the first (and largest) tranche of NER funding, which could significantly reduce the cost to the UK consumer.

3. *Delivering a diverse and secure low carbon economy in the UK*

At present there is 28GW of coal plant on the UK system. By 2016, 8GW will have closed under the LCPD. The Industrial Emissions Directive could see substantial further closures, possibly down to zero by 2023. Unless appropriate steps are taken, replacement of this generation capacity will be by the building of unabated gas generation which will lock in carbon emissions over the next 30 years and further diminish security and diversity of supply.

For this gap to be filled by coal generation will require CCS to be proven by 2018. To aid this transition the Government needs to act now and publish its ambitions for coal with CCS over the coming 20 year time period as part of delivering a diverse and secure low carbon energy supply.

4. *Helping create jobs and economic opportunities for UK based businesses in a new industrial sector*

In order to have a sustainable business , the CCS industry needs a clear commitment to an ongoing build programme commencing with and extending beyond four demonstration projects.

UK coal reserves –part of the energy security solution

On the contribution of our coal reserves to energy security and affordability, Wicks[1] argued that, "Given the abundance of proven coal reserves and its relative low costs and flexibility to meet fluctuations in demand for power, I believe that there is a long-term future for coal in the UK's energy mix. Indeed, given the importance of supply diversity to our security, it would be foolish to abandon coal … it must be part of the solution, not as now part of the problem" (para. 6.24).

He postulated that, with major investment in both deep and surface mines, UK coal production "could be sustained at current levels of around 20 million tonnes a year to at least 2025." This represents a remarkable shift in energy policy since the 2003 Energy White Paper, which spoke of the continuing decline of domestic coal production, "as existing pits reach the end of their geological and economic lives".

Indigenous coal should be recognised as having the potential to meet a significant amount of this coal demand. UK coal production is currently around 18mtpa; the industry believes the reserve base is capable of maintaining an output of 20mtpa at internationally competitive costs; employment has risen to some 6,000 employees.

[1] Energy Security: A National Challenge in a Changing World, August 2009

It is important that generators bidding into the funding mechanism for CCS should be able to demonstrate that their proposals will be technically suitable to burn indigenous coal. ie higher sulphur and chlorine levels.

(An example where power station operators have made such investment in the past is in flue gas desulphurisation (FGD) equipment. Certain FGD coal stations in the UK can only meet SO_2 emission standards by burning low sulphur imported coals. This is because they have opted to cut capital costs and not install a full blown system which would remove the higher sulphur levels associated with indigenous coals.)

Coal fired generation with CCS – essential part of the a low - carbon generation mix

Coal-fired generation with CCS is predicted to have a generation cost (wholesale price of electricity) midway in the range of low carbon generation between nuclear and offshore wind. It has the advantage of having high availability compared to wind and better flexibility compared to nuclear. By using the sites of existing coal power stations there will be less of a requirement for expensive grid improvements.

We consider it is appropriate to plan on a 30/30/30 % mix of nuclear, renewables and coal/CCS capacity in 2030. Beyond that date one or other technology may take a larger share of the growing total capacity.

The EMR proposals must be judged against their likelihood of delivering an appropriate mix in 2025/2030 whilst maintaining adequate generation capacity in the meantime.

4. Responses to Consultation

Carbon Price Floor: support and certainty for low-carbon investment

This proposal will have a very negative impact on generation from coal, major consequences for the coal industry and will not incentivise CCS unless greater clarity is given.

Negative impact on coal generation and the UK coal industry

1. Of the existing 28GW of coal fired capacity, 8 GW is opted out under the LCPD and will close by 2016. The remaining coal power plants (20GW) face the need to fit SCR, under the IED, if they wish to stay open with reasonable load factors after 2016. Under the carbon price support proposal they find their economics against unabated gas fired power stations worsened by the additional cost to the extent that they may well opt for reduced running hours and closure by 2023.

Redpoint's modelling has non-CCS coal capacity reducing to18GW in 2020 and 5 GW in 2030. However the reduction could be faster - at the current time only one power plant (2GW out of the current total coal capacity of 28GW) has committed to SCR.

2. Potential CCS demonstration projects will face increasing costs on their residual emissions from the larger unabated proportion of the scheme and this will act as a disincentive to build CCS demonstrations.

3. Investment in indigenous coal mining production capacity depends on there being a long term market as much of this investment, especially in deep mines has long development lead times. It is likely that the carbon price support proposals will affect the investment decisions of the electricity generating industry which, through the effect on the market for coal, has a knock on effect on the UK coal industry.

The impact on the indigenous coal industry has not been considered and is not covered within the accompanying impact assessment. The Clean Coal Task Group believes this is a major omission as it could potentially have a devastating effect on the industry, especially in deep mines.

4. The CCTG is support of the Scenario 1 trajectory of £20/t in 2020 as the best way of ensuring that existing coal capacity can play its part in the transition to a low carbon economy.

Carbon Dioxide capture and storage

Paragraphs 4.30 and 4.31 are not sufficiently clear how the CPS mechanism will not act as a barrier to investment in CCS demonstrations.

Potential investors in CCS projects need clarity *now* when projects are being formulated that they will have full relief from CCL for all Carbon dioxide stored both at the demonstration stage and at the retrofit stage when CCS is extended to the full plant. It is not sufficient to leave this for further future legislation.

If this certainty is given, then it will act to incentivise investment in CCS, both the demonstrations and follow on projects. Early clarity on incentives for follow-on projects is important because the means has to be found to ensure that the fledgling CCS industry does not whither as soon as the demonstration projects are built.

Feed-In Tariff(s)

The CCGT is supportive of a Feed-in tariff for all low carbon electricity generation (including CCS) based on a contract for difference with the wholesale electricity price.

If necessary premiums can be introduced for specific technologies or generation with specific characteristics eg flexible low carbon generation (including CCS) or new, more expensive higher risk technologies such as offshore wind, wave and tide.

Generators will only build new coal power plant with CCS if they are confident of the financial business case for the plant capacity for 20 years when measured against gas-fired power plant, especially if gas plant has no CCS retrofit obligation.

Emissions Performance Standard

The CCTG previously opposed the introduction of an EPS due to concerns that a single EPS, not fuel specific, would always weigh more heavily on coal more than gas.

We do however recognize that an EPS may be necessary in order to define what is meant by low carbon generation in the context of Feed-in Tariffs or Carbon Price Support exemption.

Potential investors in coal fired power plant with CCS need clarity on how the proposed rules will apply to coal plant and also to gas plant and also how the rules relate to the funding rules for CCS demonstrations and exemption from the CCL levy (Carbon Price Support)

We interpret the proposals as follows:

Existing power plant – EPS not applicable

New coal power plant – such plant must meet the EPS applicable at its date of consent. A level based on 600g/kwh would require CCS on 25% of the plant whilst one of 450g/kwh would require CCS on 50%.
The rules on demonstration funding (currently proposed 300/400MW of CCS) would then determine the maximum sizes of plant to be built.

If such a plant was classified as Low Carbon generation and thereby gained exemption from the Carbon Price Floor/CCL levies this would be a valuable incentive. The effect of Carbon Price Support would be to incentivize retrofit of CCS on the full plant as the cost of emissions rises.

New coal fired plant commissioned after the Review would have to meet a new EPS established during the Review in the light of the results of the Demonstrations. Members confident in the technology would expect an EPS based on a level of 100g/kwh could be applied from 2025. We would urge a relaxation of this to say 150 g/kwh for plants consented before 2020 and for retrofits to complete CCS on Demonstration Projects in order to encourage early Implementation.

New gas power plant – neither 600 nor 450 g/kwh require CCS and with the grandfathering principle this will be the case for the life of the plant. The incentive for CCS will come from the effect of the Carbon Price Support. CCS will only be possible if plants are built CCR so this requirement should continue.

After the CCS review we would anticipate an EPS set at a level of 100g/kwh or less and again some relaxation for early projects consented before 2020.

This should be indicated now.

Overall:

We find these proposals discriminate against coal to a greater extent than justified by the relative unabated emissions.

The proposal as written will have a very negative impact on investment in new cleaner, more efficient capture and storage ready (CCR) coal power plant and CCS (gas or coal) and fails to send any signals in the direction of reducing carbon emissions from gas fired power stations

An EPS should not be used which allows gas plant to be built unabated whilst effectively imposing CCS on coal generation. This would give no incentive to invest in coal generation and operators would simply invest in gas with no carbon abatement. This would lock in carbon over the next 30 years and further weaken our diversity and security of supply by locking in import dependency and leaving consumers highly exposed to future moves in international gas prices and supply interruptions.

Capacity Payments

We understand the government's concern that their will be insufficient investment in new generation capacity to replace the plants that close. The consultation describes a large number of different potential responses to a capacity shortage.

It is necessary to consider separately three types of capacity shortfall which need different solutions:
i) the capacity shortage that could occur at the relatively short teatime peak of demand. Such shortage would be for just a few hours, and a few GW maximum.
Solutions would be more interconnection, more pumped storage, demand side reduction, open cycle gas turbines.
ii) the capacity shortage that could occur due to the difference in demand between day and night in winter lasting, each day for about eight hours and measured around 20 GW.
Currently this capacity is provided by older less efficient coal power plant and gas CCTGs which are "two shifted", with consequentially modest load factors (30- 35%), which are acceptable commercially because the capital investments in these plants have been written off.
It is technically feasible for coal with CCS to provide flexible, low carbon capacity but there would need to be capacity payments to compensate for the modest load factors.
iii) the capacity shortage that could occur at periods of low wind across the whole generation system, sometimes lasting several days and up to 25 GW if wind targets are met.
It is technically feasible for coal with CCS to provide flexible, low carbon capacity to back up gaps in wind generation but there would need to be capacity payments to compensate for the low load factors.

Further consideration should be given to the relative economics of different mixes in the whole system.

5. Responses to Specific Questions in HM Treasury Consultation

Investment

3.A1: What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?

This will depend on government/ EU/international policies.

It is important for UK competiveness that we do not institute measures that are costly at home and reduce the cost of meeting the overall cap for other Member States. There is a danger of doing this in an effort to meet Climate Change Act objectives. UK policy should be tested against this criterion.

3.A2: If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.

The first effect of high carbon prices is the negative impact on investment in coal fired generation. There is less impact on gas-fired generation because there is confidence that wholesale electricity prices will follow the price of gas plus carbon.

Carbon Price Floor: support and certainty for low-carbon investment

As noted above, this proposal will have a very negative impact on generation from coal, major consequences for the coal industry and will not incentivise CCS unless greater clarity is given:
1. Of the existing 28GW of coal fired capacity, 8 GW is opted out under the LCPD and will close by 2016. The remaining coal power plants (20GW) face the need to fit SCR, under the IED, if they wish to stay open with reasonable load factors after 2016. Under the carbon price support proposal they find their economics against unabated gas fired power stations worsened by the additional cost to the extent that they may well opt for reduced running hours and closure by 2023.

Redpoint's modelling has non-CCS coal capacity reducing to18GW in 2020 and 5 GW in 2030. However the reduction could be faster - at the current time only one power plant (2GW out of the current total coal capacity of 28GW) has committed to SCR.

2. Potential CCS demonstration projects will face increasing costs on their residual emissions from the larger unabated proportion of the scheme and this will act as a disincentive to build CCS demonstrations.

3. Investment in indigenous coal mining production capacity depends on there being a long term market as much of this investment, especially in deep mines has long development lead times. It is likely that the carbon price support proposals will affect the investment decisions of the electricity generating industry which, through the effect on the market for coal, has a knock on effect on the UK coal industry.

The impact on the indigenous coal industry has not been considered and is not covered within the accompanying impact assessment. The Clean Coal Task Group believes this is a major omission as it could potentially have a devastating effect on the industry, especially in deep mines.

4. The CCTG is support of the Scenario 1 trajectory of £20/t in 2020 as the best way of ensuring that existing coal capacity can play its part in the transition to a low carbon economy.

3.A3: How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?

The proposals laid out in this policy are, in effect, a carbon tax on fuel for power generation and attractive to the government initially at least as a politically acceptable source of additional revenue. However in the longer term when the costs of the tax begin to make a noticeable impact on electricity prices there may be a public reaction, similar to that against the fuel tax escalator.

3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

This tax alone will not stimulate low carbon investment; although making conventional coal and gas generation more expensive is a way to give everything else a competitive advantage. The primary incentive for low-carbon investment should come from a combination of FIT and capacity/availability payments included in the DECC EMR consultation.

Administration

4.B1: What changes would you need to make to your procedures and accounting systems to ensure you correctly account for CCL on supplies to electricity generators?

The electricity generating companies themselves will have to account for CCL on imported coal, at present more than 50% of supplies. It makes sense, therefore, that they should account for CCL on all coal supplies, including those from UK producers.

4.B2: How long would you need to make the necessary changes to your systems to account for CCL on supplies to electricity generators?

No comment

4.B3: Please provide an estimate of how much the system changes would cost, both one-off and continuing?

No comment.

Types of generator

4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.

All types of electricity generation should be treated equally in relation to their Carbon Dioxide emissions.

4.C2: Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

If CHP or any other technology (e.g biomass) is ascribed special tax-free provisions it should not result in a perverse impact that subtracts in any way from the incentive to capture and store the emissions. CCS projects should always receive full tax credit for the emissions they avoid whether or not exemption has already been granted for the heat or biomass components of the generation.

4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

Paragraphs 4.30 and 4.31 are not sufficiently clear that Carbon dioxide not emitted due to CCS will be exempt from the new CCL. There is the implication that this does not need to be addressed until after the Demonstrations are up and running.

If "Carbon Price Support" is a tax on emissions of carbon dioxide, not a tax on using fossil fuel, then it should be levied only on emissions.

Potential investors in CCS projects need clarity *now* when projects are being formulated that they will have full relief from CCL for all Carbon dioxide stored both at the demonstration stage and at the retrofit stage when CCS is extended to the full plant. It is not sufficient to leave this for further future legislation.

If this certainty is given, then it will act (especially in Scenarios 2 and 3) to incentivise investment in CCS, both the demonstrations and follow on projects. Early clarity on incentives for follow-on projects is important because the means has to be found to ensure that the fledgling CCS industry does not whither as soon as the demonstration projects are built.

Accelerating CCS and clean coal technology

In order to ensure that the UK remains at the forefront of international CCS development, the Government must accelerate progress to have four demonstration plants in operation by 2015 or as soon after as possible. A less rapid timescale would not be sufficient to maintain the UK's global leadership in this field nor to meet climate change targets. It is therefore essential that that the CCS competition is awarded early in 2011 and that the process for projects 2-4 is announced and completed as soon as possible.

The government has previously set out four key objectives for its policies on clean coal and CCS. The CCTG agrees with and supports the four objectives, but they will be only be

achieved if the four demonstrations are executed now and quickly followed by a deployment programme - planned now - based on confidence in the success of the demonstrations.

1. *Advancing the global development of CCS technology*

The CCTG supports the aim of placing the UK at the forefront of global technology, but the timeframe proposed is not sufficiently ambitious. As noted above, we need a firm timescale for progress which aims to have four demonstration plants in operation by 2015 or as soon after as possible. These four new stations when completed could deliver 6.4GW of new coal power plant with full CCS, which could cut UK emissions by 42 million tonnes a year, or 23% of emissions from power plant on 2007 levels. Developers should not be constrained by the 300/400 MW limit on clean coal technology demonstrations into doing less than they would otherwise set out to do, or doing it differently.

2. *Improving the affordability of CCS investment*

It is important that the Government takes steps to ensure that the decisions on UK funding of four plants do not come too late for them to be eligible for the first (and largest) tranche of NER funding, which could significantly reduce the cost to the UK consumer.

3. *Delivering a diverse and secure low carbon economy in the UK*

At present there is 28GW of coal plant on the UK system. By 2016, 8GW will have closed under the LCPD. The Industrial Emissions Directive could see substantial further closures, possibly down to zero by 2023. Unless appropriate steps are taken, replacement of this generation capacity will be by the building of unabated gas generation which will lock in carbon emissions over the next 30 years and further diminish security and diversity of supply.

For this gap to be filled by coal generation will require CCS to be proven by 2018. To aid this transition the Government needs to act now and publish its ambitions for coal with CCS over the coming 20 year time period as part of delivering a diverse and secure low carbon energy supply.

4. *Helping create jobs and economic opportunities for UK based businesses in a new industrial sector*

In order to have a sustainable business , the CCS industry needs a clear commitment to an ongoing build programme commencing with and extending beyond four demonstration projects.

Imports and exports

4.D1: What impact would the Government's proposals have on electricity generators and suppliers that export or import electricity?

The proposal to apply CCL to electricity exports but not to imports is perverse and will lead to severe market distortion given the probable increase in interconnector capacity. If this electricity is fossil fuel based it would be a distortion of competition against indigenous generation. As new links with the Netherlands and Ireland come on stream, it is very likely that this imported power will be fossil fuel based.

UK coal reserves –part of the energy security solution

The Treasury should also take account of the effects of CO2 pricing on UK coal supply and demand and imports, the balance of payments, energy security, and on employment in the coal mining industry.

On the contribution of our coal reserves to energy security and affordability, Wicks[2] argued that, "Given the abundance of proven coal reserves and its relative low costs and flexibility to meet fluctuations in demand for power, I believe that there is a long-term future for coal in the UK's energy mix. Indeed, given the importance of supply diversity to our security, it would be foolish to abandon coal … it must be part of the solution, not as now part of the problem" (para. 6.24).

He postulated that, with major investment in both deep and surface mines, UK coal production "could be sustained at current levels of around 20 million tonnes a year to at least 2025." This represents a remarkable shift in energy policy since the 2003 Energy White Paper, which spoke of the continuing decline of domestic coal production, "as existing pits reach the end of their geological and economic lives".

Indigenous coal should be recognised as having the potential to meet a significant amount of this coal demand. UK coal production is currently around 18mtpa; the industry believes the reserve base is capable of maintaining an output of 20mtpa at internationally competitive costs; employment has risen to some 6,000 employees.
It is important that generators bidding into the funding mechanism for CCS should be able to demonstrate that their proposals will be technically suitable to burn indigenous coal. ie higher sulphur and chlorine levels.

An example where power station operators have made such investment in the past is in flue gas desulphurisation (FGD) equipment. Certain FGD coal stations in the UK can only meet SO_2 emission standards by burning low sulphur imported coals. This is because they have opted to cut capital costs and not install a full blown system which would remove the higher sulphur levels associated with indigenous coals.

4.D2: What impact might the proposals have on trading arrangements for electricity?

[2] Energy Security: A National Challenge in a Changing World, August 2009

No comment

4.D3: What impact might the proposals have on electricity generation, trading and supply in the single electricity market in Northern Ireland and Ireland?

No comment **.**

Carbon price support mechanism

4.E1: How should the carbon price support rates be set in order to increase certainty for investors, in particular over the medium and long term?

Carbon price support rates need to have a binding trajectory over at least fifteen to twenty years from plant operation, i.e. perhaps twenty-five years from project inception.

However, the UK carbon floor price should not be allowed to increase substantially above the ETS market price of allowances. If it does so the the situation would be deemed to be unsustainable due to UK commercial power consumers becoming uncompetitive. This could result in a policy review undermining the long term Carbon price stability that was intended.

4.E2: Which mechanism, or alternative approach, would you most support and why?

No comment.

4.E3: What impact would the proposals have on you carbon trading arrangements?

No comment.

Future price of carbon

4.F1: Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?

The Government's objective of providing price stability in carbon is creditable; however, there is a danger that if the trajectory turns out to too steep then it will have an adverse effect on the existing coal fleet causing premature closure. It is important that the Government should target a minimum carbon price of £20/t in 2020 so not to damage the competitiveness of UK industry or threaten UK security of energy supply by encouraging massive fuel switching from coal to gas.

4.F2: What is the most appropriate carbon price for the UK to meet its emissions reduction targets in the power generation sector? How would this be affected by changes in the structure of the electricity market?

The primary incentive mechanism will be the FITs so the level of the carbon support price should be as low as possible beyond the ETS price. The objective of the carbon price floor should be to provide price stability only.

4.F3: When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?

Generators need to understand the likely impact of this measure as soon as possible because of its impact on investment decisions on coal fired plant upgrades to meet the requirements of the IED necessary.

Electricity investment

5.B1: What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?

The impact on investment on CCS and new coal fired generation depends on an early understanding of the rules. See 4.C3.

However, the primary mechanism for incentivising low-carbon investment will be the FIT

5.B2: What other impacts would you expect carbon price support to have on investment decisions in the electricity market?

Carbon price support will clearly act against high carbon fuels. Taken together with an EPS this package penalises unabated coal. The question that needs to be resolved is whether there are still good strategic reasons for the UK to maintain fuel diversity incorporating coal. If so, then these proposals run the risk of threatening UK energy security.

There is a risk that public money provided for the CCS demonstration programme will not be deemed good use of public funds if the policy regime beyond demonstration does not encourage investment in CCS.

5.B3: How should carbon price support be structured to support investment in electricity generation whilst limiting impacts on the wholesale electricity price?

Carbon price support will inevitably impact the price of electricity, since the additional tax will have to be paid for from electricity sales. There will be benefit for investment if the revenues are re-cycled via FITs for low carbon electricity generation from fossil fuels (ie with CCS).

Existing low-carbon generators

5.C1: Can you provide an assessment of the impact of the proposals on your generation portfolio and overall profitability?

No comment

5.C2: What would be the implications of supporting the carbon price for existing electricity generators and how should the Government take this into account?

Existing fossil generators will be penalised by this measure with the impact on coal roughly twice that on coal.. This will increase the risk of early retirement of fossil plant with consequential effects on supply diversity and security and potential lost opportunity to refit flexible fossil generation sites with low-carbon CCS.

Of the existing 28GW of coal fired capacity, 8 GW is opted out under the LCPD and will close by 2016. The remaining coal power plants (20GW), which under the IED (formerly the LCPD) are facing the need to fit SCR if they wish to stay open with reasonable load factors after 2016, would now under this proposal find their economics vs unabated gas fired power stations worsened by the additional cost to the extent that they may well opt for the reduced running hours option and close by 2023. This is more likely under Scenarios 2 and 3 than for Scenario 1.

Redpoint's modelling has non-CCS coal capacity reducing to18GW in 2020 and 5 GW in 2030. However the reduction could be faster - at the current time only one power plant (2GW out of the current total coal capacity of 28GW) has committed to SCR.

Electricity price impacts

5.D1: How do you currently manage fluctuations in the wholesale electricity price?

No comment

5.D2: What difference will supporting the carbon price make to your business?

The coal market within the UK is highly competitive market, dominated by imports. The proposals will increase UK producer's electricity costs and coal producers are unable to pass on this additional cost because our prices are aligned to the international coal market. Overseas coal producers therefore will have a huge competitive advantage in an already price conscious market.

5.D3: As an electricity generator or supplier, how much of the cost of the carbon price support would you pass on to consumers?

We cannot see how less than the full cost will be passed on.

5.D4: As a business, how much of the cost of energy bills do you pass on to customers?

No comment

5.D5: How might your company or sector be affected and would there be any impact on your profit margins?

As coal producers are unable to pass on the increase in electricity prices, it will directly impact on our bottom line profit margin. This will reduce our investment capability and threaten jobs.

5.D6: Do you have any comments on the assessment of equality and other impacts in the evidence base of the Impact Assessment, included at Annex D?

Annex D.100 refers to the interaction with other policies, specifically other parts of the overall EMR package which are addressed in the DECC consultation. However, of the four package options studied, all options include CPS and all assume a level of carbon price support of £30/tCO_2. Furthermore, all options include EPS. The CCSA believes that the modelling should test the impact at different price levels including zero as well as with or without EPS.

We are disappointed that the Impact Assessment makes no reference to the effect of the proposals on the indigenous coal industry, which will be catastrophic. The carbon price support mechanism is designed to instigate a switch from coal to gas generation by pushing up coal input prices at a higher rate than gas, and hence widening the coal gas price differential. The decline in the coal market will:

i) Reduce the market size for indigenous production
ii) Create uncertainty about the ongoing role of coal in the energy mix

iii) Curtail necessary investment in existing coal stations leading to premature closure

iv) Make it difficult to raise long term investment for the mining business, especially deep mines, leading to possible eventual closure

Carbon Price Floor Consultation: TUC response

This document presents the TUC's response to the Treasury Consultation on a Carbon Price Floor: support and certainty for low carbon investment,

11 February 2011.

The TUC is the voice of Britain at work. With 58 affiliated unions representing more than six million working people from all industries and occupations, we campaign for a fair deal at work, for social justice at home and abroad, and for a fair and just transition to a low carbon future. We negotiate in Europe, and at home build links with political parties, business, local communities and wider society.

This response follows consultation with the trade unions representing workers in energy and industrial sectors, and takes account the views expressed by unions generally on the wider issues of energy policy and fuel poverty.

Key points:

- This review of the UK's energy market is taking place against the backdrop of a faltering economy, rising unemployment and fuel poverty. Energy market reforms should therefore be seen as a prime opportunity to deliver green jobs growth and affordable energy.
- The energy review must therefore connect with the urgent need to create quality, skilled jobs and provide energy at prices that industry and domestic consumers can afford. **It must also address the unintended consequences, including impacts on jobs and investment in the UK's energy intensive industries.**
- We understand the Government's objective in setting a CO2 floor price to provide long-term carbon price trajectory right through to 2030. Together with other reforms in the Electricity Market Review, the intention is to help sustain investments in high capital, low carbon technologies (renewables and new nuclear) over the long term.
- Unless the Government strikes the right balance between

competing interests in the energy market, the CO2 tax could have **profound if unintended consequences.**

- **First, unless set appropriately, a CO2 tax is likely to deter investment in clean coal technology with carbon capture & storage.** The UK would lose investment and skilled, quality jobs in failing to lead the development of a vital piece of low carbon technology. The CCS industry will not invest and create jobs without a clear, determined statement of intent by the Government.

  The UK could lose the employment and investment opportunity of developing CCS for a new global market. The UK share of this global business[i] could create 27,000 jobs in the UK from 2020. The Treasury should join discussions with DECC on ensuring a policy framework and timetable for the deployment by 2015 the four CCS demonstration projects.

- **Second, the proposal will impact badly on coal fired power stations.**

- **Third, as a consequence, a danger that this will force the premature closure of UK deep mines.** This will lead to a massive loss of employment, especially in areas of already high levels of joblessness.

- **Fourth, the competitiveness of the UK's energy intensive industries is at risk.** "Carbon leakage" could result if the CO2 floor price is not set at an appropriate level, leading to the loss of jobs and investment to economies with weaker or no CO2 price.

  The Treasury has failed to assess the impacts of CO2 price support, or carbon tax, on the UK's energy intensive industries. The schedule of sectors considered at risk (see below) is not comprehensive, with **ceramics** clearly one of those industries which will be heavily impacted but missing from the schedule of sectors. An impact assessment of the three CO2 price trajectories to 2020 and beyond must be provided for public consideration as soon as possible, and before any policy changes are made.

- **Fifth, a failed strategy for CCS and clean coal will mean a worrying dependency on imported gas** - replacing all indigenous coal-fired generation with imported gas. In the long-term when the UK's gas installations have to fix CCS, this technology will be imported.

- **Finally, in respect of an EMR for clean coal,** we would suggest the following policy combination to avoid premature

closure of existing coal power plants before clean coal CCS plants are built:

- Carbon floor price: adopt Scenario 1 trajectory with lower initial carbon price support (£20/tCO2 in 2020).
- Emission Performance Standard (EPS): establish an EPS for 2025 that will require CCS on gas as well as coal.
- Feed-In Tariffs: confirm that FITs will apply for early CCS projects
- Capacity payments: offer capacity payments for low carbon, flexible coal power plant with CCS

Introduction

The Treasury's consultation paper outlines options to introduce a floor price of carbon in 2013, effectively a "carbon tax", through reforms to the Climate Change Levy and Fuel Duty. A central justification is that a weak CO2 market price (currently 14 euros per tonne of CO2: January 2011) is not stimulating investment in alternative low carbon technologies[ii].

TUC Congress 2010 considered this issue in the context of a motion on climate change, [iii] calling for urgent action to "ensure a secure and balanced low carbon energy supply for the UK," including "reforms to support a stable floor price for carbon."

Since 2005, the UK's CO2 emissions from power stations and heavy industry have been regulated by a cap-and-trade scheme, the EU Emissions Trading Scheme. It sets a market price for carbon allowances for each emitter, and caps CO2 emissions. The CO2 price was meant to increase as the cap tightened, on a downward trajectory towards around a 20% cut in CO2 by 2020. But the market has not worked well. The market price of CO2 has proven to be low and unstable, due to over-allocation of emissions allowances, the impacts of recession and other factors.

The Treasury's solution is to define the "right" target price of CO2 needed to drive investment, and impose a tax (called "carbon price support") on top of the market price:

- Target price = CO2 Market price + CO2 Tax

The Consultation outlines three possible "carbon price support" scenarios. Each starts at £1 on top of the EU ETS price in 2013. There are three options for a rising trajectory

for a CO2 Target price of £20, £30 or £40 a tonne in 2020. There is a common target of £70 a tonne by 2030.

To set the market price for carbon, the government proposes to:

- remove existing Climate Change Levy (CCL) exemptions relating to fossil fuels used in UK electricity generation; and
- reduce the amount of fuel duty that can be reclaimed when oil is used to generate electricity.

Subject to responses, the Government proposes to publish an Energy White Paper in Spring 2011, and take forward reforms to the CO2 price mechanism in a Finance Bill later in 2011, to take effect from April 2013.

Policy impacts of CO2 tax

The consultation paper identifies the following positive impacts:

- increase investment in new low-carbon capacity by up to 11 gigawatts (GW) by 2030 under the highest price scenario of £40 a tonne of CO2 by 2020;
- significantly reduce emissions from UK electricity generation;
- increase wholesale electricity prices over the medium term, though prices would begin to decline in the mid-2020s;
- marginally increase non-domestic electricity bills though in the mid-2020s they would begin to decrease compared to doing nothing;
- affect profit margins for some energy-intensive business; and
- increase household electricity bills in the short and medium term, though they would decrease in the mid-2020s.

Emissions from the UK’s energy sector account for a third (31%) of total CO2 emissions in 2009. Only one of these scenarios, the highest CO2 price support, will ensure that the UK decarbonises its electricity supply in compliance with recommendations from the Committee on Climate Change:

- low carbon investment accelerates to the point where the average amount of CO2 emissions produced per unit of electricity falls to 105 grammes of CO2 per Kilowatt hour

(105gCO2/KWh).

- This compares with around 486gCO2/KWh in 2010.
- This fall in CO2 intensity complies with an objective set by the Committee on Climate Change[iv] to secure "the radical decarbonisation of electricity (i.e. a reduction in carbon-intensity to below 100gCO2/kWh) by 2030."
- It would secure a reduction of over 500 million tonnes of CO2 emitted from UK power generators over the period to 2030.

The Government strongly supports a higher CO2 target for the EU, consistent with the UK's ambition to limit global temperature rises to below 2 degrees C above pre-industrial levels. Even following a global climate change agreement and a higher EU target, a CO2 price mechanism "would continue to bolster certainty and provide credible long-term price signals for investors[v]." This is particularly important for high capital, long-life investments. It is important to act now, given the long lead times involved (8 years for nuclear, 2-3 years for offshore wind, 4-5 years for CCS).

TUC RESPONSE TO CONSULTATION QUESTIONS

Investment issues

Q. 3.A1: What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?

This will depend on government/ EU/international policies.

It is important for UK industrial competiveness that we do not institute measures that are costly at home and reduce the cost of meeting the overall emissions cap for other Member States with whom we are in competition. There is a danger of doing this in an effort to meet Climate Change Act objectives. The appropriate CO2 floor price should be at the low threshold of £20 a tonne in 2020.

In respect of a policy framework for clean coal, including proposals in the EMR, we would suggest the following policy combination to avoid premature closure of existing coal power plants before clean coal CCS plants are built:

- Carbon floor price: adopt Scenario 1 trajectory with

lower initial carbon price support (£20/tCO2 in 2020).

- Emission Performance Standard (EPS): establish an EPS for 2025 that will require CCS on gas as well as coal.
- Feed-In Tariffs: confirm that FITs will apply for early CCS projects
- Capacity payments: offer capacity payments for low carbon, flexible coal power plant with CCS.

Q3.A2: If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.

Yes. But not for coal fired generation with CCS. As the consultation points out, wholesale electricity prices are currently set by the costs of the marginal plant supplying the market. This is typically gas-fired plant and sometimes coal. While gas and coal plants continue to set the electricity price, an increase in their costs through carbon price support, would increase electricity prices. This in turn increases the returns for low-carbon investment, particularly new nuclear powered stations and renewables. The impact of the higher and more certain carbon price is to bring forward more low-carbon capacity (renewables, and nuclear).

However, there will be a negative impact on investment in coal fired generation, but a lesser impact on gas-fired generation because of confidence that wholesale electricity prices will follow the price of gas plus carbon tax.

Q 3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

This tax alone will not stimulate low carbon investment; although making conventional coal and gas generation more expensive is a way to give everything else a competitive advantage. The primary incentive for low-carbon investment should come from a combination of Feed in Tariffs and capacity/availability payments as discussed in the EMR consultation.

Future price of carbon

Q4.F1: Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?

The Government’s objective of providing price stability in carbon is creditable. However, there is a danger that if the

trajectory turns out to be much steeper than the market price of EU emissions allowances, then, for reasons of competitiveness, a future Government may be inclined to reduce the tax rate, undermining the long term price signal.

Q4.F2: What is the most appropriate carbon price for the UK to meet its emissions reduction targets in the power generation sector? How would this be affected by changes in the structure of the electricity market?

Taking the reforms overall, the primary incentive mechanism is likely to be the Feed In tariff, suggesting that the level of the carbon support price, or tax, should be as low as possible above the ETS market price rice. The objective of the carbon price floor should be to provide price stability.

Carbon capture & storage

Q4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

Yes.

Potential investors in CCS projects need clarity now when projects are being developed that they will have full relief from the Climate Change Levy (CCL) for all CO2 stored, both at the demonstration stage and at the retrofit stage when CCS is extended to the full power plant. It is not sufficient to leave this for further future legislation.

If “Carbon Price Support” is a tax on emissions of carbon dioxide, not a tax on using fossil fuel, then it should be levied only on emissions. If this certainty is given, then it will act to incentivise investment in CCS, both the demonstrations and follow on projects. Early clarity on incentives for follow-on projects is important because the means has to be found to ensure that the fledgling CCS industry does not whither as soon as the demonstration projects are built.

Accelerating CCS investment

To ensure the UK remains at the forefront of international CCS development, the Government must accelerate progress to have four demonstration plants in operation by 2015 or as soon

after as possible. A less rapid timescale would not be sufficient to maintain the UK's global leadership in this field nor to meet climate change targets.

The government's objectives for clean coal and CCS include:

- **Advancing global development of CCS technology:** four CCS coal stations could deliver 6.4GW of new coal power plant, to cut UK emissions by 42 million tonnes a year, or 23% of emissions from power plant on 2007 levels.
- **Create jobs and economic opportunities for the UK:** the UK's CCS industry needs a clear commitment to an ongoing build programme commencing with four demonstration projects.
- **Improving the affordability of CCS:** decisions on UK funding of four plants should not come too late for them to be eligible for the first (and largest) tranche of the EU's new entrant reserve (NER) funding, to reduce the cost to UK consumers.
- **Delivering a diverse and secure low carbon economy in the UK:** the UK is in danger of heading towards high dependency on gas fired power generation. The current 28GW of coal plant on the UK system will faces significant closures to 2020, in line with EU environmental Directives. Unless appropriate steps are taken, gas powered stations will replace this coal power generation.

Although gas power stations emits about half the CO2 per Kilowatt hour than coal, the current dash for gas will nevertheless lock in CO2 emissions over decades and diminish security and diversity of supply. Investment in coal generation will require CCS to be proven by 2018. To aid this transition the Government needs to act now and publish its ambitions for coal with CCS over the coming 20 years as part of delivering a diverse and secure low carbon energy supply.

Government policy aims to enable the deployment of CCS technologies in the UK's electricity generation sector. CSR 2010 announced up to £1 billion for one of the world's first commercial scale CCS demonstration on an electricity generation plant. Demonstration projects are an important step in enabling the commercial deployment of CCS. The carbon price support mechanism will not become a barrier to investment in such demonstrations.

Government acknowledges that there are good environmental grounds for introducing a partial relief from the Climate Change Levy (CCL) for fossil fuels used in CCS plants to

reflect the proportion of CO2 abated, and for adjusting the amount of fuel duty that can be reclaimed on oil used in CCS plants. Subject to State aid approval by the European Commission, the Government proposes to legislate for partial relief once the technology has been proven and is available commercially.

Electricity investment

Q5.B2: What other impacts would you expect carbon price support to have on investment decisions in the electricity market?

Carbon price support will clearly act against high carbon fuels. Taken together with an Emissions Performance Standard set at limiting CO2 emissions from coal, this package penalises unabated coal. The question that needs to be resolved is whether there are still good strategic reasons for the UK to maintain fuel diversity incorporating coal. If so, then these proposals run the risk of threatening UK energy security. There is a risk that public money provided for the CCS demonstration programme will not be deemed good use of public funds if the policy regime beyond demonstration does not encourage investment in CCS, not secure the economic and employment opportunities that a full scale CCS programme would bring to the UK.

Electricity price impacts

Question D5: How might your company or sector be affected and would be there any impact on your profit margins?

The Treasury has failed to assess the impacts of CO2 price support, or carbon tax, on the UK's energy intensive industries. The schedule of sectors considered at risk (see below) is not comprehensive, with **ceramics** clearly one of those industries which will be heavily impacted but missing from the schedule. An impact assessment must be provided for public consideration as soon as possible, and before any policy changes are made.

A joint TUC/EIUG study[vi] concluded that: "the cumulative impact of all climate change policies is significant, especially on energy intensive sectors … if the government continues to simply add one energy or carbon reduction levy after another on to the energy intensive sectors then the risk is that these industries will no longer be able to compete internationally and will simply cease to operate in the UK. Some sectors are already proving unable to reinvest in their infrastructure due

to the increased energy tax burden in the UK and will consequently "wither on the vine" through an inability to produce cutting edge products or compete with foreign producers. In either scenario, "carbon leakage" will result: the loss of investment, jobs and carbon emissions to competitors, some may have fewer controls on CO2 emissions or regimes that better protect energy intensive sectors from these tax burdens."

These findings were based on a cross section of companies and modelled on a "representative" energy intensive company using a stable level of gas and electricity demand and adding the projected tax increases to the bills. The increase in EU ETS costs is driven by an assumed increase in the price of allowances, "but the majority of the tax burden is directly from UK government designed policies."

Energy intensive sectors - iron and steel, aluminium, cement and lime manufacture, pulp and paper making, basic inorganic chemicals, and nitrogen fertilisers – together employ an estimated 225,000 workers, accounting directly for about 1% of UK GDP (some £15 billion). Many of them are based in regions of relatively high unemployment and their continued operations are vital to the economies in which they are based.

They also provide raw materials to other sectors of the economy such as construction, automotive, aerospace, food and packaging. Therefore any increases in costs that they try to pass through results in increasing costs further down the supply chain; ultimately increasing prices, and thus inflation, and making
UK produced goods less competitive.

The study modelled its forecasts on a low price of £15/tCO2 to 2014. However, anticipating that CO2 prices would then increase under Phase III of the EUETS (due to a minimum price for emissions possibly being established), it assumed £30/tCO2 in 2020, the middle scenario assumed in the current Treasury consultation.

Including the EU ETS, by 2020 the UK's combined climate change policies will increase energy costs to intensive users by between 18% and 141%.

It is difficult to marry the TUC/EIUG study with the Treasury's impact assessment on non-domestic users, especially as the consultation document only reviews the effect of CO2 price scenarios on an "average medium-sized non-domestic

user’s electricity bill”. This shows electricity bill increases of up to 8% by 2016. Prices do not fall until near 2030, when the proportion of low carbon generation increases.

CO2 floor price impact on an average medium-sized non-domestic user: increase in electricity bills, %

Year	Scenario one	Scenario two	Scenario three
2013	1%	1%	2%
2016	1%	4%	8%
2020	1%	3%	6%
2025	2%	2%	4%
2030	-3%	-4%	-8%

The consultation acknowledges that impacts on energy intensive industries like steel, cement and brick making “are likely to be more severe”, especially if both heavily reliant on electricity, and “trade intensive”, facing a high degree of international competition. So a key concern when considering the impact on businesses is competitiveness and the risk of carbon leakage – the relocation of investment or production to countries without carbon constraints – resulting in an overall increase in global emissions and a loss of jobs and investment for the carbon constrained economy.

The carbon price support scenarios might lead to increases in average non-domestic retail electricity prices of between 1-2% in 2013 and 1-6% cent in 2020. This is likely “to have a significant impact on a small, but important number of energy intensive sectors in the UK.”

The Treasury notes that BIS and DECC are working on a joint project looking at the cumulative impact of energy and climate change policies on energy intensive industries in the UK. “The research will be used to advise Ministers on how to decarbonise the economy while maintaining the competitiveness of these industries.”

Sectors most impacted by carbon price support, taking into account the existing CCL, include:

- aluminium production;
- cement production;
- chemicals-industrial gases, fertilisers;

- clays and kaolin;
- glass manufacture;
- iron and steel manufacture;
- lime production; and
- paper manufacture and wood board.

“There might be a reduction in profit margins for these sectors, assuming businesses cannot pass on the extra electricity costs they face and have to absorb them entirely.”

Question D6: Do you have any comments on the assessment of equality and other impacts in the evidence base of the Impact Assessment, included at Annex D?

The carbon tax will impact on fuel poverty. But these are given scant attention, in just three paragraphs in the consultation paper (paras 5.30-5.33).

Yet the impact assessment in an Annex acknowledges that by 2020, the policy will increase the number of fuel poor households by between 100,000 and 200,000 in scenario three. Average household annual electricity bills increase by between £2 (1%) and £7 (2%) in 2013, rising to a maximum of £23 (5%) in 2020 compared with the baseline scenario. These increases will take effect from 2013, just when Warm Front, providing grants from home insulation to fuel poor households, comes to an end.

Poorer households will spend a larger proportion of their expenditure on electricity compared with the baseline. In 2020, the average household in the bottom two income deciles is estimated to spend an extra 0.04 per cent of its expenditure on electricity in scenario one compared with the baseline. By contrast, the average household in the top income docile is estimated to spend an extra 0.01 per cent of its expenditure on electricity. The impacts are greatest on single pensioner households.

Year	Scenario one	Scenario two	Scenario three
2013	1% (£2)	1% (£2)	2% (£7)
2016	1% (£4)	3% (£14)	6% (£28)
2020	1% (£3)	2% (£11)	5% (£23)

The Consultation notes that "Social Price Support is being expanded and put on a mandatory basis to assist vulnerable households with their energy bills and will be worth £310 million a year by 2014-15. The Energy Company Obligation will supersede the Carbon Emissions Reduction Target scheme and work alongside the Green Deal to focus additional support on those most vulnerable to fuel poverty." CSR 2010 committed the Government to address fuel poverty. Charging for climate change policies is having a disproportionate impact on the fuel poor.

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[i] *Carbon capture & storage skills study*, Alan Young, Richard Catterson and Mike Farley, Industrial Power Association, September 2010.

[ii] CO2 price approached zero in Phase I EU-ETS. In Phase II it ranged from £9 (10 euros) a tonne to £26 (30 euros) a tonne, following the global financial crisis and recession. Phase III from 2013 may see a stronger CO2 price.

[iii] Composite 7, *Climate change.*

[iv] Committee on Climate Change, *Advice to government*, Chapter 6: Power sector decarbonisation to 2030.

[v] Carbon Price Floor, para 3.17.

[vi] *The Cumulative Impact of Climate Change Policies on UK Energy Intensive Industries – Are Policies Effectively Focussed?* A summary report for The Energy Intensive Users Group and the Trades Union Congress, July 2010.

UK District Energy Association Response to the Carbon Price Support Consultation – February 2011

On Behalf of:

- **Southampton City Council**
- **Birmingham City Council**
- **Cofely District Energy**
- **Veolia Environmental Services**
- **Thameswey Limited**
- **EnviroEnergy Limited**

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INVESTMENT

Question 3.A1: What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?
The UKDEA's expectations about the carbon price depend to a very significant extent on the outcome of these carbon price support proposals. The UKDEA is particularly concerned that the carbon price support (CPS) should treat all forms of low-carbon generation fairly. Low-carbon generation from Good Quality gas-fired Combined Heat & Power (CHP) can achieve significant carbon emissions savings, often of a level in excess of a number of renewable technologies, when compared with conventional heat and electricity supplies, and therefore it should not suffer detrimental effects from a new tax designed to encourage such carbon saving measures. The current proposals are likely to actually reduce investment in low-carbon decentralised energy, unless Good Quality CHP is exempted from this new CPS tax. This issue is explained in further detail throughout our consultation response.

Question 3.A2: If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.
Greater certainty in the future long-term price of carbon could provide some marginal increase in investment following an associated reduction in risk premiums on capital funding.

However, reviewing Chart 1 and Chart 4 in the consultation's Impact Assessment yields the apparent conclusion that the stability element of the CPS results in little to no additional decarbonisation. It is only when the CPS results in a substantially increased cost of fossil fuels that any notable decarbonisation is incentivised. Much more significant decarbonisation is achieved by other (non-CPS) measures (such as feed-in tariffs) in the base case. Whilst the UKDEA recognises the importance of the Government looking into all of tools available to it, to encourage low-carbon growth, the UKDEA would question whether the substantial negative effects of this policy in the early stages (including substantial increases in fuel poverty) are out-weighed by the marginal benefits, which are expected so far in the future that uncertainty in the modelling is likely to be far greater than the level of benefit expected.

Where no outside investment is needed for low-carbon development (i.e. where intra-company funding is available to developers or energy service companies) the impact on funding is expected to be virtually non-existent.

Question 3.A3: How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?
It is questionable how much certainty would actually be provided via the proposed mechanisms. Assuming that the new CPS would have its level set annually, and this level would need to be set in advance of each financial year, it would not be able to adjust quickly enough for the more variable EUETS price becoming apparent. Therefore, whilst there *may* be some increased long-term certainty, the benefit of this to investment is limited because cash flow remains open to uncertainty.

Question 3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?
Even with existing incentives, rates of return for many low-carbon technologies are still insufficient to allow wide-spread implementation. Carbon Price Support (CPS) is unlikely to be set at a sufficient level to incentivise significant new low-carbon plant installation (at least in the earlier years) but will result in a pass-through of the increased costs directly to consumers.

ADMINISTRATION

Question 4.B1: What changes would you need to make to your procedures and accounting systems to ensure you correctly account for CCL on supplies to electricity generators?
As consumers of gas for use in CHP, budgeting for existing CHP generators would need to consider the proposed changes. There would be no administrative saving achieved by planning for a single carbon price. Indeed, there would be a marginal increase in administrative burden, to deal with the new tax and its consequences.

Question 4.B2: How long would you need to make the necessary changes to your systems to account for CCL on supplies to electricity generators?
Operators of CHP based decentralised energy systems would need to provide consumers with information about changes to their charging structure, sufficiently in advance of their introduction to allow them to budget for the changes.

Question 4.B3: Please provide an estimate of how much the system changes would cost, both one-off and continuing?
Initial estimates are that administrative changes would require approximately two days of work from the finance manager (or equivalent level), for each district energy scheme, dependant on the scale of those schemes and the number of consumers they supply.

TYPES OF GENERATOR

Question 4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.
No. The current proposals disregard the significant carbon savings that gas-fired CHP achieves, when compared to conventional, separated heat and power generation. At the most basic level, the current proposals for this new CPS tax on fossil fuel generators should recognise that a proportion of the fuel used in CHP systems is utilised to make heat and not electricity, and that it is therefore inappropriate to tax the input fossil fuels for CHP with this new tax on power generation. CHP is an important carbon saving technology and would be disadvantaged by the application of this new tax.

Question 4.C2: Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

One interpretation of this question's wording would be as a statement that the current CPS proposals provide preferential treatment for CHP, when in fact the current proposals are detrimental to the development of low-carbon CHP and detrimental to the delivery of other forms low-carbon district energy solutions.

There are a number of arguments for providing preferential treatment for CHP. The significant carbon savings that can be achieved with CHP are already acknowledged in its treatment under the existing CCL regime. The consultation document states that the proposals are intended to be fair, with "liability ... directly linked to the environmental damage caused by the generation of electricity". The CHPQA system ensures that only "Good Quality" (i.e. highly efficient) CHP benefits from the CCL exemption. Therefore, the UKDEA proposes that CHP should remain exempt from all CCL charges, including the proposed new carbon price support, utilising the existing CHPQA system to ensure that only CHP which genuinely achieves carbon emissions savings is eligible for exemption.

CHP is an important part of the low-carbon energy mix, often able to provide comparable and superior carbon savings to a number of renewable technologies. Please see Appendix 1 for example calculations demonstrating the significant carbon savings which can be achieved with CHP, particularly in a district energy context.

District heating provides a means of aggregating numerous diverse heat consumers. Achieving carbon savings through these district heating networks is then dependant on the installation of low-carbon plant to supply the network. Gas-fired combined heat and power is currently one of the primary means of decarbonising existing district heating networks and often one of the most viable technologies when considering installation of new low-carbon decentralised energy systems.

The energy efficiency of CHP provides cost savings which can be shared between the energy consumers (reduced energy bills) and the scheme operator (in the form of a financial return on investment). Installation of this low-carbon plant is funded on the back of long-term energy supply agreements which allow the initial investment in the low-carbon plant to be recovered. If the proposed new CPS tax were applied to CHP, it would have a direct impact on CHP's financial viability, thus reducing considerably the ability to fund low-carbon plant and associated district heating infrastructure.

Once installed, district heating networks are essentially "fuel agnostic" – the low-carbon technology at their centre can be changed for new, more efficient technologies as they become viable, thus reducing the carbon intensity of several energy consumers at once, without the need for action by those individual energy consumers. To be clear, damaging the viability of CHP based district heating networks by applying a new tax to CHP has several negative outcomes:

- Existing district energy schemes, which frequently operate with extremely tight margins, will have their financial viability damaged, essentially unfairly punishing developers and consumers who have chosen to employ a low-carbon energy solution. This will have the further effect of reducing investor certainty in *all* forms of low-carbon generation and will significantly dis-incentivise the early adopters we now need to lead the installation of new forms of low-carbon plant.
- Funding and implementation of new CHP based low-carbon district energy schemes is reduced, with a direct negative impact on the carbon savings achievable by this industry;
- The reduced development of district energy schemes limits the reach of future forms of low-carbon plant. For example, without the financing and installation of gas-fired CHP schemes, there will be no progression to biomass fired CHP schemes as this important technology becomes more financially viable.
- District heating schemes often supply significant numbers of consumers in fuel poor areas. Additional costs for CHP would therefore disproportionately affect those in fuel poverty and it is unclear whether this disproportionate outcome has been adequately taken into account by the consultation's Impact Assessment.

Question 4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?
As a parallel to the treatment of fossil fuel fired CHP, if CCS will provide genuine carbon emissions savings, it should not be negatively impacted by a new tax which is intended to reduce carbon emissions.

The consultation document states that "there are good environmental grounds" for CCS to benefit from relief from CPS, "to reflect the proportion of CO_2 abated". Since the consultation document also recognises that CCS currently remains unproven technology, it begs the question, why is relief from CPS planned for CCS and not CHP, even though CHP is a proven means of reducing carbon emissions, and is achieving those carbon emissions savings now?

IMPORTS & EXPORTS

Question 4.D1: What impact would the Government's proposals have on electricity generators and suppliers that export or import electricity?
The UKDEA declines to respond to this question.

Question 4.D2: What impact might the proposals have on trading arrangements for electricity?
The UKDEA declines to respond to this question.

Question 4.D3: What impact might the proposals have on electricity generation, trading and supply in the single electricity market in Northern Ireland and Ireland?
The UKDEA declines to respond to this question.

CARBON PRICE SUPPORT MECHANISM

Question 4.E1: How should the carbon price support rates be set in order to increase certainty for investors, in particular over the medium and long term?
If the aim is to improve certainty for investors over the longer term, then the final carbon price (i.e. EU ETS cost plus CPS) should be the published long-term target. It should be borne in mind that investments in decentralised low-carbon plant at the district energy scale can be based on supply contracts in excess of 20 years. Therefore, genuine long-term cross-party consensus regarding the trend in final carbon price should be the aim.

Question 4.E2: Which mechanism, or alternative approach, would you most support and why?
Achieving a predictable final price for carbon will require the CPS to be adjusted on at least an annual basis, to take account of the changeable nature of the EU ETS market. Any more frequent alteration of the rate is assumed to be inappropriate for taxation and might add further administrative burdens.

A transparent mechanism is necessary, which allows informed budgeting to take place. Given the rate of change of EU ETS prices, including the potential for substantial price shocks, the UKDEA would question the ability of a taxation measure to genuinely remove uncertainty. In reality, the CPS *may* dampen some of the medium or long term uncertainty of the EU ETS but it could just as easily add a further layer of uncertainty, particularly to shorter term cash-flows. This measure therefore has the potential to impact more negatively on smaller players in the market, strengthening the position of larger scale incumbents and reducing competition.

As discussed in the answer to Question 3.A2, comparing Chart 1 and Chart 4 in the Impact Assessment yields the apparent conclusion that the stability element of the CPS results in little to no additional decarbonisation, and it is only when the CPS results in substantially increased cost of import fuels that decarbonisation is incentivised above and beyond that decarbonisation which is achieved by other (non-CPS) measures (such as feed-in tariffs) seen in the base case.

Question 4.E3: What impact would the proposals have on your carbon trading arrangements?
The UKDEA foresees little to no impact of the proposals on the existing carbon trading arrangements of its members. The UKDEA cannot comment on the likelihood of any wider effects on the carbon trading market and the resultant impacts of these on DE.

UK District Energy Association Response to the Carbon Price Support Consultation – February 2011

FUTURE PRICE OF CARBON

Question 4.F1: Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?
Long-term targeting of the carbon price appears sensible, given the long-term nature of investments in low-carbon plant, at all scales. The UKDEA has no views on the proposed level of the carbon price other than to insist that low-carbon, gas-fired CHP should not be dis-incentivised by a new tax that is intended to promote the very things which CHP achieves.

Question 4.F2: What is the most appropriate carbon price for the UK to meet its emissions reduction targets in the power generation sector? How would this be affected by changes in the structure of the electricity market?
Alongside the proposals for the new CPS, changes in the structure of the electricity market are expected to impact across all scales of the electricity market. However, the consultation documents indicate that the proposals have concentrated primarily on the large scale generation and supply markets. Further consideration is required at the smaller scales, to ensure that Communities, Local Authorities, Local Enterprise Partnerships and Energy Service Companies are genuinely incentivised to develop the diverse, de-centralised, low-carbon solutions that the UK requires.

Reliance on large scale generation alone, and particularly reliance on economic and energy modelling which only takes these larger stakeholders into account, disregards the substantial benefits available from district energy, community scale action and demand side measures. Only when the genuinely diverse market players (both existing and as required in future) are considered, can confidence be placed in the setting of particular carbon price profiles.

Question 4.F3: When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?
The UKDEA recognises that the intention is to introduce proposals in the Finance Bill 2011, and therefore the consultation period has been shortened. However, given that the Consultation Code of Practice states that "Consultations should normally last for at least 12 weeks with consideration given to longer timescales where feasible and sensible", it is clear that the 8 week period actually provided for this consultation is insufficient. Re-iterating our response to question 4.F2, the UKDEA believes that further consideration should be given to stakeholders of all scales that will be affected by these proposals, before a genuinely useful mechanism can be introduced which will not impact negatively on low-carbon development.

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ELECTRICITY INVESTMENT

Question 5.B1: What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?
Whilst the CPS is expected to dis-incentivise the more carbon intensive forms of generation at larger scales, there will also be significant dis-incentive to develop low-carbon gas-fired CHP energy solutions, actually resulting in an increase in carbon emissions where existing schemes are adversely affected and reducing development of further low-carbon CHP schemes. As explained in our response to Question 4.C2, this unfair limitation on CHP based district energy systems now, will have significant adverse impacts on the UK's ability to deliver other low-carbon solutions (such as biomass fired CHP) when they become financially viable in the future.

Question 5.B2: What other impacts would you expect carbon price support to have on investment decisions in the electricity market?
The UKDEA would like to re-iterate the important points raised in response to Question 4.C2; that knock-on effects of dis-incentivising gas-fired CHP now, will include a reduced ability to deploy other forms of low-carbon energy in the future. Therefore, it is important that low-carbon gas-fired CHP is protected from this dis-incentive measure and the UKDEA would recommend utilising the existing CHPQA scheme to determine the level of exemption from any new CPS taxation, just as is carried out with the current CCL arrangements.

Question 5.B3: How should carbon price support be structured to support investment in electricity generation whilst limiting impacts on the wholesale electricity price?
It is unclear whether carbon price stability provided by the CPS provides significant decarbonisation; reviewing Chart 4 in the Impact Assessment, it would appear that the projected decarbonisation occurs as a result of the carbon price reaching a threshold value, rather than any stability effects. It is therefore unclear how decarbonisation is genuinely incentivised other than by adding cost to fossil fuel generation, which in-turn raises the wholesale electricity price (therefore increasing revenue for all generators, fossil fuelled and low-carbon alike); both effects combine towards a threshold where low-carbon generation becomes viable, though at an unavoidable increase in the cost of electricity for consumers and significant increases in levels of fuel poverty.

EXISTING LOW CARBON GENERATORS

Question 5.C1: Can you provide an assessment of the impact of the proposals on your generation portfolio and overall profitability?
The overall impact on CHP is difficult to determine because the carbon price paid by CHP will depend on the portion of the EUETS price which it is exposed to (which in turn depends on the level of EUETS allowances made available for CHP). In essence, under these proposals, CHP would be subject to a higher level of uncertainty than less carbon efficient dedicated electrical generators.

Question 5.C2: What would be the implications of supporting the carbon price for existing electricity generators and how should the Government take this into account?
Increased costs for generators of all scales will be passed onto consumers. At the district energy scale, profit margins for scheme operators are sufficiently tight that they cannot insulate their consumers from changes in taxation. Under the current proposals, where low-carbon district energy schemes are fed by gas-fired CHP systems, this will therefore result in consumers who have chosen to procure both power *and heat* supplies from a low-carbon source of energy, being hit with an increase in costs as a result of a new tax which is intended to incentivise low-carbon generation. Therefore, the Government's commitment to achieving fairness through their proposals would indicate that the carbon savings achievable should be recognised by exempting low-carbon CHP from this new tax. This would fit with the simplification agenda, because it could utilise the existing CHPQA system to achieve such an exemption.

ELECTRICITY PRICE IMPACTS

Question 5.D1: How do you currently manage fluctuations in the wholesale electricity price?
In the district energy context, fluctuations in the wholesale electricity price are effectively passed through to the electricity consumer(s). Indexation of energy prices can ensure that consumers receive a discount when compared to conventional energy supplies, but the operators of such schemes cannot insulate the consumers against fluctuations in price.

Question 5.D2: What difference will supporting the carbon price make to your business?
As previously noted within this consultation response, the current proposals stand to reduce the financial viability of low-carbon district energy schemes which utilise low-carbon fossil fuelled CHP. As well as potentially damaging the margins of existing schemes, investment will be reduced in potential future schemes, substantially limiting growth in this important low-carbon industry.

Question 5.D3: As an electricity generator or supplier, how much of the cost of the carbon price support would you pass on to consumers?
As noted above, in the district energy context, fluctuations in the wholesale electricity price are effectively passed through to electricity consumers. Indexation of energy prices can ensure that consumers receive a discount or cost neutral supplies of energy, when compared to conventional energy supplies, but the operators of such schemes cannot insulate the consumers against changes in price.

Question 5.D4: As a business, how much of the cost of energy bills do you pass on to customers?
As suppliers of energy, district energy operators have little option but to pass any increase in energy costs onto the final energy consumers.

Question 5.D5: How might your company or sector be affected and would be there any impact on your profit margins?

To be completely clear and consolidate the UKDEA's response to this consultation, the current proposals stand to reduce the margins for existing CHP based district energy schemes and discourage investment in low-carbon district heating networks, through the introduction of a new tax which is actually intended to incentivise low-carbon generation.

The consultation document states that the Government's aim is to make the tax system more:

- Competitive – But the new CPS would reduce the viability of decentralised generation, reducing competition.
- Simple – But a new tax means more administrative burdens, even if the fuel suppliers (rather than the fuel users) are made responsible for paying CPS.
- Fair – But the new CPS would give unfair advantage to large-scale incumbents, to the detriment of small-scale decentralised generators. This is strongly linked to the competitiveness argument.
- Green – But the loss of existing and future decentralised generation reduces the consumers which can be future-proofed through district energy schemes.

Question 5.D6: Do you have any comments on the assessment of equality and other impacts in the evidence base of the Impact Assessment, included at Annex D?

CHP based district heating schemes are often utilised to supply lower cost energy to fuel poor areas. Additional costs for CHP would therefore disproportionately affect those in fuel poverty and it is unclear whether this disproportionate outcome has been adequately taken into account by the consultation's Impact Assessment.

Appendix 1 to UKDEA Response to the CCL Reform Consultation

Typical Carbon Emission Savings

Highlighting the potential for gas-fired CHP and District Energy to out-perform other low carbon technologies in terms of emissions savings.

Typical annual energy requirements of the city centre mixed use development:

Site Heat Consumption	15,618,829	kWh_{th} p.a.
Site Elec Consumption	23,488,944	kWh_e p.a.

Conventional Scheme

Seasonal Boiler Efficiency	75%	
Gas into Boilers	20,825,105	kWh_{gas} p.a.
Grid Elec	23,488,944	kWh_e p.a.

Conventional Scheme CO_2 as built

	Energy	Factor	Tonnes CO2	
Gas	20,825,105	0.194	4,040	
Grid Elec	23,488,944	0.422	9,912	
		Total	**13,952**	**Tonnes CO2 p.a.**

Gas Fired CHP Scheme

Portion of Heat from CHP	60%	of total
Heat from CHP	9,371,297	kWh_{th} p.a.
Nominal size of CHP	1,250	kW_e
CHP Elec Efficiency	36%	
CHP Heat Efficiency	45%	
Seasonal Boiler Efficiency	75%	
Gas into CHP	20,825,105	kWh_{gas} p.a.
Gas into Boilers	8,330,042	kWh_{gas} p.a.
Elec from CHP	7,497,038	kWh_e p.a.
Whole Site Elec	23,488,944	kWh_e p.a.
Grid Elec	15,991,906	kWh_e p.a.
Portion of Site Elec from CHP	32%	

Alternative Gas Fired CHP Scheme CO_2

	Energy	Factor	Tonnes CO2	
Gas	29,155,147	0.194	5,656	
Site Elec	23,488,944	0.422	9,912	
Offset Elec	7,497,038	-0.568	-4,258	
		Total	**11,310**	**Tonnes CO2 p.a.**

CO_2 Saving With CHP	**2,642**	**Tonnes CO2 p.a.**
	19%	

Biomass Heat Only Scheme

Portion of Heat from Biomass	60%	of total
Heat from Biomass Boiler	9,371,297	kWh_{th} p.a.
Nominal size of Biomass Boiler	1,442	kW_{th}
Seasonal Biomass Boiler Efficiency	75%	
Fuel into Biomass Boiler	12,495,063	kWh_{bio} p.a.
Heat from Gas Boilers	6,247,532	kWh_{th} p.a.
Gas into Boilers	8,330,042	kWh_{gas} p.a.

Alternative Biomass Scheme CO_2

	Energy	Factor	Tonnes CO2	
Gas	8,330,042	0.194	1,616	
Grid Elec	23,488,944	0.422	9,912	
Biomass	12,495,063	0.025	312	
		Total	**11,841**	**Tonnes CO2 p.a.**

CO_2 Saving With Biomass Heat Only	**2,112**	**Tonnes CO2 p.a.**
	15%	

Ground Source Heat Pump Scheme

Portion of Heat from GSHP	60%	of total
Heat from GSHP	9,371,297	kWh_{th} p.a.
Seasonal GSHP CoP	3.5	
Elec into GSHP	2,677,514	kWh_{elec} p.a.
Heat from Gas Boilers	6,247,532	kWh_{th} p.a.
Gas into Boilers	8,330,042	kWh_{gas} p.a.

Alternative Heat Pump Scheme CO_2

	Energy	Factor	Tonnes CO2	
Gas	8,330,042	0.194	1,616	
Grid Elec	26,166,458	0.422	11,042	
		Total	**12,658**	**Tonnes CO2 p.a.**

CO_2 Saving With GSHP Heat	**1,294**	**Tonnes CO2 p.a.**
	9%	

UKERC

UK Energy Research Centre

Response to the 2011 HM Treasury Carbon Floor Price Consultation

11 February 2011

www.ukerc.ac.uk

UK Energy Research Centre

THE UK ENERGY RESEARCH CENTRE

The UK Energy Research Centre carries out world-class research into sustainable future energy systems.

It is the hub of UK energy research and the gateway between the UK and the international energy research communities. Our interdisciplinary, whole systems research informs UK policy development and research strategy.

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UKERC response

The UK Energy Research Centre welcomes this opportunity to provide input to the HMT Carbon Floor Price Consultation. We have focused only on the questions where we believe we may have something to offer. The observations have benefited from discussions at an "Independent Experts Workshop on Electricity Market Reform" convened jointly by UKERC and the Imperial Collage Centre for Energy Policy and Technology on 31 January 2011.

Investment

3.A2: If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.

In the hypothetical circumstance where investors have complete confidence that carbon prices will be sustained in the long run, low carbon investment would be encouraged and high carbon investment discouraged. However, where the carbon price overlays electricity wholesale prices and the latter are uncertain and outside the control of low carbon generators, volatility in the wholesale price will still discourage investment in low carbon generation. We explain the reasons below. In addition, the evidence suggests that investors attach political risk to taxes.

It is also worth noting that the uncertainty over the future price of gas, because of the availability of cheap shale gas, will affect the impact of the any carbon price support mechanism.

3.A3: How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?

Carbon taxes offer greater certainty than cap and trade schemes such as the EU ETS. However, investors have indicated that they view fiscal instruments as relatively risky, because political changes create changes to the fiscal environment[1]. Taxes can drive investment, but when considering power sector investment, the relatively long run uncertainty relating to carbon taxes has to be seen in the context of highly capital intensive, long lived assets such as nuclear power stations. As we explain below, long run fixed price contracts for electricity are likely to be more bankable and economically efficient.

[1]Energy and Climate Change Select Committee: Electricity Market Reform - uncorrected evidence - 2 February 2011- http://www.publications.parliament.uk/pa/cm201011/cmselect/cmenergy/uc742-iii/uc74201.htm

3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

For the reasons set out below further reform is desirable, perhaps essential and certainly likely to be much more economically efficient than carbon pricing alone.

Types of generator

4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.

Yes. But see the response to 4.C3.

4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

UKERC believes that some degree of tax relief for power stations with CCS is essential. These plants are expected to produce electricity at a cost of up to one third more than unabated coal fired power stations. Taxes on the fuel will prejudice the economics of this family of technologies. However, tax relief should not be set at 100% and should take account of residual emissions associated with say 80-90% capture. For commercial plant a minimum level of availability of capture plant should be met. For demonstration plant, any periods during which capture plant was not available but the station continued to operate should be granted relief, as teething problems will be inevitable as experience is gained.

Imports and exports

4.D1: What impact would the Government's proposals have on electricity generators and suppliers that export or import electricity?

Greater physical integration with the wider European markets via interconnection will be beneficial in the future, but physical integration will also require harmonisation of the rules on carbon price support mechanism. Physical integration coupled with a standalone UK carbon price could simply make un-priced carbon flow through the interconnector to the UK.

Carbon price support mechanism

4.E1: How should the carbon price support rates be set in order to increase certainty for investors, in particular over the medium and long term?

It would probably be best to base support rates on forward prices for carbon under the EU ETS. It would be helpful to set indicative rates several years ahead, but firm these up a year or two ahead as price expectations become clearer.

4.E2: Which mechanism, or alternative approach, would you most support and why?

See answer to Question 5.B3.

Electricity investment

5.B1: What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?

UKERC would expect the immediate impact to be rather modest, for three main reasons:

1. Investors view carbon prices as a relatively risky instrument compared to long run, contracted, guaranteed prices (Feed in Tariffs for example). The reason is that taxes are viewed as politically risky – subsequent governments can change the rates.

2. Electricity generators and suppliers are usually able to pass increases in prices through to consumers. This is because gas or coal generators are 'price makers', due to the way the electricity market functions. A carbon price would be expected to benefit investment in gas and discourage investment in coal, since the former generates at around half the carbon intensity of the latter. However, gas is already preferred by investors for a variety of reasons and there are no plans for a new coal station in Britain at present.

3. Whilst a carbon price would also be expected to improve the relative economics of zero carbon generators such as nuclear power or renewable energy, it would not of itself insulate such generators from movements in wholesale power prices. Nuclear and most renewable are 'price takers', and while high fossil fuel prices benefit such plants they may be unable to cover key costs, including debt service, when prices are low. Only a very high carbon price would be sufficient to over-ride such downside risk. For reasons described below we believe that it would be more economically efficient to de-risk investment in low carbon generation through other means, notably through the Feed in Tariff/Contracts for Difference described in DECC's Energy Market Reform proposals.

5.B3: How should carbon price support be structured to support investment in electricity generation whilst limiting impacts on the wholesale electricity price?

By far the simplest and most economically efficient means by which to incentivise investment in low carbon generation is through long run, fixed price contracts for plant such as nuclear and wind that have high fixed costs, very low operating costs and are exposed to electricity price risks. If wholesale prices are to be held down then the carbon price should be seen as a secondary intervention, focused more on signalling intent, encouraging minimum carbon dispatch and improving energy efficiency.

Existing low-carbon generators

5.C2: What would be the implications of supporting the carbon price for existing electricity generators and how should the Government take this into account?

There are very serious implications for existing generators. Companies fortunate enough to have portfolios that contain significant nuclear, hydro or wind will receive a windfall benefit as wholesale prices rise. On the other hand generators with a lot of coal plant will experience a cost increase. Merchant coal operators would be expected suffer particularly in this regard. It is difficult to avoid these impacts and for this reason instruments additional to carbon pricing are likely to be both a more economically efficient and a fairer means of encouraging low carbon investment.

Whilst in carbon terms limiting the use of such plant and encouraging its retirement might be desirable, this is less true in terms of prices, consumer costs and security of supply. A key consideration is whether proposals to introduce a capacity mechanism might interact with carbon pricing so that older, higher carbon plant is retained to provide system margin and reliability with minimal impact on emissions. UKERC will address these issues more thoroughly in our response to the DECC EMR proposals.

[redacted]

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By email: Environmentaltaxes.consultation@hmrc.gsi.gov.uk 11 February 2011

Martin Shaw
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M60 9LA

Dear Mr. Shaw,

HM Treasury Consultation on Carbon price floor: support and certainty for low-carbon investment

Thank you for the opportunity to comment on the Government's proposals for reforms to the climate change levy (CCL) and, where oil is used for electricity generation, fuel duty. UKPIA is the trade association representing the downstream oil refining and marketing industry in the UK. Our members own and operate all the major crude oil refineries and supply some 90% of the inland market in oil products, about a third of UK primary energy demand. Our responses to the specific questions included in the Consultation "Carbon price floor: support and certainty for low-carbon investment" are given in the Attachment.

Issues of particular importance are as follows:

- The proposals represent another UK unilateral policy which serves to undermine provisions made under EU ETS Phase III to mitigate against carbon leakage.

- The refining sector is already subject to challenge with the requirement to purchase a proportion of allowances under EU ETS Phase III from January 2013. The UK

proposals for carbon price support compromise UK refinery competitiveness against EU refiners and supply sources.

- The proposed removal of exemptions for CHP and auto-generators. Refinery CHP plants represent an important part of the UK portfolio of CHP capacity, which successive Governments have been keen to promote, due to the high levels of thermal efficiency available.

UKPIA is also concerned regarding the increasingly complex and multiple legislation covering climate change and air quality, each with their own monitoring reporting and verification requirements. This imposes significant administrative burden on operators and regulators alike and the Government should undertake a fundamental review of this area to rationalise policies and reduce administrative burden, in line with the commitments made in the Coalition Agreement to reduce red tape and "end the so-called 'gold-plating' of EU rules, so that British businesses are not disadvantaged relative to their European competitors".

To conclude, UKPIA remain keen to work with Government to ensure practicable, operable and affordable solutions for policy initiatives affecting the downstream oil industry. However, we believe the proposals for reform of the climate change levy (CCL) and, where oil is used for electricity generation, fuel duty, in particular for CHP plants and auto-generators, are ill-considered. They will impose unnecessary burdens on energy intensive industries and lead to loss of UK refinery competitiveness against others in Europe and elsewhere. Loss of competitiveness will inevitably introduce risk of further refinery closures, job losses and loss of supply resilience, along with significant risk of carbon leakage.

Yours truly,

Attachment

UKPIA Response to HM Treasury Consultation on Carbon price floor: support and certainty for low-carbon investment

Responses to Consultation Questions

Investment

3.A1: What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?

UKPIA member companies each have their own expectations about future carbon price levels. This is a matter for individual companies.

UKPIA is opposed to unilateral UK policy initiatives having impacts on the refining sector, which has been identified by the European Commission as being exposed to significant risk of carbon leakage. Such initiatives compromise UK refinery competitiveness and reduce the likelihood of investment in comparison with other opportunities available elsewhere.

3.A2: If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.

Investors require as much certainty as possible when making significant long term investments and carefully assess economic and political risk when compiling their investment proposals. The Government proposals for a carbon price support mechanism provide little certainty for investment due to the level of political risk. Existing and future investment in the refining sector, including additional CHP capacity will be severely compromised if the proposals for the carbon price support mechanism are implemented without reference to the damaging impacts on industries exposed to significant risk of carbon leakage.

3.A3: How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?

UKPIA believe that carbon price support delivered through the tax system in line with the proposals made in the consultation document is unlikely to deliver certainty for investors, due to the level of political risk. The carbon price support mechanism will deliver significant additional revenue at lower EUA prices and there is risk that Government then changes the price support mechanism to become an additional flat rate or percentage tax, rather than a balancing mechanism between EUA pricing and the Government carbon price aspirations and initial trajectory. Here we also note the poor record of

successive UK Governments in providing long term support for investment in carbon saving measures, for example:

- *The CRC Energy Efficiency Scheme, which has a negative impact on some types of CHP operation*

- *Removal of the recycling mechanism for CRC revenue, which otherwise would have supported investment in energy efficiency improvements*

- *Early withdrawal of incentives provided for LPG (a lower carbon fuel), which were intended to support market development, in particular for automotive use*

3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

Although some UKPIA member companies are involved directly in the power sector, UKPIA wishes to comment only on the impact of carbon price support on the refining sector in its response to this consultation.

The UK refineries are net electricity importers and, with the high likelihood of full pass through of carbon price support by the power generation sector, they will face increased costs and reduced margins. This will result in loss of competitive position against EU and non-EU refineries and supply sources, increasing the risk of further refinery closures in a sector well-recognised as being at risk of carbon leakage (see response to Question 4.E1).

Administration

4.B1: What changes would you need to make to your procedures and accounting systems to ensure you correctly account for CCL on supplies to electricity generators?

The proposals are likely to have significant impact on the refining sector, where embedded CHP and other forms of electricity generation and heat production are used, as well as external (but closely integrated) CHP, along with grid supply. Embedded plant uses a constantly varying mix of non-commercial fuels including refinery off-gases, which are not taxable commodities for CCL purposes. The fuel mix is carefully and continually optimised depending on operational factors including component availability, energy requirements and emissions control (NO_x, SO_x etc.) under IPPC permits. The removal of exemptions for CHP as proposed (notwithstanding the legality of this step under the provisions laid out in the current Energy Products Directive, Council Directive 2003/96/EC), would impose complex monitoring and accounting requirements on the sector, along with a very significant administrative burden. UKPIA found the document to be unclear regarding the impact for auto-generators who are also refiners.

4.B2: How long would you need to make the necessary changes to your systems to account for CCL on supplies to electricity generators?

As UKPIA understand the proposals as they affect embedded refinery auto-generation (including CHP), minimal changes would be required in respect of own-use consumption. Any supplies of refinery gases and non-commercial fuels used for auto-generation are not subject to CCL and the new proposals do not change this, as these fuel types are

not taxable commodities for CCL purposes. The treatment of any imported electricity also remains unchanged in terms of CCL accounting; this also remains exempt from CCL.

4.B3: Please provide an estimate of how much the system changes would cost, both one-off and continuing?

No significant costs are anticipated in respect of system changes required to account for application of CCL on supplies to electricity generators. Fuel duty will continue to be charged at the prevailing rate on dutiable supplies to electricity generators and they would then reclaim a proportion of the duty paid, depending on the carbon price support rate applied.

Types of generator

4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.

No. Existing exemptions for refinery auto-generators should be maintained in line with the specific exclusion of own use of energy products from taxation in the Energy Products Directive, Council Directive 2003/96/EC under Article 21 (para 3).

The change in treatment proposed for CHP plants disadvantages existing plants in which there has been significant recent investment, undermining the investment case and compromising profitability of high cost plant justified on the basis of Government energy efficiency policies. A disincentive is also introduced for future investment in CHP.

4.C2: Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

UKPIA believe this question is couched to lead negative responses, implying that the proposals continue to provide preferential treatment for CHP. The proposals penalise CHP and create the perverse outcome that CHP operators may incur additional costs through carbon price support for energy efficiency improvements and carbon savings promoted under past policy initiatives.

The Government should continue to provide the existing incentives for good quality CHP, where considerable additional potential has been identified in refining and other sectors[1], where alternative low-carbon technologies have poor viability (e.g. biomass), are not feasible (e.g. nuclear), or lead to lower integrated energy efficiency or emissions performance.

There are also a number of issues with the consultation document text. Under Paragraph 4.25, that CHP generation is also entitled to other forms of support, but the list is inaccurate and misleading. For example, the EUA ring fence does not apply from 2013 under EU ETS Phase III and the current CRC Energy Efficiency Scheme (which itself is currently under review and is expected to undergo major simplification and

[1] For example, in the Pöyry study "Securing Power – Potential for CCGT CHP Generation at Industrial Sites in the UK", June 2008. This study was carried out for Greenpeace and provides some insight into the additional potential for CHP at a number of sites, although UKPIA believe this potential is overstated for some locations.

revision), does not include heat. The remaining incentives are available to a few but by no means all good quality CHP operators.

Paragraph 4.26 states: "Fossil fuel-based CHP would face a significantly lower CCL liability relative to the separate generation of heat and power, as a result of its relative efficiency and the existing CCL exemptions." UKPIA do not understand this statement, as under the proposals, eligible fuel use will be subject to CCL, irrespective of whether it is used for electricity generation or heat production. Although combined CHP electricity generation and heat production has higher fuel efficiency than separate generation of heat and power, under the latter case only electricity generation would be subject to CCL or carbon price support measures. This statement is therefore incorrect.

In Paragraph 4.27 the Government seeks to emphasise the concepts of simplicity, fairness and the 'polluter pays' principle, in justifying as few exemptions as necessary. Given the earlier comments in the response to Question 4.B1, the proposals for carbon price support are extremely complex when applied to the refining sector, although the exclusion of heat would appear simply addressed by using information currently obtained in the CHPQA submissions. 'Fairness' criteria also appear not to be met, as the heat production via CHP is generally accomplished at lower efficiencies than for separate production from high efficiency boilers (see also comments on EU ETS Phase III allocation rules in response to Question 4.E1).

The consultation also states that any relief from CCL and fuel duty may give rise to state aid issues. This statement is also open to challenge, as in the context of any such relief or support provided to CHP, the provisions of the Cogeneration Directive[2] must also be considered; these provide for the different treatment and promotion of good quality CHP.

The proposals may also have unintended consequences, increasing CO_2 emissions and reversing past reductions included under the UK's emissions reduction achievements. The application of carbon price support to fuels used by CHP plant, which would include a proportion used to generate heat, results in CHP plant being disadvantaged versus the separate production of electricity and heat, where the carbon price support rate would be applied to the fuels used for power generation only.

UK refineries have the option of reverting to separate generation of electricity and heat, having retained standalone boiler capacity and power generation for resilience purposes (power generation and heat production facilities are critical plant) and there is also the option of operating or converting CHP facilities to operate as a CCGT and to use standalone boilers for heat production. If implemented, the proposals would mean that sites that have achieved reductions in CO_2 emissions and improvements in energy efficiency through investment in CHP (as CHP emits less carbon than the separate production of power and heat), would be subject to higher costs under the carbon price support proposal than a site that imports power and has standalone boilers or could revert to this configuration. This also provides a significant disincentive for further investment in refinery and other CHP plant and may also effect how existing CHP facilities are operated in future.

As an absolute minimum CHP should not be penalised compared to the current situation and this perverse outcome should be avoided by exempting the fuel used for heat

[2] Directive 2004/8/EC of 11 February 2004 – see http://www.energy.eu/directives/l_05220040221en00500060.pdf.

generation from carbon price support - this will ensure that CHP is not disadvantaged. However, UKPIA strongly recommends that, should the Government process with the introduction of the proposed carbon price support mechanism, all fuel for good quality CHP is exempt - this may provide the incentive required for investment in additional CHP capacity as supported under the Cogeneration Directive, Directive 2004/8/EC.

4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

Fiscal measures and incentives may be appropriate to support technology requiring a long term stimulus, but tax relief from the carbon price support mechanism is unlikely to provide sufficient incentive for CCS. Further additional support would also be required for application of CCS to smaller scale embedded power generation and other refinery CO_2 emissions sources, which tend to be distributed as a number of point sources across a large area.

Imports and exports

4.D1: What impact would the Government's proposals have on electricity generators and suppliers that export or import electricity?

The UK refineries are net electricity importers and, with the high likelihood of full pass through of carbon price support by the power generation sector, they will face increased costs unless carbon price support elements are removed in the cost of supply to refineries as provided for in the Finance Act 2000[3].

4.D2: What impact might the proposals have on trading arrangements for electricity?

The proposals provide a disincentive for continued operation of embedded CHP and other power generation plant during periods of reduced refinery demand, when surplus power would otherwise be exported to the grid. As a consequence, refinery electricity supply and heat production would be reconfigured for optimum cost, with the possibility that relative emissions may increase (see also response to Question 4.C2).

4.D3: What impact might the proposals have on electricity generation, trading and supply in the single electricity market in Northern Ireland and Ireland?

UKPIA Member companies have no involvement in the single electricity market in Northern Ireland and Ireland and UKPIA has no response on this Question.

Carbon price support mechanism

4.E1: How should the carbon price support rates be set in order to increase certainty for investors, in particular over the medium and long term?

UKPIA is opposed to unilateral UK policy initiatives having impacts on the refining sector. The EU refining sector has been identified as being exposed to significant risk of carbon

[3] The Finance Act 2000, Schedule 6, Part II, paragraph 13.

leakage[4], based on the quantitative criteria set out in Paragragh 15 of Article 10a of Directive 2003/87/EC (the "EU ETS Directive")[5]. The Commission has taken steps to mitigate against carbon leakage in the refining sector under the EU ETS allocation rules[6], which define a benchmark based on a concept of complexity weighted tonne (CWT) proposed by CONCAWE and EuroPIA[7].

Under this benchmark, the EU refining sector will be required to purchase a proportion of its EUAs in EU ETS Phase III from 2013 (including those required for all emissions from electricity generation, as is the case already under EU ETS Phase II). Using an extract from the verified dataset used to derive the benchmark, UKPIA has estimated the additional cost to the UK refining sector for purchased allowances at some €70M/year from 2013 onwards based on an EUA cost of €15/CO_2e tonne, rising to some €230M/year at €50/CO_2e tonne. These costs already represent a significant proportion of current refining margins[8]; the further imposition of the carbon price support mechanism would place UK refiners at a competitive disadvantage to other EU refineries, with very significant challenge to their continued viability against substitution of domestic UK supply by imports for Europe and elsewhere. Loss of competitiveness will inevitably introduce risk of further refinery closures in a sector currently exposed to significant challenges, with consequent job losses and loss of supply resilience, along with significant risk of carbon leakage.

The proposed carbon price support mechanism therefore provides very significant challenge to the UK refining sector, compromising its very existence, let alone putting any further investment at risk. A similar situation is likely for a number of other sectors (in particular, manufacturing sectors) identified by the EU as being at risk of carbon leakage. UKPIA therefore strongly believes that the carbon price support mechanism should not be applied to such sectors and that existing CCL exemptions for CHP and auto-generators should be maintained (or even extended).

4.E2: Which mechanism, or alternative approach, would you most support and why?

Although UKPIA and its member companies have not yet developed a view of the Government proposals for Electricity Market Reform, which are currently subject to consultation by DECC, the lead option proposal for a feed-in tariff and contract for difference may offer the required support for investment in low-carbon electricity generation. The proposed Emissions Performance Standard would complement this, although unintended consequences for smaller scale auto-generation and CHP should again be considered.

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[4] Commission Decision of 24 December 2009 – see http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:001:0010:0018:EN:PDF.

[5] See http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:275:0032:0046:en:PDF.

[6] These have been defined under the Draft Commission Decision determining transitional Union-wide rules for the harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC, which were agreed by the EU Climate Change Committee on 15 December 2010. They are currently subject to three months scrutiny by the European Parliament and Council before adoption (see http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:001:0010:0018:EN:PDF).

[7] CONCAWE is the widely respected European oil industry technical body set up in 1963 for conservation of clean air and water in Europe. EuroPIA is the European Petroleum Industry Association representing the downstream oil refining and marketing industry at a European level.

[8] See NERA report "The Competitive Context of the European Petroleum Refining Industry in Light of the EU ETS", 24 October 2007. This is available at http://www.europia.com/content/default.asp?PageID=412&DocID=13597.

4.E3: What impact would the proposals have on your carbon trading arrangements?

The proposals are not anticipated to have any impact on carbon trading arrangements.

Future price of carbon

4.F1: Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?

No. UKPIA is opposed to unilateral UK policy initiatives having impacts on the refining sector, which has been identified by the European Commission, with the agreement of the UK Government, as being exposed to significant risk of carbon leakage. UKPIA supports full transposition and implementation of EU Directives with no additional enhancement or "gold-plating".

The EU ETS has operated as a market mechanism to limit and reduce CO_2 emissions since its inception in January 2005. The enhancements proposed under EU ETS Phase III from January 2013 include a single EU-wide cap on emission allowances, which will apply from 2013 and will be cut annually, reducing the number of allowances available to businesses to 21% below the 2005 level in 2020. The free allocation of allowances will be progressively replaced by auctioning, and the sectors covered by the system will be expanded, with the inclusion of aviation in 2012, chemicals and aluminium in 2013 and full auctioning to be introduced for the power sector from 2013 onwards. UKPIA believe that these changes will result in a more representative carbon price for industry and the Government should allow the market to respond before proposing any further changes any subsequent phases of the EU ETS. It should certainly not take any unilateral action which would compromise energy intensive industry sectors, negating the very steps taken in revision of the EU ETS to establish a more level playing field across EU and EEA countries.

4.F2: What is the most appropriate carbon price for the UK to meet its emissions reduction targets in the power generation sector? How would this be affected by changes in the structure of the electricity market?

UKPIA does not support use of unilateral carbon price augmenting mechanisms that appear to second guess existing markets to achieve emissions reduction targets for power generation, due to their likely impact on energy intensive sectors, including the refining sector. See response to Question 4.E1.

4.F3: When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?

See response to Question 4.F2.

Electricity investment

5.B1: What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?

In isolation, UKPIA would expect the carbon price support mechanism to provide some incentive for investment in low-carbon electricity generation, although considerable

uncertainty would remain, due to high risk that the mechanism be withdrawn due to excessive impact on the competitiveness of other sectors (see also responses to Questions 3.A3, 4.E1 and 4.F2).

5.B2: What other impacts would you expect carbon price support to have on investment decisions in the electricity market?

UKPIA would expect carbon price support to provide limited support for investment in low-carbon electricity generation (although not in the refining sector), but the political risk attached to the longevity of any taxation measure means this effect is likely to be severely diluted. Further investment in CHP would be severely undermined (see response to Question 4.C2).

5.B3: How should carbon price support be structured to support investment in electricity generation whilst limiting impacts on the wholesale electricity price?

UKPIA has no position on this matter.

Existing low-carbon generators

5.C1: Can you provide an assessment of the impact of the proposals on your generation portfolio and overall profitability?

UKPIA is currently unable to assess the impact of the proposals on refinery power generation and overall profitability, due to the complexities identified in the response to Question 4.B1 and in view of the challenges already faced under EU ETS Phase III outlined in the response to Question 4.E1. However, the proposals would undoubtedly result in further challenge to refinery competitiveness and ongoing viability.

5.C2: What would be the implications of supporting the carbon price for existing electricity generators and how should the Government take this into account?

Excluding CHP, which offers energy efficiency improvements and overall emissions reductions, the Government should ensure measures avoid unequal treatment and creation of commercial advantage for existing electricity generators.

Electricity price impacts

5.D1: How do you currently manage fluctuations in the wholesale electricity price?

UKPIA, as a trade association, has no knowledge on how member companies manage fluctuations in the wholesale electricity price.

5.D2: What difference will supporting the carbon price make to your business?

As identified in the response to Question 5.C1 and earlier Questions, UKPIA believe there would be significant negative impact on the refining sector, introducing risk of further refinery closures, job losses and loss of supply resilience, along with significant risk of carbon leakage.

5.D3: As an electricity generator or supplier, how much of the cost of the carbon price support would you pass on to consumers?

It is highly unlikely there is any opportunity for cost pass through for petroleum products, as here prices are determined by the North West European and wider wholesale product market, where prices are much more likely to be determined by suppliers that are not subject to any carbon price support costs.

The refineries themselves are not significant exporters of electricity to the grid, although some UKPIA member companies have involvement in adjacent JV CHP plants (including the Immingham CHP plant, currently the largest operating CHP plant in Europe) or supply direct to integrated petrochemicals or crude stabilisation plants operated as separate business entities or by third parties. In these cases, it would be expected that the electricity market would determine the level of cost pass through possible, since the refineries and associated CHP plants would compete with other supply sources.

5.D4: As a business, how much of the cost of energy bills do you pass on to customers?

Energy costs represent a major operating cost for refineries, second only to crude oil and other feedstock costs. Invariably, refiners must pass on all of these costs to consumers to remain economically viable – if these costs cannot be recovered, refinery closure is inevitable.

5.D5: How might your company or sector be affected and would be there any impact on your profit margins?

See response to Question 5.C1.

5.D6: Do you have any comments on the assessment of equality and other impacts in the evidence base of the Impact Assessment, included at Annex D?

UKPIA believe the Impact Assessment is fundamentally flawed, as it has not properly assessed the impact on energy intensive industries exposed to international competition and carbon leakage, nor has it considered the consequences for CHP and the possibility that CHP operations are partially or wholly substituted by standalone power generation and heat production, leading to an increase in CO_2 emissions. Other shortcomings include the assessment of impacts on CHP and auto-generators, in particular the undermining of recent investment in CHP. There is risk that the proposals if implemented could compromise plant where significant investment has been made but not yet fully depreciated, leading to stranded assets, significant closure costs and loss of investor confidence in the broader UK economy.

UKELA Response to the Carbon Price Floor Consultation

UKELA is the UK's foremost membership organisation comprising both lawyers and non-lawyers. Our aim is to improve the understanding and awareness of environmental law, and to make the law work for a better environment. UKELA has a climate change and energy working party (CCEWP) which monitors and, where appropriate, comments on the development of climate change and energy related policy and legislation.

As many of UKELA's members work in private practice, they are well informed on how various environmental policy measures work and common issues that their clients face when complying with such measures.

In responding to consultations, UKELA's aim is to ensure that the proposed policy measure or law will work including within the policy and legislative landscape within which it is framed.

As a general point, the CCEWP agrees that the design of the electricity market has failed to sufficiently incentivise the building of new generation assets, let alone low-carbon generation assets (save through directed measures such as the Renewables Obligation Order). Some technologies will continue to need directed financial support if the Government considers that they should be part of the UK's generation mix into the future, including:

- new nuclear;
- carbon capture and storage;
- smaller scale generators (not benefiting from the FIT);
- combined heat and power.

Therefore, we do agree that reform of the electricity market is needed to incentivise investment in new, low carbon generation. However, we consider that one contributor to the current market failure is the complexity of the current structure and regulation of the market. This creates asymmetries between vertically integrated utilities (which are only a natural response to the market regulation) and new entrants (large or small), on the one hand, and between existing generating plant and new plant, on the other.

We would urge the Government to acknowledge the complexity of its proposals (the carbon price support mechanism and the other elements of the Electricity Market Reform) and to use this opportunity either to aim to remove existing complexity or to aim for the simplest form of intervention, rather than to layer complexity on top of complexity.

Our responses to the Carbon Price Floor Consultation below are set out under each of the 30 questions.

Investment □?3.A1: What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?

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Response:

Currently, such a carbon price as exists in the UK is made up of the cost of EU Emissions Trading Scheme (EU ETS) allowances (EUAs) and various different regulatory costs imposed on power from fossil fuel technologies, depending on the industry and size of business.

We do not feel competent to predict future carbon prices although we would comment that if tightening regulation and auctioning does not produce a higher carbon price over this timeframe then the EU ETS is likely to be seen as a failure.

At its current levels, the carbon price is generally seen as providing insufficient incentive to justify investment in new low-carbon generation sources (or demand management). For the 'internalisation' of carbon costs at a sufficient level to drive investment, low carbon technologies with higher construction costs (but, commonly, lower operational costs) than mature fossil-fuel burning technologies (without carbon abatement or heat capture) are generally dependent on other instruments (e.g. The Renewables Obligation (RO),Feed-in Tariff (FIT), etc).

Unless the EU ETS market price of carbon increases sufficiently (or a carbon price mechanism is introduced), it is difficult to see how this situation would change significantly unless there were some technological breakthrough. Technology breakthroughs are more likely to arrive if there is a clear market for delivery those technologies at scale. The more certain mechanisms (e.g. the RO, FIT, etc) seem more likely to drive that.

In principle, we believe that if the Government adds to the "bundle of domestic and EU generated policy measures" which together generate a carbon price, it should only do so if that "layering of policies" would result in a clearer driver towards low-carbon generation (or indeed some other goal associated with decarbonising the UK economy). We are concerned that the proposed carbon price support will add another layer of complexity for businesses in this sector but will not actually generate the support that low carbon generation needs. Specifically, we are concerned that the carbon price support will increase the price of high-carbon generation but will not immediately incentivise investments in low-carbon generation. Disincentivising high carbon generation by making it more expensive will not automatically translate into low carbon generation being preferred owing to other regulatory drivers such as planning constraints, issues with new technology and so forth. This "time-lag" is a function of tax being quite a blunt instrument when seeking to incentivise investment in new low carbon generation assets. It appears to us that the current carbon price

support proposal will do far more, in the short term, to raise revenues for the Treasury rather than it will do to incentivise investment in low-carbon generation. Indeed, there is even a danger that tax paid by existing market participants with high carbon generating assets (or indeed the end consumer of such power) will be diverted from investment in low-carbon generation unless such revenues are hypothecated and used to provide support for such investment.

If a carbon floor price tax is to be used to drive investment in low carbon generation, in our view it would be better to provide for that tax on high carbon generation to be deferred so that it will be charged starting from (say) 2015. Setting the tax to jump straight to a meaningful level at a future date should better incentivise investment in new low carbon technologies, without imposing a tax burden that serves no environment purpose in the interim.

□□3.A2: If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.

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Response:

A differential between the cost of running low, versus high, carbon plant favouring low carbon plant should, of course, incentivise investment in low carbon generation provided that that plant can gain a fair price for electricity generated. The current low level of liquidity in the electricity wholesale market means that this price signal may be lost.

The Government should not underestimate the damage done to investor confidence when support levels in schemes such as FITs or the RO are changed earlier than had been anticipated as investors in generation plant typically work to 15-20 year terms when considering the return on investment.

□□3.A3: How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?

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Response:

Investors might well be concerned about the ease with which a carbon price support delivered through a tax mechanism could be changed as tax levels can be easily amended in the Finance Bill each year. Change could be against the interests of low carbon generation investors. Therefore, compared to other low carbon investment mechanisms with more 'regulatory inertia' in them (such as the RO or FITs), a tax based carbon price support mechanism is inherently higher risk for potential investors in low-carbon generation.

In order to improve investor confidence in the stability of a tax-based carbon price support mechanism, we suggest that the Government sets out in the relevant legislation, those criteria that would need to be met before a change was made to the CCL Carbon Price Support rates. For example, investor confidence in a tax-based measure would be improved if it is clear that the floor price would only be changed to reflect the fact that, for example:

- *the UK's GHG reduction targets were not being met; or*

- *the oil price for a prolonged period was such that the carbon price support was no longer needed to make low carbon generation cost-effective compared to fossil fuel generation.*

□□3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

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3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

Response:

Yes.

We find it curious that the Government is planning to introduce a UK tax to support the carbon price while at the same time, seemingly still blocking EU attempts to introduce an EU-wide carbon tax. We think that this inconsistency of approach will be bad for UK industry. Businesses may find it cheaper to operate in mainland Europe (or elsewhere) where they can avoid these costs (the "carbon leakage" problem).

In the consultation document, the carbon price support mechanism proposed is stated as being a means of raising revenue for Treasury and for incentivising low carbon generation. As noted in our response to question 3.A1 above, even if the carbon price support mechanism works to disincentivise high carbon generation, it will not guarantee that any new, low carbon generation will be built as a result or when. It could simply undermine the economics of running high carbon generation in the UK for a period of time before any new low carbon generation is built (if it is). The Government's policy position does not seem to recognise the urgency of taking action to tackle carbon emissions. The carbon price support risks simply being expensive for existing generators, who will pass costs through to consumers, so expensive also for UK business. Other measures are needed to deliver a higher degree of certainty of meeting UK emissions reduction aspirations and legal obligations, without imposing an undue cost burden on consumers.

Amongst other reforms, measures are needed to level the playing field between the larger incumbent energy companies and new entrants (which is distorted by the current market structure) to address concerns of security of supply and increasing competition. This requires ensuring sufficient generating capacity to meet total electricity demand and balancing against inflexible generating plant (e.g. wind, solar and nuclear). These issues are potentially addressed to some degree in the other aspects of the Electricity Market Reform (EMR) consultation.

We think that there is also merit in increasing transparency of the cost of supply. Further work is needed to improve the information provided to customers so that they actively select low carbon generation when purchasing their electricity. Specifically, electricity suppliers might usefully be:

- *prevented from passing through costs associated with the carbon price support mechanism levied on high carbon generation, to customers with green tariff contracts.*

- *required to provide information to customers (perhaps on electricity bills) showing clearly the comparison between the costs of generation and the tax element of high carbon (brown electricity) and low carbon generation (green electricity) and how this translates into costs to their customers in the form of the different tariffs. If the tax is set sufficiently high, it should be possible to show that the costs of brown and green electricity are at parity or even that brown electricity becomes dearer.*

However, if the tax is not set sufficiently high, even during a transitional period, this would risk backfiring and likely show low carbon energy generation to be more expensive than incumbent high carbon generation sources.

•*to support the above, regulated in respect of what they call a green tariff.*

Please also refer to our response to question 4.F2.

Administration 4.B1: What changes would you need to make to your procedures and accounting systems to ensure you correctly account for CCL on supplies to electricity generators?

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Response:

We anticipate that this will increase the challenge currently faced by those engaged in the fuel supply chain in determining the destination of fuel and, therefore, whether or not they have a CCL accounting responsibility. This may be most problematic in respect of supplies made to CHP plant.

4.B2: How long would you need to make the necessary changes to your systems to account for CCL on supplies to electricity generators?

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4.B2: How long would you need to make the necessary changes to your systems to account for CCL on supplies to electricity generators?

Response: unable to comment

4.B3: Please provide an estimate of how much the system changes would cost, both one-off and continuing?

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Response: unable to comment

Types of generator 4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.

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Response:

If (as is stated in the consultation document) the motivation is incentivising carbon abatement, then the treatment of generators should reflect their contribution towards carbon abatement. Accordingly, whether through exemption/exclusion or relief/rebate, the contribution made to carbon abatement made should be recognised appropriately in the tax burden being created.

So, for example:

irecovering useful heat – fuels are used more efficiently than the base assumption (e.g. even compared to the most efficient CCGT without CHP, the use of heat generated by CCGT with CHP plant displaces less efficient use of fuel); and

iicarbon capture and storage – emissions assumed to arise from burning input fuels do not arise.

Also, an inequity and undue regulatory burden would be created in respect of smaller generators (sub-EU ETS generators – that is, sub-20MW at present and depending on the Government's decision on de minimis generators). This sector is not currently exposed to the EU ETS price or CCL. A carbon price support mechanism operating on a fixed basis may introduce some equity with bigger generators. However, as we suggest below, looking further forward, the carbon price support must respond to movements in the price of carbon. That would mean that smaller generators are not only exposed to a new tax but that - given also the impact of the support mechanism - the overall burden would be both variable and unpredictable (contrast this with the intended impact on the EU ETS sector which is to stabilise the carbon price signal and provide investors with greater certainty). Yet, the Government apparently recognises that small-scale, embedded generators have a potentially significant role to play in mitigating emissions through avoiding grid losses, making the use of heat more practical and balancing loads in the distribution system.

On the Government's figures, the non-EU ETS generating sector contributes to less than 1.6% of UK generating capacity so it would seem pragmatic to exempt non-EU ETS generators completely.

□□4.C2: Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

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4.C2: Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

Response:

Yes. As above.

Options for recognition include:

ithe simplest option – complete exemption – recognising that CHP has a valuable role to play in abating carbon emissions (and using primary fuels more efficiently) yet receives virtually no real support (many of the measures referred to in the consultation document being more illusory than real and the RHI is still anticipated); or

iia more 'equitable' option – partial exemption/relief – calculating a final CCL burden based on the proportion of fuel used in generating electricity and discounting/rebating the amount of fuel used in generating heat. Good Quality CHP produce data on their fuel mix and electricity/heat offtakes so we believe it should not be difficult for them to report on the fuel mix used in order to gain a partial exemption from the CCL/fuel duty. To avoid imposing mandatory reporting obligations needlessly, the decision to claim a rebate should be voluntary. A CHP operator could decide whether the value of the rebate was worth the cost of determining fuel mix data if it did not already have that data.

□□4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

□4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

Response:

Yes. As above.

Options for recognition include:

ithe simplest option – complete exemption – recognising that emissions assumed to be emitted from input fuel are not emitted. However, since CCS increases use of primary fuels, there should probably be a differential from the treatment of CHP;

iia more 'equitable' option – partial exemption/relief – calculating a final CCL burden based on the proportion of assumed input emissions abated through CCS compared to a non-CCS plan. This methodology corrects for the additional fuel input required to operate CCS plant but still produces a zero burden if the fuel used is renewable and/or all of the emissions are captured and stored. An appropriate methodology might be:

- *to calculate CCL on ALL input fuels used by the generator using CCS (A), calculate the amount of input fuel emissions which have been abated (B);*
- *B divided by A gives the abatement factor (C) ;*
- *calculate the lower input fuel emissions that would have arisen from the plant to generate the same amount of power but without CCS plant fitted (D;*
- *D multiplied by C gives the net emissions abatement after CCS consumption correction (E);*
- *D minus E (if above zero) gives the amount of fuel input emissions that should be subject to CCL.*

Imports and exports 4.D1: What impact would the Government's proposals have on electricity generators and suppliers that export or import electricity?

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Response:

The consultation document indicates an intention to charge CCL on fuel used to generate electricity which is exported (though not on the electricity itself) whilst imported electricity will be continue to be exempt from the CCL This seems to give overseas producers of electricity able to use the interconnectors an additional competitive advantage over UK generators, regardless of their carbon intensity. However given that:

ainterconnector capacity is currently relatively limited; and

b the fact that imported electricity can contribute to security of supply,

we believe that this treatment of interconnectors may be beneficial and has potential to help offset intermittency concerns associated with some low carbon generation technologies. Consequently, although the use of interconnectors makes it harder to account properly for UK GHG emissions, we support this proposal.

Longer term, the introduction of a pan-European grid has potential to assist in securing energy supplies and enabling EU carbon targets to be met at a lower cost. The more successful a pan-European power grid, however, the more difficult becomes the challenge of reconciling between UK carbon targets (under the Climate Change Act) and EU targets. This issue requires further work.

4.D2: What impact might the proposals have on trading arrangements for electricity?
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4.D2: What impact might the proposals have on trading arrangements for electricity?

Response:

The notional tying of electricity and LECs (or any substitute created) may complicate trading across a wider section of the electricity market.

4.D3: What impact might the proposals have on electricity generation, trading and supply in the single electricity market in Northern Ireland and Ireland?

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4.D3: What impact might the proposals have on electricity generation, trading and supply in the single electricity market in Northern Ireland and Ireland?

Response: unable to comment

Carbon price support mechanism 4.E1: How should the carbon price support rates be set in order to increase certainty for investors, in particular over the medium and long term?

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Response:

Given that carbon price support will NOT stimulate any new low carbon generation in the short term unless set punitively high, the initial level of support should either be set (as proposed) at a fixed, low figure or (as suggested in our response to question 3.A1, be deferred until, say, 2015. The first option will allow all participants some time to work with the new CCL before the financial burden becomes too great on consumers, but the Government should acknowledge that its primary purpose in this scenario is to raise revenue, not stimulate low carbon investment. The second option avoids imposing a financial burden on consumers needlessly but would still send a signal to potential investors in low carbon generation.

Shortly in advance of when the Government realistically believes low carbon generation could be delivered through the carbon price support, the target carbon price could be ramped up (or a high carbon price support could start, depending on which of the two options outlined above was selected).

If the carbon price support is to have any hope of driving new investment in low carbon generation, the timing and amount of the target price will need to be published and certain well in advance and reach a high enough figure to put high carbon generation at a cost disadvantage compared to low carbon generation. See also our suggestions regarding how the carbon prices should be changed in our response to question 3.A3.

4.E2: Which mechanism, or alternative approach, would you most support and why?

4.E2: Which mechanism, or alternative approach, would you most support and why?

4.E2: Which mechanism, or alternative approach, would you most support and why?

Response:

See above.

4.E3: What impact would the proposals have on your carbon trading arrangements?
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Response:

The answer must depend on the mechanism chosen for setting the level of carbon price support. If the mechanism were to adjust the tax level depending to market movement, it then depends on what index is used and whether any given market participant is able to buy (or has bought) at that price or not. There may be scope to arbitrage between the index used in setting the tax level and the price actually achieved when trading carbon.

Future price of carbon 4.F1: Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?

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4.F1: Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?

Response:

Yes. It seems to us essential to set a forward target carbon price level for the carbon price support mechanism to work.

However, we do not feel qualified to comment what level the target carbon price should be set at. See also our suggestions regarding how the carbon price s should be changed in our response to question 3.A3.

□□4.F2: What is the most appropriate carbon price for the UK to meet its emissions reduction targets in the power generation sector? How would this be affected by changes in the structure of the electricity market?

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Response:

We do not feel qualified to answer the first question.

However, in response to the second (impact of changes in the structure of the electricity market), it seems that there is considerable overlap between the stated objective of the proposed carbon price support mechanism and the stated objective of the EMR's CfD/premium FIT. Both, we are told, are intended to incentivise investment in new, low carbon generation. However, one (carbon price support) seems fundamentally to be more effective as a revenue raising tool (see our response to question 3.A1 above), leaving delivery of new, low carbon generation entirely uncertain and imposing additional cost on UK business. The CfD/premium FIT seems to have the potential to reward new low carbon generation but only once it is built and when it starts generating electricity. The latter, therefore, seems a more effective tool to achieve the stated policy objective of incentivising new investment in low carbon generation at a lower cost to the consumer. The CfD/premium FIT will not address access to finance for low carbon generation assets which for some smaller organisations or local community groups is an issue.

If, however, as is alluded to in the early chapters of the carbon price support consultation document, the carbon price support mechanism is, intended more to raise revenue, then the principles of 'green taxation' should be respected and revenues raised re-directed back to incentives for new, low carbon generation including research and development of new technologies which is an area that private sector investors are often reluctant to sponsor.

4.F3: When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?

4.F3: When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?

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Response:

See our response to 4.E3 above.

Electricity investment 5.B1: What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?

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Electricity investment 5.B1: What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?

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5.B1: What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?

Response:

See above. We are not convinced that the carbon price support mechanism is a particularly effective tool at delivering a high probability of new, low carbon generation assets being built. See our response to question 3.A1 in particular.

5.B2: What other impacts would you expect carbon price support to have on investment decisions in the electricity market?

5.B2: What other impacts would you expect carbon price support to have on investment decisions in the electricity market?

5.B2: What other impacts would you expect carbon price support to have on investment decisions in the electricity market?

Response: we do not feel qualified to comment.

5.B3: How should carbon price support be structured to support investment in electricity generation whilst limiting impacts on the wholesale electricity price?

5.B3: How should carbon price support be structured to support investment in electricity generation whilst limiting impacts on the wholesale electricity price?

5.B3: How should carbon price support be structured to support investment in electricity generation whilst limiting impacts on the wholesale electricity price?

Response:

Given the current structure of the electricity market, it seems inevitable that the carbon price support mechanism, imposing an additional cost on generating plant setting the marginal price of electricity, will simply be imposing an additional cost that will be passed through the wholesale market and on to consumers. As stated above, it seems that there is full recognition that, for an initial period at least, no new low carbon generation will be delivered as a result. During this period at least, the carbon price support mechanism should be set at or near zero. In respect of the period thereafter, we have commented above on the comparison between the carbon floor price and CfD/premium FITs.

Existing low-carbon generators 5.C1: Can you provide an assessment of the impact of the proposals on your generation portfolio and overall profitability?

Existing low-carbon generators 5.C1: Can you provide an assessment of the impact of the proposals on your generation portfolio and overall profitability?

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5.C1: Can you provide an assessment of the impact of the proposals on your generation portfolio and overall profitability?

5.C1: Can you provide an assessment of the impact of the proposals on your generation portfolio and overall profitability?

Response: unable to comment.

5.C2: What would be the implications of supporting the carbon price for existing electricity generators and how should the Government take this into account?

5.C2: What would be the implications of supporting the carbon price for existing electricity generators and how should the Government take this into account?

5.C2: What would be the implications of supporting the carbon price for existing electricity generators and how should the Government take this into account?

Response:

Generating plant setting the marginal price of generation will be able to pass this cost on. No account needs to be taken on their behalf. We have commented above on the unintended/adverse impacts on CHP, CCS and small generators for whom special treatment seems justified.

Electricity price impacts 5.D1: How do you currently manage fluctuations in the wholesale electricity price?

Electricity price impacts 5.D1: How do you currently manage fluctuations in the wholesale electricity price?

Electricity price impacts 5.D1: How do you currently manage fluctuations in the wholesale electricity price?

5.D1: How do you currently manage fluctuations in the wholesale electricity price?

5.D1: How do you currently manage fluctuations in the wholesale electricity price?

Response: unable to comment.

□□5.D2: What difference will supporting the carbon price make to your business?
□5.D2: What difference will supporting the carbon price make to your business?
5.D2: What difference will supporting the carbon price make to your business?

Response: (i) as electricity consumers, we only foresee it increasing our operating costs; (ii) as advisors, the carbon price support mechanism may generate instructions. The UKELA members that have contributed to this response do not think that any instructions received will offset the increase in their operating costs.

□□5.D3: As an electricity generator or supplier, how much of the cost of the carbon price support would you pass on to consumers?

□5.D3: As an electricity generator or supplier, how much of the cost of the carbon price support would you pass on to consumers?

5.D3: As an electricity generator or supplier, how much of the cost of the carbon price support would you pass on to consumers?

Response: unable to comment. However, see above in respect of our views on the likely pass through of carbon price support costs.

□□5.D4: As a business, how much of the cost of energy bills do you pass on to customers?
□5.D4: As a business, how much of the cost of energy bills do you pass on to customers?
5.D4: As a business, how much of the cost of energy bills do you pass on to customers?

Response: unable to comment.

□□5.D5: How might your company or sector be affected and would be there any impact on your profit margins?

□5.D5: How might your company or sector be affected and would be there any impact on your profit margins?

5.D5: How might your company or sector be affected and would be there any impact on your profit margins?

Response: As above, as electricity consumers, it will put a downward pressure on profit margins. As advisors, though, this may be offset by additional fee generation.

□□5.D6: Do you have any comments on the assessment of equality and other impacts in the evidence base of the Impact Assessment, included at Annex D?

□5.D6: Do you have any comments on the assessment of equality and other impacts in the evidence base of the Impact Assessment, included at Annex D?

5.D6: Do you have any comments on the assessment of equality and other impacts in the evidence base of the Impact Assessment, included at Annex D?

Response: unable to comment.

□□
□

10 February 2011

UKOITC-ITC Response to HM Treasury Consultation on Carbon price floor: support and certainty for low-carbon investment

The members of the UK Oil Industry Taxation Committee -Indirect Taxes Committee (UKOITC-ITC) are from companies involved in both upstream and downstream areas of the oil and gas industry. Member companies operate generating stations, refineries, gas processing plants and combined heat and power plants. In addition, they supply taxable commodities to many different industry sectors. As our member population is very diverse we have decided not to respond systematically to all of the questions raised in the consultation paper. Individual companies will be making their own responses and will also have had input to responses from other industry groups such as UKPIA and CHPA.

We did feel however that we wanted to make some form of response to the document as our members will be the people directly responsible for implementing the changes and making the necessary administration processes operate successfully.

UKOITC-ITC wants to be sure that it engages, with HMRC and the Treasury on the practical issues of implementation of the proposed changes and the consequential legislative revisions. We believe it is generally accepted that the operation of CCL is not simple and any changes require careful thought as to the impact on our member businesses.

There will be varying issues for our member companies depending on what areas of the changes impact them.

In general the following is in response to questions 4.B

- Refineries will need to consider the way in which they currently operate and consider the impact of the addition of CPS. Some will have embedded CHP plants many of these will be members of the CHPQA. They will have to analyse the impact of CPS and consider if restructuring activities will produce a better cost result. They will have to consider that the cost of imported power may now increase because of the potential 'pass through' cost of CPS.
- Consideration will have to be given to the auto-generator rules and consider their impact. It is unclear from the document exactly how auto-generators will be affected and the draft legislation seen so far provides no further assistance. This requires time to assess and that can only be successful if there is certainty on the practical implications.
- There is no doubt there will be increased administration. For generating plants there will now be a need to review the PP11 certificates issued and revoke those no longer valid.
- It is evident from the Consultation document that the Government believes only a limited number of supply companies will be impacted by the proposed introduction of CPS. In actual fact, should the measures be implemented as proposed, the number of companies that will be required to register and account for CCL could be considerable as supplies by wholesale trading companies who supply relevant commodities to power stations will also be brought within scope.
- There will be member companies who are not currently registered for CCL who will have to become registered. Currently, these companies are generally making wholesale supplies of taxable commodities and the occasional supply to a generating plant or CHP plant. These occasional supplies to generating plant or CHP plant will normally be exempt and covered by a PP11 certificate. These contracts will need to be identified and a mechanism set up to charge CPS, collect that CPS and submit CCL returns. These companies may not have any experience of submitting such returns. They will need to set up new accounting to deal with this change

successfully. The number of supplies in question may be small but that will not necessarily mitigate the resource required to implement change. Robust procedures to identify CPS liable contracts will need to be developed.

- For wholesale traders provided the necessary evidence is in place regarding wholesale trade, it is currently of no consequence to the Seller if the gas traded is to be used for power generation or if it is to be traded on by the Buyer. It is important to note that at the point of entering into a trade, the Seller will not always be in a position to know to what purpose the commodity will be put. This is especially the case where trades are conducted with companies which may comprise both trading and generation arms (as opposed to the activities being carried out in separate companies). Under the proposals, procedures will need to be in place which will enable businesses to establish at the point of entering into individual trades, what the gas will be used for to ensure CCL is correctly charged and accounted for where applicable.
- Intra-group accounting may also need to be changed. Where today companies may not raise invoices for intra-group supplies of gas to power stations, as the companies are members of the same VAT group the introduction of CPS will change that position. Under the proposals, in order to ensure there is a fully automated process for the charging and accounting of CCL, it will be necessary for the billing system to be adapted to recognise these supplies for CCL purposes, but to disregard them for VAT purposes.
- For business whose accounting systems are already configured to charge VAT they may already have a number of CCL rates to manage. The introduction of CPS adds another rate. Processes to identify the application of the correct rates will need to be developed.
- It is recognised that the Government wishes to simplify taxation. We do not see this as a step in that direction. The CCL legislation is already very cumbersome and complicated. This new proposal adds another layer that needs to be considered, the impact identified and processes developed to administer the accounting correctly.
- The time required to implement the changes and the consequential costs to member companies will vary depending on the impact of the changes to their business and the type of accounting system in place. We usually anticipate that for system changes a minimum of six months is required. Training for staff is also a factor for consideration.

As stated this response is not intended to answer anything other than Administration questions in the document.

We would welcome meeting with HMRC on the practical issues involved in this consultation. It is understood a workshop has already been held. No UKOITC-ITC member was able to attend that workshop due to the fact that interest had been underestimated and numbers were restricted.

The early opportunity to review any changes to Regulations would assist in this assessment. We understand the draft primary legislation is now available but concerns arise over the fact that this could alter in a very short timeframe given the objective is to include this in the Finance Bill 2011. Budget day is only 6 weeks away. Although the effective date for change is some way in the future, 2013, the legislative changes made today are what we will have to consider. They need to be clear and consistent and produce the expected result.

We understand that much of the thrust of the consultation is to establish the views around carbon pricing and the business impact of the proposals but it is very important to discuss the practical aspects of implementation. Our committee is very well placed to assist HMRC in understanding those issues. It is a little disappointing that this consultation has such a short timeframe where primary legislation will be laid in a matter of weeks. We can arrange for a small number of our members to meet with HMRC very quickly and we would urge HMRC to take up that offer.

Please contact:

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Salford, M60 9LA

By email to environmentaltaxes.consultation@hmrc.gsi.gov.uk

11 February 2011

Dear Mr Shaw,

Consultation: Carbon Floor Price

United Utilities PLC welcomes the opportunity to respond to the Government's consultation on a Carbon Floor Price. As a significant investor and operator of energy intensive capital infrastructure, United Utilities is sympathetic to efforts to provide greater certainty and support to the carbon price to help create more incentives for investment in low-carbon electricity generation.

We recognise our role in helping the UK reduce its carbon emissions and meet national targets. Our business continues to exploit opportunities for greater energy efficiency and now generates 13% of our total electricity demand from renewable sources. The water and wastewater sectors expect to come under increasing pressure to further reduce energy consumption whilst investing extensively in its asset base to meet increasingly stringent environmental standards, such as those demanded by the Water Framework Directive, and taking on additional assets through the requirement to adopt private drains and sewers. Such investment activities will put pressure on emissions to grow rather than decrease.

United Utilities therefore wishes to make the following comments in light Government's proposed changes to the Climate Change Levy and fuel duty:

Investment

- United Utilities believes that the UK power sector is in urgent need of reform if national carbon reduction targets are to be met. A carbon floor price should primarily support the move to a low-carbon economy and must be consistently applied in line with other carbon taxes and incentives. It must be of minimal administrative burden (for example, it could be administered through standard electricity billing) and should be accompanied by a conducive planning policy framework.

- Carbon price does not currently affect United Utilities' approach to investment in low-carbon generation, but it is possible that a threshold will be reached in the future where carbon price becomes a factor. The carbon price should drive the correct behaviours to reduce energy consumption and it should actively

support the business case for low-carbon investments. United Utilities believes that greater certainty in the future long-term price of carbon would increase investment in low-carbon electricity generation in the UK by making such investments a more attractive investment opportunity.

- United Utilities believes that the universal nature, familiarity and perceived integrity of the tax system would lend confidence to investors, but that the short term nature of rate-setting would also work to diminish certainty.

Generation

- United Utilities believes that fossil fuel electricity generators should be treated separately to renewable generators in order not to diminish further investment in low-carbon generation. Fossil fuel-fed CHP should not receive preferential treatment and the proposals should focus on carbon content of fuels rather than the nature of their combustion. CHP fed from renewable sources should therefore attract tax relief in any new proposals.

- United Utilities believes that power stations with CCS should attract tax relief, but only relative to the amount of emissions sequestered, not electricity generated.

Yours sincerely,

[redacted]

Environmental Taxes Consultation at HMRC

Dear Sir or Madam

Carbon Floor Price

Thank you for the opportunity to comment on the above proposal.

The Utility Regulator is a non-ministerial government department responsible for regulating the electricity and gas industries and water and sewerage services in Northern Ireland, to promote the short and long-term interests of consumers. We make sure that the utility industries in Northern Ireland are regulated and developed within Ministerial policy as set out in our statutory duties.

We carry out our work in line with statutory duties set out in the Energy (Northern Ireland) Order 2003 and the Water and Sewerage Services (Northern Ireland) Order 2006. The Utility Regulator has three main objectives:

- to protect the interests of electricity consumers with regard to price and quality of service, where appropriate by promoting competition in the generation and supply of electricity;
- to promote the development and maintenance of an economic and co-ordinated gas industry and to protect the interests of gas consumers with regard to price and quality of service;
- to protect the interests of water and sewerage consumers, where appropriate by promoting competition, by promoting a robust and efficient industry delivering high quality services.

While we appreciate the intent of the carbon floor price (CFP), which is one element of the DECC Electricity Market Reform (EMR) package, we are concerned that the effect in Northern Ireland may be the opposite of that intended under the EMR package as a whole.

Before outlining our concerns it is worth while giving a very high level overview of the Single Electricity Market (SEM) on the island of Ireland. The SEM is an unconstrained wholesale market operating across the island of Ireland. It operates on the basis of a gross mandatory pool. All electricity generated (from installations above 10MW installed capacity) must be bid into the pool on a cost reflective basis. Bids into the pool are used to determine merit order and dispatch and also to determine the system marginal price (SMP). Suppliers across the island of Ireland purchase from the pool at the SMP.

Our understanding is that the intent of EMR (of which CFP is one element) is firstly to improve security of supply and secondly to improve signals for investment in low carbon generating technology.

The proposed carbon floor price could have the following unintended impacts on Northern Ireland which are the opposite of those intended by the EMR package as a whole:

1) **Security of Supply**
   - **a)** The CFP will increase costs to Northern Ireland generators thus creating a distortion and disadvantage for Northern Ireland generators as compared to their Republic of Ireland counterparts. If Northern Ireland generators bid the increase in costs into the pool they will fall down the merit order and thus run less often. If Northern Ireland generators do not bid the CFP cost into the pool there will be an adverse impact on returns to Northern Ireland generators as compared to their Republic of Ireland counterparts. Both of these scenarios provide an incentive for base load generation to locate in the Republic of Ireland rather than Northern Ireland.
   - **b)** The CFP may provide an advantage to Republic of Ireland generators thus providing windfall gains.
   - **c)** While the SEM is an unconstrained wholesale market there are physical constraints on interconnection between Northern Ireland and the Republic of Ireland. The consequences outlined above would almost certainly feed through into a knock on effect on constraint costs. This is due to a security of supply requirement to run generation in Northern Ireland when they are not in schedule.
   - **d)** Due to the small size of Northern Ireland and the amount of interconnection available any shifting of base load generation from Northern Ireland to the Republic of Ireland would have serious consequences for security of supply in Northern Ireland.
2) **Low Carbon Generation (Including Renewable and Nuclear)**

a) Due to the small size of Northern Ireland nuclear is unlikely to be a possibility in the near future.

b) Due to the unconstrained nature of the wholesale market on the island of Ireland any signal to renewable generators, would be diluted across the island as a whole. This is because if the CFP is fed through into the SMP the benefit in increase revenue to renewable generators would be the same whether they locate in Northern Ireland or the Republic of Ireland.

c) Renewables in Northern Ireland are supported by alternative means which we believe are sufficient to meet our targets. Indeed there is a significant amount of renewable generation in planning which we believe negates the need for the CFP in Northern Ireland.

3) Affect on customers

a) Northern Ireland has the highest rates of fuel poverty in the UK, currently 44%. Any increase in costs passed on to Northern Ireland consumers will exacerbate the situation.

b) Northern Ireland customers spend more than twice as much of their disposable income on energy than households in London and around 60% more than the UK average, thus the impact on customers would be greater in Northern Ireland than in the rest of the UK.

For the above reasons we would suggest that the CFP should not be implemented in Northern Ireland.

Yours sincerely

VATTENFALL

Martin Shaw
Environmental Taxes
HM Revenue and Customs
3rd floor west
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3 Stanley Street
Salford M60 9LA

[redacted]

Dear Mr Shaw

Carbon price floor: Vattenfall response

The UK Government has proposed to make significant changes to the way electricity markets function in the UK. Its proposals are intended to encourage investment in low carbon generation and peak load plant and so achieve domestic renewable energy objectives and ambitious climate change obligations whilst delivering affordable and reliable power supplies.

Vattenfall believes the EU Emissions Trading Scheme (EU ETS) should be protected and developed as an effective system to positively influence investment decisions on low carbon generation by leveraging in a transparent and reliable CO_2 emission price across the Europe based on increasing European ambition-levels. We are therefore concerned about the potential unintended consequences of unilateral action by Member States on carbon pricing and the proper functioning of the EU ETS.

Therefore, the proposals under the Government's Electricity Market Reform, including for a carbon price floor, are important to our interests. We answer specific questions posed by The Treasury related to the carbon price floor consultation document later in this paper.

Vattenfall supplies electricity, heat and gas to millions of customers across Northern Europe. It is the fifth largest generator of electricity and largest producer of heat in Europe. It has a wide generation portfolio which includes hydro, wind, biomass, coal (including CCS), gas and nuclear.

VATTENFALL

Vattenfall is a major investor in wind power in the UK and since 2008 we have invested around £1.5 billion on projects including Thanet, Ormonde and Edinbane. We also see the UK as a significant growth market for wind power and we are currently in partnership with ScottishPower Renewables for the development of the East Anglia Round 3 zone.
Capital investment decisions in the future, for projects including Round 3, will take into account investment returns, continued political support for low carbon generation, regulatory stability and long term, predictable markets.

If you would like to discuss any of the points that we raise in this response please do not hesitate to get in touch.

: vivideconomics

Martin Shaw
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11 February 2011

Dear Mr Shaw,

Re: Consultation on a carbon price floor

Thank you for inviting comments on your proposals.

The EU Emissions Trading Scheme acts on investment incentives through the allowance price, which is a single price across Europe. Recognising that the level of this price signal is determined by decisions now made jointly in Europe with our European partners, it is clear that the UK does not control this, the largest policy lever relating to low carbon investment.

The UK has its own level of ambition in cutting carbon emissions and so has reason to employ policy levers over which it has control.

(i) The proposed Climate Change Levy extension will, as intended, increase the cost of carbon emissions to power generators, encourage low-carbon investment and assist in delivering the UK's low carbon ambition. It will not result in lower emissions from Europe, since it does not affect the EU ETS cap.

(ii) The efficiency of the new policy and its effect depends upon the way in which it is implemented, and in particular whether it establishes a certain and credible future carbon price commitment. **A preannounced future price path and a process for periodic review could be critical design features.**

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(iii) Although it has been presented as a price floor, there may be more to be gained from **controlling the overall price (levy plus EU ETS) between a floor and a ceiling.**

(iv) Its efficiency also depends upon the carbon prices affecting the power sector relative to other parts of the economy. The more unequal the distribution of incentives, the higher the cost of action. The proposed policy leaves some sectors still facing no carbon price at all, and it adds complexity. It is an incremental and partial solution. Although it is an incremental and partial solution it still may be beneficial**. Nevertheless it would be more apparent whether it is the *best* policy if the government were to set out a clearly defined role for it within a broad, long-term carbon policy architecture.**

(v) The policy will affect the competitiveness of electricity-intensive firms. When firming up price signals, due consideration might be given to mechanisms which could protect against economic and carbon leakage where nations persist with unequal ambitions to control emissions.

Please feel free to ask for elaboration on any of the above points.

10th February 2011

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Dear Martin,

Consultation on Carbon price floor: support and certainty for low-carbon investment

The Water Industry supports the Government's aim to decarbonise energy generation in the UK. Taxing fuels according to their carbon content is a move towards this and a carbon floor price should give more certainty for investment in lower carbon energy generation.

There is a real concern that the multiplicity of taxes and levies imposed at the various stages of energy production and consumption may lead to confusion for the consumer and we would urge the Government to consider simplifying the current range of energy taxes and levies by consolidating where possible. In addition it is unclear how this tax fits in relation to the costs to cover the Feed In Tariff and Carbon Capture Storage. A further concern is that the carbon floor price is being promoted before the final structure and therefore associated costs of the amended Carbon Reduction Commitment Energy Efficiency Scheme (CRC) are known.

In particular we believe that the Carbon Floor price can effectively replace the CRC in total. The main points in support of this are that the CCL Carbon Support Rate Tax:

- Is aimed at encouraging energy efficiency, like the CRC (a significant duplication).
- It applies to all businesses and the public sector and is therefore not discriminatory.

- It is more administratively efficient and straightforward than the CRC.
- It encourages renewable energy development and will avoid perverse investment decisions related to scheme design, in contrast with the CRC.
- It could readily be structured to ensure no loss of revenue to the Treasury.
- It will provide greater certainty for a wide range of energy efficiency and renewable energy generation investment.

We would also like to see the revenue from this mechanism put back into both UK low carbon generation and used to protect vulnerable customers. Overall we would like to see a fair reward for investment in renewable generation and good CHP with long term certainty of that reward as both a consumer and renewable energy generator.

We anticipate the carbon price support price will be passed through to customers via wholesale energy price rises. The Water sector regulatory conditions mean that we cannot pass these costs through to our customers until after the current Asset Management Period (AMP) is over in 2015 so any energy price rises will have to be absorbed by the water industry; we believe that this would be discriminatory for the sector.

We would like to know more about how these proposals are to fit in with the wider Electricity Market Reforms.

One specific point we wish to raise is the possibility of an undesired outcome from the Carbon Floor Price approach. The oil carbon support price and the implications of the changes to the fuel duty will impact on businesses that use stand-by Diesel generators for load management and/or those that have arrangements for demand side response (STOR). The proposed fuel duty changes may act to discourage businesses from engaging in STOR which could have negative impacts for UK energy generation and energy security as a whole.

Please do not hesitate to contact me if you wish to discuss our response further.

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11 February 2011

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Dear Mr Shaw

Carbon price floor

Welsh Power Group (WPG) is a privately owned energy company with a strong track-record in development, in both conventional and renewable energy. In August 2009 Welsh Power submitted an application to develop Wyre Power, an 850MW CCGT (combined-cycle gas turbine) power plant near Fleetwood, Lancashire, with an investment of some £600 million. In January 2009 the Company commenced the development of a 49.9MW biomass plant at Newport Docks through its wholly owned subsidiary Nevis Power Limited. We also own and operate an OCGT, Leven Power, on a STOR[1] contract to NGC.

For our OCGT under a longer term contract to National Grid, there is currently no mechanism to adjust prices for changes in taxation. This is not because we did not believe the tax regime would change, in fact we assumed that an extension of EU ETS to smaller generation was possible, but National Grid or Ofgem[2] would not allow it. As a result the proposed carbon floor price will be a direct cost to us and reduce our profitability significantly.

For small, independent players such as Welsh Power the electricity market is a relatively hostile market. The dominance of the Big 6, and Ofgem's unwillingness to do anything to break them up, has reduced liquidity to levels that do not easily facilitate new build plant. There is no forward curve against which to judge investment and financing is

[1] Short Term Operating Reserve
[2] We negotiate with NG who reports Ofgem will not allow certain contractual changes

invariably more difficult. The existence of longer term STOR contracts is offering a way to build at least small scale flexile plant, of the type we believe the Redpoint modelling shows the UK will need in 2020 and beyond.

We would argue that the tax should not apply to small plant such as ours until Ofgem has agreed that the contracts with the System Operator should allow for such tax increases to be passed through to the SO. These tax increases are sufficiently onerous on STOR plant to warrant a change to the structure of the contract to allow at least some cost pass through of costs.

HMT has rightly identified that most fossil fuel generators can pass these costs through to customers via power prices. If we were in the wholesale market we may also be able to pass some costs along. Also if we owned a supply business we could bill some cost to customers. However, we are not in these positions.

Welsh Power has previously raised with Ofgem and National Grid our concerns that the STOR contract terms are onerous on the generator, handing him risks he cannot manage. We have welcomed the fuel indexation decisions, but green taxes have not been taken account of. We do not think this is an unreasonable request. Were our plant to go out of business we simply believe it will be bought by one of the larger players and the prices would alter as a new STOR contract would be struck.

Independent players add competition to the energy markets. The electricity market desperately needs more competition, which ultimately benefits consumers. HMT must therefore help protect smaller players by asking Ofgem to ensure that the taxes it levies can reasonable be added to generators cost based and covered by the prices it charges. Even if the initial levy could be carried by our plant, future rises in the tax rate could see the damage being done in the near future.

We will comment more fully on the package of energy policy proposals in responding to the DECC paper, but we would want to note that the package as a whole does risk some unintended consequences. In particular we are concerned about how the capacity mechanism will interact with the current reserve arrangements. As the providers of reserve we are keen to understand what the assumptions are on capacity mechanisms and how this will alter the operation of our current plant and plant we are developing.

In the modelling undertaken by Redpoint we note that they assume a capacity payment that is based on a fixed fee for installed capacity. They do not assume any utilisation payment, as currently happens with STOR plant. This would require a developer to price an unknown fuel price into his tender. While fuel costs can be hedged for a few years, hedging for 20 years would be if not impossible at least very expensive. Assuming that you could hedge the risk, we could not hedge the tax risks.

The impacts of the package must be considered in the whole rather than picking off one proposal at a time.

If you would like to discuss this issue further please do not hesitate to contact me.

Yours sincerely

World Coal Association submission to the Treasury Consultation on Carbon Price Floor – Support and Certainty for Low-Carbon Investment

As a non-profit, non-governmental industry association working internationally on behalf of the world's major coal producers and stakeholders, the World Coal Association (WCA) closely follows global and national policy developments within the area of environment and energy.

In this response, the WCA assesses the proposed carbon price floor support mechanism in terms of its capacity to deliver the desired results, as defined within the consultation document and in terms of its coherence with other goals of the UK energy policy such as the CCS demonstration and increasing integration of the UK energy generation and consumption within the EU energy market. Given the international character of the WCA, this submission to the Treasury's public consultation, also assesses the proposed carbon price floor in terms of the international political context in which the UK operates – both in the EU and globally.

The Carbon Price Floor (CPF) proposal is based on the assumption that the EU Emissions Trading Scheme (EU ETS) cannot deliver investment in low carbon electricity generation in the UK. However, given the fact that the European carbon market established through the EU ETS is still not fully matured and important regulatory developments are likely in the next 10 years, the WCA believes that the CPF proposal comes much too soon and the already planned near term changes within the EU ETS may make it redundant.

The consultation document states that the introduction of a CPF through the climate change levy (CCL) is intended to reduce investment uncertainty within the electricity generation sector and to improve the economics for investment in low-carbon electricity generation.

Moreover, the WCA believes that the introduction of a carbon price floor is likely not to deliver the desired results and is also likely to have unintended consequences such as discouraging investment in carbon capture and storage (CCS), limiting the diversity of energy suppliers and penalizing UK-based businesses and energy generators.

Executive Summary

Given that the capacity of the CPF to deliver the desired results is questionable (I, II, III) and taking into account the potential for unintended consequences to occur in the form of disincentive for CCS demonstration and deployment (IV – a), weaker security of energy supply (IV – b) and discriminatory effect on UK-based businesses (IV – c), the WCA believes that the UK Government should continue to exempt fossil fuels used to generate electricity from the CCL.

I Assessing the necessity for intervening within the EU ETS

The perceived incapacity of the EU ETS to deliver sufficient decarbonisation and investment incentive is one of the key considerations at the origins of the CPF proposal. In fact, currently registered carbon prices are weak to moderate. However, the EU ETS is still a policy mechanism in the making and the European carbon market established through the EU ETS is incomplete. Within the next 10 years, the EU ETS will undergo substantial changes which are expected to deliver a fully functioning carbon market. In 2013 full auctioning will become the rule for all electricity generators and the aviation sector will enter the EU ETS. Other sectors, which today benefit from free allowances will progressively be covered by the full auctioning rule through to 2027.

All these developments will result in increasing carbon prices. Given that the European carbon market is not yet mature, it seems that additional regulatory action, in the form of a CPF, uncoordinated on the EU level, might produce a series of unintended consequences, such as penalising UK-based energy intensive businesses, discouraging investment in CCS, limiting the diversity of the UK energy supply and, in case the CCL was to prove redundant, imposing unnecessary additional administrative burden on companies operating in the energy market.

II Assessing the capacity of a CPF to increase investment certainty

The carbon price floor support mechanism is only likely to increase long term investment certainty if a specific carbon price is targeted. However, as the consultation document rightly points out, because the suggested carbon price floor support mechanism does not interfere directly with the EU ETS and is based on the carbon content of fossil fuels instead, it would be impossible for the regulator to achieve a specific overall carbon price, encompassing both the EU ETS carbon price and the one set up through CCL. This means that the CPF might in fact increase carbon price levels in the UK but does not guarantee a specific carbon price in the longer term.

III Assessing the capacity of a CPF to improve the economics for investment in low-carbon electricity generation

The immediate effect of the introduction of a carbon price floor will likely be for generators to favour natural gas over coal as a fuel for generating electricity. Although burning natural gas may produce fewer CO2 emissions than burning coal, it will likely increase atmospheric emissions of methane – a far stronger and more persistent greenhouse gas under the Kyoto Protocol. Gas is also a fossil fuel from which CO2 emissions will need to be captured and stored or destroyed if international climate ambitions are to be achieved.

Carbon capture and storage is a technology which will allow near to zero emissions from fossil-fuelled power plants, including those fired with either coal or natural gas. However, according to the statistics provided within the consultation document, the CPF will not constitute an incentive for this key low-carbon technology to be deployed. In fact, Chart 5.B within the consultation document shows the projected impact of different carbon price scenarios on the capacity mix in the UK in 2020 and in 2030. None of the scenarios foresees that CCS technology will actually be deployed beyond the

demonstration plants within the next 20 years (see annex I). This clearly contradicts Government policy on CCS demonstration projects and public commitments made by current UK energy ministers.

These forecasts contrast with the UK's ambition to become a CCS technology leader. CCS has been identified as a crucial low-carbon energy technology by the IPCC, the G20, the IEA, the EU and by many governments. According to IEA analysis, failure to deploy CCS technology would increase the costs of mitigating climate change by 70% and would likely be unsuccessful in keeping global warming increases to below 2 degrees. In fact, although abated coal-fired power plants produce electricity at a higher cost than unabated ones, CCS is a cost competitive technology in comparison to other low-carbon alternatives such as wind and solar energy (see annex II).

IV Possible unintended consequences of introducing a carbon price floor:

- **(a) discouraging investment in carbon capture and storage**

One of the unintended consequences of the CPF would be to discourage investment in CCS demonstration plants – *a possibility that the Treasury did not investigate in the impact assessment accompanying the policy proposal*. In fact, because the first demonstration plants planned by the UK Government are to be only partially abated, fossil fuels supplied to the unabated part of power plants will be subject to CCL. This will raise the operating costs incurred by investors and put investment in CCS demonstration plants in the UK at risk. The Treasury should investigate the possibility of such a disincentive taking place in light of the CPF proposal.

Given the international importance of CCS as a key energy technology within the global low-carbon portfolio and the UK's ambition to become an international climate change leader, the new regulatory framework should encourage CCS demonstration and deployment, rather than cast doubts over the economic feasibility of demonstrating CCS.

- **(b) limiting the diversity of the origins of energy supply**

The consultation document acknowledges that the CPF is intended to provoke a switch from coal to natural gas. Because UK natural gas reserves are almost exhausted, this will cause an increased dependency on imported natural gas. In a report published on 26 January 2011, the House of Commons Energy and Climate Change Committee voiced its concerns over a new 'dash for gas' happening in the UK, claiming further that the current government's energy policy could not only favour natural gas over coal, but also over renewables.

Switching further from coal to natural gas would weaken the UK's security of energy supply in the medium to longer term. Currently the UK imports around 50% of its natural gas consumption, however according to the BP Statistical Review current natural gas reserves of the UK will run out in less than 5 years, making it necessary to increase natural gas imports. Currently 40% of natural gas is imported from Norway and the Netherlands but in those countries the natural gas reserves to production (R/P) ratio is also steadily decreasing. In fact, the R/P ratio for natural gas in Norway and the

Netherlands is 19.8 and 17.3 years respectively. This makes the prospect of an almost complete reliance on natural gas imports from Russia increasingly likely within the next 20 years.

Dependence on natural gas from Russia, which holds almost one fourth of the world's natural gas reserves, would not only undermine the UK's energy security but also cause a negative net effect in terms of CO2 emissions. In fact, increased export of natural gas from Russia to the European market is known to result in higher domestic consumption of coal for generating electricity.[1] Because the average efficiency rate of coal-fired power plants in Russia is lower than in the UK, the net environmental effect of such a substitution is likely to be negative.

- **(c) Penalising UK-based businesses and energy generators**

Since the CCL will not apply to electricity imports, imported electricity can be expected to be less costly than electricity produced in the UK. This would have two effects: first, businesses based in the UK which have high electricity consumption, will be disadvantaged in comparison to those operating in other EU countries where the carbon price floor has not been introduced.

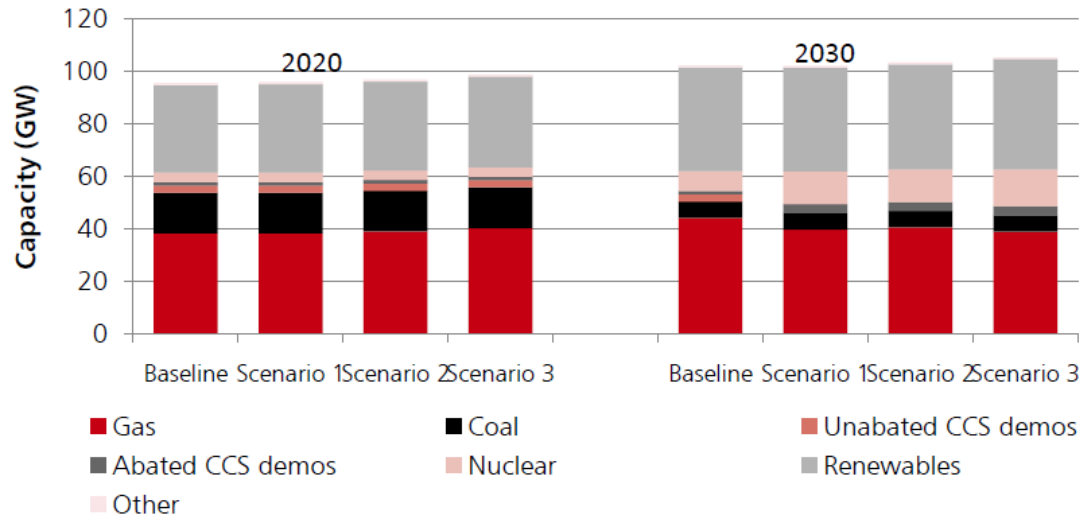
Second, unilateral introduction of a CPF by the UK could make electricity imports less expensive than generating electricity in the UK and lead to a crowding out of investments in local generation capacities by imported electricity. Although the current capacity of interconnections for the UK grid is only 3% and the potential for substitution is low, this proportion will likely increase with the planned tripling of interconnection capacity over the next 10 years. On the European scale, the increase in interconnection capacity is a positive evolution as it will make the European energy market more competitive and more resistant to energy supply and demand variability. However, it also means that capital intensive low-carbon power generated in the UK will have to compete with lower cost electricity generated in fossil power plants abroad.

World Coal Association
February 2011

[1] K. Rosner, 'Dirty hands : Russian coal, GHG emissions & European gas demand', *Journal of Energy Security*, 27 August 2009

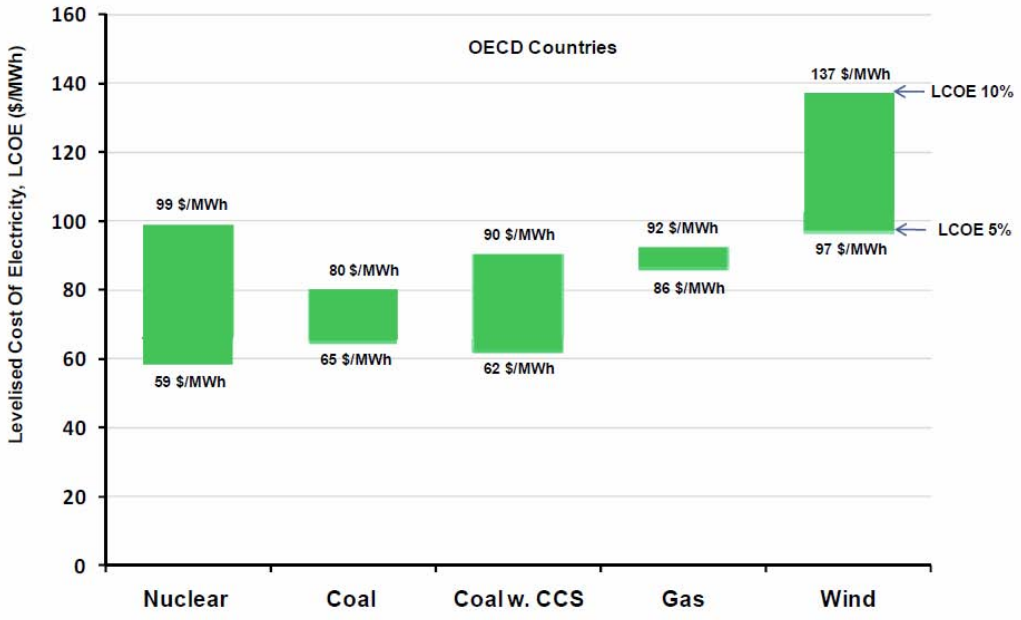
Annex I Capacity mix in 2020 and 2030 (GW), source: HM Treasury consultation document: "Carbon price floor: support and certainty for low-carbon investment"

Chart 5.B: Capacity mix in 2020 and 2030 (GW)



Source: Redpoint Energy, 2010

Annex II Levelised costs of electricity, source: Projected costs of generating electricity, IEA 2010



WWF-UK Response to Carbon Floor Price Consultation

February 2010

WWF welcomes the opportunity to respond to HM Treasury's consultation on the carbon price floor.

Executive Summary

A carbon floor price could be used as a useful additional tool as part of the overall EMR package, in particular in providing the Government with a helpful source of revenue from the UK's most polluting power stations (consistent with the "polluter pays principle"), a significant proportion of which could and should be reinvested in the capitalisation of the Green Investment Bank to support energy efficiency and renewable energy projects (including R&D projects for emerging technologies). **However, the effectiveness of the carbon floor price in promoting a greater deployment of renewable energy and acting as a disincentive to investment in unabated fossil fuel plants is likely, without stronger complementary policies, to be limited.** This is mainly because a carbon floor price will be one of many variables (such as coal and gas prices) which investors will take into account prior to making key investment decisions. As a result, the carbon floor price cannot offer the clear regulatory certainty necessary to ensure that the UK power sector will reach a specific level of decarbonisation by a particular date. As such, **we do not think that the carbon floor price should be the main pillar of the EMR and would suggest that a carbon floor price be accompanied by a strong emissions performance standard. A strong emissions performance standard would be able to drive investment decisions away from unabated fossil fuel plants and send a strong and long-term sales volume opportunity signal to the marine renewables and CCS supply chain.**

We have summarised our key thoughts below before answering some of the detailed questions raised in the consultation document.

1. The carbon floor price is not the most effective way of encouraging investment in renewables, strategic grid infrastructure and CCS

WWF is concerned that the carbon floor price, as currently proposed, will not be sufficiently effective on its own in driving the decarbonisation of the power sector.

Our key concern is that a carbon floor price is one of many variables that will impact on investment and operational decisions for unabated coal and gas plants. **As clearly explained in the Redpoint report which sets out the background analysis to the EMR proposals, the carbon floor price will be less effective as an investment signal in the event of low coal and gas prices or when investors forecast such low prices.** There is a real risk that in the case of low coal and / or gas prices and in the absence of a strong emissions performance standard (which would require the gradual fitting of CCS on both coal and gas plants), the UK electricity market could continue to see increased investment in unabated gas

and largely unabated coal plants (such as the proposed new coal power station at Hunterston in Scotland) as well as the extended operation of existing unabated coal plants at levels incompatible with a near-decarbonisation of the power sector by 2030**1**. **In effect, the carbon floor price would just be passed through to consumers as opposed to acting as an effective tool to influence investment and operational decisions away from unabated fossil fuel plants and towards sustainable low-carbon technologies.**

As the system decarbonises, the impact of the carbon floor price on electricity prices is also likely to diminish, which will reduce its effectiveness as an investment signal. This was again highlighted as a concern in the Redpoint report**2**.

2. A carbon floor price needs to be accompanied by a strong EPS if (i) it is to guarantee clear sales volume opportunity to investors in the low-carbon sector and (ii) avoid the continued construction or operation of unabated gas and coal plants to a level that is incompatible with a near-decarbonisation of the power sector by 2030

For a carbon floor price to be effective, it will need to be accompanied by other measures if it is to deliver a low-carbon power sector by 2030. Clearly, long-term feed-in tariff contracts will be important in that respect, in terms of providing investors with clear long-term certainty as to the revenues they can expect to make from their low-carbon investment, which in turn should stimulate investment in that part of the power sector. However, **the combination of a carbon floor price and long-term contracts alone will not be sufficient in deterring investment in unabated fossil fuel plants, in particular given the fact that the carbon floor price will be one of many variables (including coal and gas prices) which will have an impact on investment and operational decisions affecting unabated fossil fuel plants.**

WWF believes that it is key that a strong emissions performance standard be introduced alongside the carbon floor price to deliver a low-carbon power sector by 2030. By "strong EPS", we mean an EPS along the lines previously suggested by WWF and Greenpeace (a plant-based EPS set at 300gCO2/KWh from now on for all new coal and gas plants, reducing to 100gCO2/KWh from 2025 onwards for all existing plants on the system**3**), not the "strong EPS" modelled in the Redpoint report (275gCO2/KWh for all existing from 2018), which we consider to be unrealistic. **We are concerned that the Redpoint report essentially sets up a "straw man" version of an EPS which is then dismissed because it is so ambitious that it could have adverse consequences.** A more phased version, along the lines proposed by WWF and Greenpeace, would have significant benefits.

In particular:

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1 In fact, it could also be argued that a carbon floor price will have also minimal impact on investment decisions in the event of high coal and gas prices, which would be the main factors that would actually drive investors away from coal and gas fired- power stations. Therefore, a carbon floor price might only effective within a very narrow band of fossil fuel prices.

2 Electricity Market Reform, Analysis of Policy Options, Redpoint (December 2010). See page 8 and Chapter 4.

3 See the NGO joint statement on emissions performance standards, attached to this response.

- A strong EPS would introduce clear physical certainty (i) as to the types of plants that can and cannot get built at a particular point in time but also (ii) as to the types of plant that can or cannot operate after a particular date, thus providing considerable certainty as to the level of decarbonisation that can be achieved by 2030. In terms of investment in new power stations, this has the advantage of providing a clear sales volume opportunity for new investments in the renewable energy sector (which is important given the opportunity for the UK to become an industrial leader in marine renewable in particular)**4** . In the case of CCS technology, a strong EPS also has the advantage of requiring the retrofitting of CCS technology on existing unabated coal and gas plants by a particular date, thus sending a very clear and early signal to stimulate the CCS supply chain.

- A tight EPS with a carbon intensity level that gradually goes down is much better at rewarding early movers who build plants that go below the statutory carbon intensity level. This is because the EPS provides more certainty of long term demand for low carbon generation and so will make investors more inclined to support the up front cost of plants that are ahead of the decarbonisation deadline rather than just reacting incrementally as the rising carbon price takes hold and interacts with other cost factors such as coal and gas prices. This 'early mover' advantage is important given that the timing of investments in clean energy is key if we are to substantially decarbonise the power sector in the next 20 years.

- The current EMR proposals are for a last stop EPS to accompany the carbon floor price, which would either not apply to new CCS demonstration plants or apply to these plants but grandfathered at a very high level of 600gCO2/KWh. These are of concern to us as they will expose electricity consumers to potentially very high retrofit costs for these new CCS demonstration plants. In particular, there is currently a provision in the Energy Act 2010, which specifies that the CCS levy (which could be worth up to £10bn over the next 15 years) could be used to retrofit some of the new CCS demonstrations plants, presumably in the event that CCS technology was proven to be technically but not economically feasible. The same concern applies to the numerous unabated gas plants which are likely to be built under current proposals. None of these will be captured by the proposed EPS at any stage in their operational life, which could result in putting at risk the UK's ability to meet its decarbonisation targets, requiring consumers to fund the CCS retrofit of those plants or in these plants having to close prematurely as the decarbonisation deadline approaches.

3. For investors to have long-term confidence in the carbon floor price, the trajectory towards a high and more effective carbon floor price needs to be made convincing in this Parliament, not left to be decided in the future

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4 For instance, the Offshore Valuation Report (http://www.offshorevaluation.org/downloads/offshore_vaulation_full.pdf) that was put together by DECC and a range of other industry players, showed that by just using 29% of the UK's practical offshore resources, the UK's offshore renewable energy industry alone could allow the UK to become a net electricity exporter by 2050 and generate annual revenues of £62 billion and create approximately 145,000 new jobs in the UK by that date.

As made clear in the Redpoint report analysing the different policy options for the EMR, **the carbon floor price will only have some impact on investment behaviour if investors have long-term confidence that this policy tool will not be subsequently modified by future governments.** To ensure that investors consider the carbon floor price as a predictable and long-term policy and in order to maximise the effectiveness of this mechanism, **we believe that an ambitious trajectory for a floor price needs to be set during this current Parliament for the period up to 2030. In particular, we believe that the floor price mechanism should result in carbon prices that follow a linear path from 2013 to £40/tCO_2 in 2020 and a minimum of £70/tCO_2 in 2030 (broadly Scenario 3 in the consultation paper).**

4. Revenues from the carbon floor price should be ring-fenced and recycled into funding energy efficiency measures and R&D support for emerging technologies

It is important to the effectiveness of the carbon floor price as a tool to stimulate investment in low-carbon technology and to its public acceptability that it is not perceived as another "stealth tax". To this end, we are strongly of the view that all, or a very substantial proportion of the revenues generated from this policy should then be re-invested into energy efficiency and renewables funding (including R&D support for emerging technologies). This would be consistent with the requirements of Article 3(d).4 (auctioning of allowances to the aviation sector) and Article 10.3 (auctioning of allowances in Phase III of the EU ETS) of the EU ETS Directive (as amended) which require that a substantial proportion of the revenues from the auctioning of EU Allowances must be reinvested in measures to address climate change, including energy efficiency and support projects for emerging technologies.

Energy efficiency: The carbon price will feed through into higher electricity prices for domestic and business consumers. Revenues of up to £4.5bn could be generated by 2015/16 (from the sum of EUA auctions and the carbon floor price) rising to £8bn by 2020. Given the potential of energy efficiency measures to reduce the costs of decarbonising the power sector**5**, **Government should aim to neutralise the price impact of the carbon floor price by boosting public support for energy efficiency measures for households, and business. This could be done efficiently and so as to achieve maximum leverage on the public finance component by providing further capitalisation of the Green Investment Bank and enabling it to provide low cost capital to reduce the interest charged on energy efficiency loans.**

R&D for emerging technologies: An important outcome of the EMR should be to ensure that the level of R&D funding that is directed towards emerging low-carbon technologies – in particular offshore

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5 Based on a study looking at "what might be reasonable changes to expect in the future"**5** in terms of future energy lifestyles, the UK Energy Research Centre (UKERC) estimates in its report, *'Making the transition to a secure and low-carbon energy system'* that a combination of energy service demand change and efficiency improvement in the transport and residential sectors could reduce energy demand in these 2 sectors by more than 50% by 2050 compared to business as usual levels in that same year. **Not only is the potential for energy demand reduction key in helping reduce CO2 emissions, it is also compelling from an economic point of view.** In particular, UKERC estimates in the same report that "**in an energy system constrained to 80% carbon emissions reduction, the main effect of social and lifestyle change is to reduce the costs of delivering a low-carbon energy system, up to £70 billion**".

renewables (but also CCS technology) - is sufficient to allow the realisation of economies of scale and to enable the UK to become an industrial leader in these technologies. **In its Low Carbon Innovation Report, the Committee on Climate Change referred to the fact that current levels of funding towards offshore renewables should be regarded as a minimum.** In particular, the CCC referred to the Carbon Trust's recommendation that up to £50 million needed to be invested in offshore wind RD&D each year if the UK was to take full advantage of opportunities for cost reductions, compared to investments of £15 million in 2009/2010 and planned investments of £40 million in 2010/2011**6**. The revenues from the carbon floor price could therefore also play a key role in helping to fund the necessary R&D support, thus making the carbon floor price a key tool of the government's clean energy policy.

5. The introduction of a carbon floor price should not result in windfall profits for existing nuclear generators

To avoid undermining the integrity of the carbon floor price, windfall profits for existing nuclear power generation have to be avoided in the design of the mechanism. The current suite of incumbent low carbon electricity providers (i.e. renewables, CHP and nuclear) all appear to be affected differently by the carbon floor price. However, **WWF and Greenpeace have recently revealed that according to the assumptions used in the Redpoint study, the potential windfall profit for the existing nuclear operators would be in the region of £3.43bn for the period 2013-2026 (£3bn until 2022) under the £40/tCO2 carbon floor price scenario – although the timescales are different, it is interesting to note that this is equivalent to a substantial proportion of the £4bn to £6bn capitalisation of the Green Investment Bank (by 2015) which has been called for by most analysts if the bank is to be successful at raising significant funds to support renewable energy and energy efficiency projects.** Given the substantial amount of subsidies that the nuclear industry has already received in the UK (including a £10bn bailout of British Energy paid for by UK taxpayers in 2002) and the mature state of that technology, the design of the carbon floor price must not result in super profits for existing nuclear generators. To this end, **we support the introduction of a windfall tax designed to capture these windfall profits (which would be similar to the German Government's proposal to introduce a tax on nuclear fuel rods from 2011) which can then be reinvested via the Green Investment Bank in energy efficiency and renewable energy projects, as already suggested above for the revenues of the carbon floor price mechanism.**

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6 Building a low-carbon economy: the UK's innovation challenge, Committee on Climate Change, July 2010, http://hmccc.s3.amazonaws.com/CCC_Low-Carbon_web_August%202010.pdf, page 23. See also the rest of Part 3 from page 18 to 24.

Answers to specific questions

Question 3.A1: What are your expectations about the carbon price in 2020 and 2030? And how important will it be when considering investment in low-carbon generation?

Based on existing evidence, we do not believe that the carbon price will rise to any significant extent during Phase III (2013-2020) of the EU Emissions Trading Scheme (EU ETS) and have not come across any evidence that would suggest a substantial rise in carbon prices in the 2020 to 2030 period. To this end, we do not share government's predictions in the baseline scenario that carbon prices under the ETS will rise to £70/tCO2 by 2030. This assumption appears to be driven by the view that carbon markets will converge on the Government's shadow price for carbon by that date, rather than by any informed analysis.

The EU Commission made clear in its latest paper on the possibilities of moving to a 30% emission reduction target by 2020, that despite the linear reduction cap of 1.74% from 2013 onwards, the fact that spare EU Allowances (EUAs) can be carried forward from Phase II (2008-2012) to Phase III will mean that no absolute emission reductions will need to take place to meet the emission reduction targets currently agreed for Phase III (a reduction of emissions of 20% by 2020 compared to 1990 levels): *"Between 2013 and 2020 and despite the linear reduction of the ETS cap, no absolute emission reductions in the ETS need to take place due to the availability of a large buffer of allowances from the period 2008 – 2012 and unused international credits."* 7 Whilst a move to a 30% EU emission reduction target for 2020 (which WWF fully supports) would help in terms of increasing carbon prices, we do not believe that this would lead to a substantial increase in these prices given the amount of surplus allowances for Phase II of the scheme and the current high access to offset credits. Indeed, the strong tendency to rely on offsets to meet emission targets is a major threat to investments in decarbonising the EU's own economy and to the desire to stimulate green industries and innovation.

Whilst we support the continued operation of the EU ETS and would strongly encourage the UK government to maintain its efforts in reaching agreement around a 30% emission reduction targets for 2020, we believe that evidence of carbon markets so far shows that the effectiveness of carbon prices alone in incentivising investment in low carbon generation is limited (even when supported by a floor price) **and that carbon prices need to be accompanied by clear regulatory measures such as a strong emissions performance standard, if they are to become more effective in delivering decarbonisation.**

Question 3.A2: If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.

If investors have greater certainty in the future long-term price of carbon, on which we have reservations (see executive summary), this may increase investment in low-carbon generation as long as (i) the carbon price is accompanied by strong regulatory measures (as explained above) and (ii) the trajectory to a high carbon price is set over this Parliament, not left to be decided in the future. Leaving

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7 http://ec.europa.eu/environment/climate/pdf/26-05-2010working_doc2.pdf

the trajectory to a high carbon price to be decided in the future will undermine investors' confidence in the robustness of the carbon floor price and will create uncertainty as to the long-term trajectory of the carbon floor. To this end, **we believe that this should result in action in this Parliament setting out carbon prices that follow a linear path from 2013 to £40/tCO_2 in 2020 and a minimum of £70/tCO_2 in 2030 (broadly Scenario 3 in the consultation paper).**

Question 3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

The carbon floor price needs to be accompanied by strong pricing and regulatory measures

As explained in our executive summary above, **we believe that the carbon floor price on its own will not be sufficient to decarbonise the power sector in the UK and that further reform will be necessary.** There are 4 key points to make here.

Firstly, it is key that the Electricity Market Reform delivers clear long-term predictability to investors in the low-carbon sector (especially investors in renewables and CCS technologies) as to the levels of return on investment which they can expect to make over the long-term. In a context where the Renewables Obligation has been amended several times since its introduction in 2002, this is a key issue and the proposal to introduce long-term contracts with defined revenues may help to address this.

Second, if emerging renewable technologies such as wave and tidal are to be deployed on a large commercial scale and if the UK is to seize the opportunity of becoming an industrial leader in these technologies**, it is key that sufficient R&D support continues to be directed towards these technologies** – this is where the Green Investment Bank and the use of recycled revenues from the carbon floor price and a windfall tax on nuclear profits could play an important role.

Third, in order to guarantee clear sales volume opportunity for investors in low-carbon technology and to avoid continued investment in or extended operation of unabated fossil-fuel plants at levels inconsistent with the objective of nearly decarbonising the UK power sector by 2030, **the EMR needs to provide clear regulatory certainty as to how the carbon intensity of the power sector is to gradually reduce for new plants in the first instance and existing plants in the second instance.** We believe, as explained above, that this can be best achieved by introducing a strong EPS along the lines previously suggested by WWF and Greenpeace (a plant-based EPS set at 300gCO2/KWh from now on for all new coal and gas plants, reducing to 100gCO2/KWh from 2025 onwards for all existing plants on the system).

Fourth, a price signal on its own is insufficient to address the fundamental changes in the nature of our energy system that will be necessary to meet the challenges of the 21st century. **In essence, a decarbonised power sector cannot be achieved sustainably without concerted and sophisticated policies to reduce energy demand, strategic planning and long-term thinking on infrastructure requirements, a concerted effort towards a European grid (both in terms of infrastructure and grid management) and a clear policy on technology innovation and deployment.** A price signal is necessary, but certainly not sufficient.

The carbon floor price appears designed to mainly support the nuclear sector, not renewables

In addition, we are concerned that the carbon floor price appears to be essentially designed to stimulate the construction of new nuclear power stations (which WWF opposes) **to the detriment of other low-carbon technologies, in particular renewables and CCS.** This is made very clear in the Redpoint report which concludes that market-wide support measures are more likely to benefit nuclear power over other low-carbon technologies and that the different policy options are not intended to increase investment in renewables compared to existing policies under the baseline scenario**8**. In particular, the report states: "*Renewables build is, by design, similar across all options. Nuclear, as a lower cost option compared to CCS, is favoured under mechanisms which are less technology-specific (Carbon Price Support (£50/t), whereas a more diversified mix is achieved with technology-differentiated Premium Payments, Fixed Payments and Contracts for Difference**9**".*

A deployment of new nuclear power stations in the UK will result in serious environmental risks for the UK, in particular given that there is currently no long-term storage solution for high level radioactive waste which can remain dangerous for 100,000s of years (up to 250,000 years in the case of plutonium and 200,000 years in the case of spent fuel). In addition, **previous experience in the UK show that there are serious doubts as to the nuclear industry's ability to complete projects on time and on budget and the latest 2 EPR projects in Finland (which is currently 3 years late and 55% over budget) and Flamanville in France (which EDF announced in July 2010 was currently 2 years late and €1bn over budget) show that the costs of nuclear power stations continue to rise despite the fact this is a mature industry with over 50 years of past expertise**10**.** Not only are there serious concerns as to the environmental risks and costs of nuclear power, the construction of new nuclear power stations would also be of very little economic benefit to the UK as the designs would essentially be imported from overseas based suppliers. By contrast, the marine renewables industry offers major opportunities for developing a major UK-based industry**11** - the Offshore Valuation Report**12**, recently published by government and key industry players, found for instance that by using 29% of the UK's practical offshore resource, the marine renewables industry could make the UK a net exporter of electricity, whilst creating around 145,000 jobs and £62bn of annual revenues for the UK economy by 2050**13**. Therefore,

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8 See in particular pages 52-53 of the Redpoint report

9 Electricity Market Reform, Analysis of Policy Options, Redpoint, December 2010, page 79-80 (see also page 53).

10 The World Nuclear Industry Status Report 2009, commissioned by the German Federal Ministry of Environment, Nature Conservation and Reactor Safety, also makes clear that **"while many industries experience declining costs as they move out of their technological learning curve, the nuclear industry continues to face steadily increasing costs on existing construction and future cost estimates"**. In particular, the same report refers to the May 2009 nuclear investment cost estimate update by the Massachusetts Institute of Technology (MIT), which doubled an earlier estimate from $2,000 to $4,000 cost (excluding financing) per installed kilowatt.

11. Building a low-carbon economy: the UK's innovation challenge, Committee on Climate Change, July 2010, http://hmccc.s3.amazonaws.com/CCC_Low-Carbon_web_August%202010.pdf. See in particular Part 2 (pages 13-17).

12 http://www.offshorevaluation.org/downloads/offshore_vaulation_full.pdf

13 Renewable UK also recently revealed that over the 2007/2008 to 2009/2010 period, full time employment in the UK's wind industry grew by 91% whilst employment figures nationwide dropped by 3.4% over the same period: http://www.bwea.com/media/news/articles/pr20110201.html

we believe that it is essential that the carbon floor price be accompanied by other technology specific mechanisms that are in particular designed to support a substantial deployment of a wide range of renewable technologies as well as the environmentally sound demonstration and deployment of CCS technology.

Indeed, it seems highly perverse and economically incoherent for the Government to aim to meet the EU renewable energy target for 2020, which will require the development of a significant new industrial base and jobs – but to then essentially put a brake on the development of the renewables sector in the 2020s. **This risks a "boom and bust" approach to renewable energy which will undermine investor confidence in that sector** (in particular for key stakeholders such as GE, Siemens, Mitsubishi, etc.)**.** WWF is convinced that the policy framework should be designed to use the 2020 renewables target as a springboard for further ongoing deployment of renewable energy. This point was indeed stressed as a key issue for the future of the marine renewables industry in the Offshore Valuation Report: ***"the period from 2020-2030 onwards is a critical decade. The scale of the deployment will determine the path forward and the ability of the UK to maximise the value of the offshore resource."***14

Types of generator

Question 4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why

Given the superior efficiency and improved carbon intensity of CHP plants compared to conventional coal and gas fired plants as well as the potential of CCS technology to reduce emission from fossil fuel plants, WWF believes that it would be sensible for CHP plants and plants equipped with CCS technology to be treated more favourably than other generating units. We have set out our reasoning and proposals in more detail in answer to questions 4.C2 and 4.C3 below.

Question 4.C2: Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

CHP plants are more efficient than conventional coal and gas plants as they also displace the heat generated from electricity production. According to the Combined Heat and Power Association (CHPA), "*the overall efficiency of CHP plants can reach in excess of 80% at the point of use. This compares with the efficiency of CCGTs, which in the UK ranged between 49% and 52% over the period 2006 to 2008. Coal-fired plant fare less well with an efficiency of around 38%.****15***" WWF also understands that if the thermal and electrical load of a gas-fired CHP plants are both taken into account, the carbon intensity of a gas-fired CHP plant is below 300gCO2/KWh**16** – the initial EPS level recommended by WWF and

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14 http://www.offshorevaluation.org/downloads/offshore_vaulation_full.pdf, page 76.

15 http://www.chpa.co.uk/what-is-chp_15.html

16 A gas fired combined heat and power (CHP) plant should be capable of meeting a 300gCO2/kWh EPS if the carbon intensity of the heat generation that the plant displaces is taken into account. This is important. For example DECC estimates that emissions from a conventional CHP plant running on gas equate to 650gCO2/kWh for each unit of electricity generated (DECC emissions factors are here: http://chp.defra.gov.uk/cms/emissions-reductions). However, this estimate takes no account of the CO2 benefit achieved through the displacement of emissions emitted from the use of gas for heating purposes only. If this displacement is

Greenpeace, which when complemented to low carbon intensity plant such as renewables in particular, would provide a good first step towards the near-decarbonisation of the UK power sector.

WWF is therefore of the view that a differential treatment should be applied to CHP plants to reflect their improved energy efficiency and lower carbon intensity. In particular, it is key that the EMR does not result in making investment in combined heat and power generation less attractive as this would be extremely damaging to the UK's efforts to decarbonise its power sector. There are 3 ways in which a differential treatment could be applied to CHP plants:

- the first option, which would essentially act as a minimum requirement, would consist in applying the carbon floor price to the fuel used for electricity generation only and exempt the fuel used for heat generation. This would at least have the merit of preserving the existing status quo and avoid having a situation whereby CHP plants end up being subject to a higher level of carbon tax than conventional electricity generation plants per unit of electricity generated (which would happen under current proposals given that CHP plants use roughly twice the amount of fuel per unit of electricity produced given that the fuel is used for generating both heat and electricity).

- the second option, would be to grant a full exemption to CHP plants for as long as the Government is allowing the construction of unabated gas plants. This would have the advantage of sending a clear signal to the industry that investment in gas CHP is preferred to investment in conventional unabated gas plants given the improved efficiency and lower overall carbon intensity of CHP plants.

- the third option, which might be more complex in terms of implementation, would be to apply a partial exemption to CHP plants which would be proportionate to the relative efficiency and improved carbon intensity of CHP plants compared to efficient conventional plants using the same fuel (e.g. the efficiency / carbon intensity of a gas-fired CHP should be compared with that of an efficient CCGT plant, etc.).

Question 4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

Given that the point of CCS technology is to reduce CO2 emissions for gas and coal-fired plants and that the cost of CCS technology – pending its deployment on a wide commercial scale – will initially be very expensive, **WWF agrees that some level of relief from the carbon floor price should be granted to power stations equipped with CCS. However, this needs to be balanced with a need to ensure that the potential of the carbon floor price to incentivise the application of CCS technology over as big a part of a power station's capacity as possible is not lost.** Clearly, an exemption that was designed in a way that would incentivise the construction of new fossil fuel fired power plants with only minimal amounts of CCS would not be consistent with the objective of decarbonising the power sector over the

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considered then the electricity generated by a CHP plant is responsible for between 270-280gCO2/kWh when the plant is running at full load. Taking into account start up and ramp down periods, when the plant will not be running at optimum efficiency however the plant on average should still be able to achieve an emissions intensity of <300gCO2/kWh. It is perhaps worth noting here that the EPS statute in California has adopted a methodology for calculating the emissions rate from CHP plant which recognises both the thermal and electrical output.

next 20 years, nor would it send a strong enough sales volume opportunity signal to the CCS supply chain.

We therefore agree with the Treasury's proposals to provide a partial tax relief for CCS demonstration plants and future CCS plants. **The relief should however ensure that the amount of carbon floor price applicable to a CCS plant (both for demonstration plants and future CCS plants) covers at least the amount of CO2 that is emitted by the unabated part of the plant.**

Future price of carbon

4.F1: Should the Government target a certain carbon price for a) 2020 and b) for 2030? If so, at what level?

As explained in our response to question 3.A2 and in the executive summary to this response, if a carbon floor price is to be introduced, it needs to be done in a way that provides investor certainty and transforms the carbon price into a key variable that has to be taken into account by investors in the power sector. We believe that in that case a high carbon price trajectory for 2020 and 2030 needs to be determined now and not left to be decided in the future. Leaving the trajectory to a high carbon price to be decided in the future will undermine investors' confidence in the robustness of the carbon floor price and will create uncertainty as to the long-term trajectory of the carbon floor. To this end, **we believe that the carbon floor price mechanism should result in carbon prices that follow a linear path from 2013 to £40/tCO_2 in 2020 and a minimum of £70/tCO_2 in 2030 (broadly Scenario 3 in the consultation paper).**

4.F3: When would the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?

See our response to question 4.F1 and 3.A2.

Electricity Investment

5.B1: What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?

As explained in our response to question 3.A2, if investors have greater certainty in the future long-term price of carbon, on which we have reservations (see executive summary), this may increase investment in low-carbon generation as long as (i) it is accompanied by strong complementary regulatory measures (as explained above) and (ii) the trajectory to a high carbon price is set over this Parliament, not left to be decided in the future. Leaving the trajectory to a high carbon price to be decided in the future will undermine investors' confidence in the robustness of the carbon floor price and will create uncertainty as to the long-term trajectory of the carbon floor. To this end, **we believe that the carbon floor price mechanism should result in carbon prices that follow a linear path from 2013 to £40/tCO_2 in 2020 and a minimum of £70/tCO_2 in 2030 (broadly Scenario 3 in the consultation paper).**

YORKSHIRE COAL TASK FORCE

c/o City of Wakefield MDC, Regeneration and Housing Services,
PO Box 92, Newton Bar, Wakefield WF1 1XS

[redacted]

Martin Shaw
Environmental Taxes Team,
HM Revenue and Customs (HMRC)

Dear Mr Shaw,

Carbon price floor: support and certainty for low-carbon investment

I have been asked by the Yorkshire Coal Task Force to respond to the consultation on this issue.

The Task Force welcomes the opportunity to respond to this consultation and supports the principle of giving certainty to the price of carbon in the UK electricity generating sector and helping to create adequate incentives for investment in low-carbon electricity generation.

The Task Force would very much wish to ensure the future of a viable deep mined coal industry in the UK, not only because of the employment it brings to the region but also for reasons of security of energy supply in an increasingly insecure world. We do however believe that coal fired power generation should be made as clean as feasibly possible and Government should encourage investment in cleaner and more efficient coal technologies, including carbon capture and storage (CCS), to ensure the continued reduction of greenhouse gases.

We note that the domestic coal industry and coal-fired power generation sectors have paid a high price in recent years in terms of closures and cutbacks and there has been insufficient investment in new technologies to help achieve targets set by successive governments for emissions reductions. The Yorkshire Coal Task Force sees that the challenge to existing and new coal fired power generation to be unabated gas fired generation (without CCS) which may appear to be the alternative low risk option but which does not fit with the government's long term objectives on security, diversity or decarbonisation.

There is little point moreover in coal producers at Kellingley, Maltby, and Hatfield, for example, investing in more coal production and bringing down production costs if there is to be no market for their product in the UK. The ability of the Aire valley power stations to continue to burn coal from the remaining Yorkshire collieries would, we hope, be a policy objective of all Government departments.

Apart from these general points, we would like to make some more detailed comments on the proposals and the reasoning behind them. In summary these are:

The proposal for a Carbon Price Floor will have a very negative impact on generation from coal, major consequences for the coal industry, and will not provide certainty for investment in CCS unless greater clarity is given.

The Coal Task Force supports a feed-in tariff for all low carbon electricity generation based on a contract for difference with the wholesale electricity price. If necessary premiums can be envisaged for specific technologies or characteristics e.g. flexible low carbon generation (including CCS) or new, more expensive technologies such as offshore wind, wave and tide.

The proposal for an Emissions Performance Standard (EPS) as written will have a negative impact on coal and fails to address the need to reduce carbon emissions from gas fired power stations.The combination of the EPS levels and the policy on grandfathering at the point of consent appears to weaken the intent of the current government policy of requiring CCGTs to be designed to be CCR (carbon capture and storage ready).

Accelerating CCS and clean coal technology

In order to ensure that the UK remains at the forefront of CCS development, the Government should ensure progress on four demonstration plants to be in operation by 2015 or as soon after as possible. A shorter timescale would not be sufficient to maintain the UK's global leadership in this field nor to meet climate change targets.

Government has previously set out four key objectives for its policies on clean coal and CCS. The Task Force supports the four objectives, but they will be only be achieved if the four demonstration plants are in place by 2015 with a deployment programme based on confidence in the success of the demonstrations.

1. *Advancing the global development of CCS technology*

   These four new stations when completed could deliver 6.4GW of new coal power plant with full CCS, which could cut UK emissions by 42 million tonnes a year, or 23% of emissions from power plant on 2007 levels. Developers should not be constrained by the 300/400 MW limit on clean coal technology demonstration palants into doing less than they would otherwise set out to do, or doing it differently.

2. *Improving the affordability of CCS investment*

   It is important that the Government takes steps to ensure that the decisions on UK funding of four plants do not come too late for them to be eligible for the first (and largest) tranche of NER funding, which could significantly reduce the cost to the UK consumer.

3. *Delivering a diverse and secure low carbon economy in the UK*

At present there is 28GW of coal plant on the UK system. By 2016, 8GW will have closed under the LCPD. The Industrial Emissions Directive could see substantial further closures, possibly down to zero by 2023. Unless appropriate steps are taken, this capacity will be replaced by unabated gas generation which will set carbon emissions over the next 30 years and further diminish security and diversity of supply.

For this gap to be filled by coal generation will require CCS to be proven by 2018. To aid this transition the Government needs to act now and publish its ambitions for coal with CCS over the coming 20 year time period as part of delivering a diverse and secure low carbon energy supply.

4. *Helping create jobs and economic opportunities for UK based businesses in a new industrial sector*

In order to have a sustainable business, the CCS industry needs a clear commitment to an ongoing building programme which starts with and extends beyond the four demonstration projects.

UK coal reserves –part of the energy security solution

Given the abundance of proven coal reserves with relative low costs and flexibility to meet fluctuations in demand for power, the Task Force believes there is a long-term future for coal in the UK's energy mix.

With major investment in both deep and surface mines, UK coal production could be sustained at current levels of around 20 million tonnes a year to at least 2025 with employment at around 6,000.

It is important that generators bidding into the funding mechanism for CCS should be able to demonstrate that their proposals will be technically suitable to burn indigenous coal, i.e. with higher sulphur and chlorine levels than some imported coals.

Coal fired generation with CCS – essential part of the a low - carbon generation mix

Coal-fired generation with CCS is predicted to have a generation cost in the mid-range of low carbon generation between nuclear and offshore wind. It has the advantage of having high availability compared to wind and being more flexible than nuclear. By using the sites of existing coal power stations there will be reduced requirement for expensive grid improvements.
It is appropriate to plan on a 30/30/30 % mix of nuclear, renewables and coal/CCS capacity in 2030. Beyond that date one or other technology may take a larger share of the growing total capacity.

The EMR proposals must be judged against their likelihood of delivering an appropriate mix in 2025/2030 whilst maintaining adequate generation capacity in the meantime.

Responses to Consultations

Whilst the government has issued two separate consultations the Task Force agrees with the Clean Coal Task Group that the proposed measures have to be judged in combination. We have therefore provided a combined response.

Carbon Price Floor: support and certainty for low-carbon investment

This proposal will have a very negative impact on generation from coal, major consequences for the coal industry and will not incentivise CCS unless greater clarity is given.

Negative impact on coal generation and the UK coal industry

1. Of the existing 28GW of coal fired capacity, 8 GW is opted out under the LCPD and will close by 2016. The remaining coal power plants (20GW), which under the IED (formerly the LCPD) are facing the need to fit SCR if they wish to stay open with reasonable load factors after 2016, would under this proposal find their economics against unabated gas fired power stations worsened by the additional cost so that they may well opt for the reduced running hours option and close by 2023. This is more likely under Scenarios 2 and 3 than for Scenario 1.

Redpoint's modelling has non-CCS coal capacity reducing to18GW in 2020 and 5 GW in 2030. However the reduction could be faster - at the current time only one power plant (2GW out of the current total coal capacity of 28GW) has committed to SCR.

2. Potential CCS demonstration projects will face increasing costs on their residual emissions which may be the small proportion of carbon dioxide not captured on a 400MW plant with full capture or the carbon dioxide emitted from the rest of a larger plant where partial CCS is fitted e.g. 400MW on an 800MW plant and this will act as a disincentive to build CCS demonstrations and new coal fired power plants.

3. The consequences for the coal industry need to be covered in the impact assessment statement.

Carbon Dioxide capture and storage

Paragraphs 4.30 and 4.31 are not sufficiently clear that carbon dioxide not emitted due to CCS will be exempt from the new CCL. There is the implication that this does not need to be addressed until after the demonstrations are up and running.

If "Carbon Price Support" is a tax on emissions of carbon dioxide, not a tax on using fossil fuel, then it should be levied only on emissions.

Potential investors in CCS projects need clarity now when projects are being formulated that they will have full relief from CCL for all carbon dioxide stored both at the demonstration stage and at the retrofit stage when CCS is extended to the full plant. It is not sufficient to leave this for further future legislation.

If this certainty is given, then it will act (especially in Scenarios 2 and 3) to incentivise investment in CCS, both the demonstrations and follow on projects. Early clarity on incentives for follow-on projects is important because the means has to be found to ensure that the fledgling CCS industry does not whither as soon as the demonstration projects are built.

Feed-In Tariff(s)

The YCTF supports a Feed-in tariff for all low carbon electricity generation based on a contract for difference with the wholesale electricity price.

If necessary premiums can be introduced for specific technologies or generation with specific characteristics eg flexible low carbon generation (including CCS) or new, more expensive higher risk technologies such as offshore wind, wave and tide.

Generators will only build new coal power plant with CCS if they are confident of the financial business case for the plant capacity for 20 years when measured against gas-fired power plant, especially if gas plant has no CCS retrofit obligation.

Emissions Performance Standard

There have been concerns that a single EPS, not fuel specific, would always weigh more heavily on coal more than gas. It is however recognized that an EPS may be necessary in order to define what is meant by low carbon generation in the context of Feed-in Tariffs or Carbon Price Support exemption.

Potential investors in coal fired power plant with CCS need clarity on how the proposed rules will apply to coal plant and also to gas plant and also how the rules relate to the funding rules for CCS demonstrations and exemption from the CCL levy (Carbon Price Support)

The YCTF interprets the proposals as follows:

Existing power plant – EPS not applicable

New coal power plant – such plant must meet the EPS applicable at its date of consent. A level based on 600g/kwh would require CCS on 25% of the plant whilst one of 450g/kwh would require CCS on 50%.
The rules on demonstration funding (currently proposed 300/400MW of CCS) would then determine the maximum sizes of plant to be built.

If such a plant was classified as Low Carbon generation and thereby gained exemption from the Carbon Price Floor/CCL levies this would be a valuable incentive. The effect of Carbon Price Support would be to incentivize retrofit of CCS on the full plant as the cost of emissions rises.

Overall these proposals discriminate against coal to a greater extent than justified by the relative unabated emissions.

The proposal as written will have a very negative impact on investment in new cleaner, more efficient capture and storage ready (CCR) coal power plant and CCS (gas or coal) and fails to send any signals in the direction of reducing carbon emissions from gas fired power stations

An EPS should not be used which allows gas plant to be built unabated whilst effectively imposing CCS on coal generation. This would give no incentive to invest in coal generation and operators would simply invest in gas with no carbon abatement. This would lock in carbon over the next 30 years and further weaken the nation's diversity and security of supply by increasing import dependency and leaving

consumers highly exposed to future moves in international gas prices and supply interruptions.

Capacity Payments

We understand the government's concern that their will be insufficient investment in new generation capacity to replace the plants that close. The consultation describes a large number of different potential responses to a capacity shortage.

It is necessary to consider separately three types of capacity shortfall which need different solutions:

i) the capacity shortage that could occur at the relatively short teatime peak of demand. Such shortage would be for just a few hours, and a few GW maximum. Solutions would be more interconnection, more pumped storage, demand side reduction, open cycle gas turbines etc.

ii) the capacity shortage that could occur due to the difference in demand between day and night in winter lasting, each day for about eight hours and measured around 20 GW. Currently this capacity is provided by older less efficient coal power plant and gas CCGTs which are "two shifted", with consequentially modest load factors (30-35%), acceptable commercially because the capital investments in these plants have been written off. It is technically feasible for coal with CCS to provide flexible, low carbon capacity but there would need to be capacity payments to compensate for the modest load factors.

iii) the capacity shortage that could occur at periods of low wind across the whole generation system, sometimes lasting several days and up to 25 GW if wind targets are met. It is technically feasible for coal with CCS to provide flexible, low carbon capacity to back up gaps in wind generation but there would need to be capacity payments to compensate for the low load factors.

Further consideration should be given to the relative economics of different mixes in the whole system.

Responses to Specific Questions in HM Treasury Consultation

Investment

3.A1: What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?

This will depend on government/ EU/international policies.

It is important for UK competiveness that we do not institute measures that are costly at home and reduce the cost of meeting the overall cap for other Member States. There is a danger of doing this in an effort to meet Climate Change Act objectives. UK policy should be tested against this criterion.

3.A2: If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.

The first effect of high carbon prices is the negative impact on investment in coal fired generation. There is less impact on gas-fired generation because there is confidence that wholesale electricity prices will follow the price of gas plus carbon

3.A3: How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?

The proposals laid out in this policy are, in effect, a carbon tax on fuel for power generation and attractive to the government initially at least as a politically acceptable source of additional revenue. However in the longer term when the costs of the tax begin to make a noticeable impact on electricity prices there may be a public reaction, similar to that against the fuel tax escalator.

3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

This tax alone will not stimulate low carbon investment; although making conventional coal and gas generation more expensive is a way to give everything else a competitive advantage. The primary incentive for low-carbon investment should come from a combination of FIT and capacity/availability payments included in the DECC EMR consultation.

Administration

4.B1: What changes would you need to make to your procedures and accounting systems to ensure you correctly account for CCL on supplies to electricity generators?

No comment

4.B2: How long would you need to make the necessary changes to your systems to account for CCL on supplies to electricity generators?

No comment

4.B3: Please provide an estimate of how much the system changes would cost, both one-off and continuing?

No comment

Types of generator

4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.

All types of electricity generation should be treated equally in relation to their Carbon Dioxide emissions.

4.C2: Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

If CHP or any other technology (e.g biomass) is ascribed special tax-free provisions it should not result in a perverse impact that subtracts in any way from the incentive to capture and store the emissions. CCS projects should always receive full tax credit for the emissions they avoid whether or not exemption has already been granted for the heat or biomass components of the generation.

4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

Paragraphs 4.30 and 4.31 are not sufficiently clear that Carbon dioxide not emitted due to CCS will be exempt from the new CCL. There is the implication that this does not need to be addressed until after the Demonstrations are up and running.

If "Carbon Price Support" is a tax on emissions of carbon dioxide, not a tax on using fossil fuel, then it should be levied only on emissions.

Potential investors in CCS projects need clarity *now* when projects are being formulated that they will have full relief from CCL for all Carbon dioxide stored both at the demonstration stage and at the retrofit stage when CCS is extended to the full plant. It is not sufficient to leave this for further future legislation.

If this certainty is given, then it will act (especially in Scenarios 2 and 3) to incentivise investment in CCS, both the demonstrations and follow on projects. Early clarity on incentives for follow-on projects is important because the means has to be found to ensure that the fledgling CCS industry does not whither as soon as the demonstration projects are built.

Imports and exports

4.D1: What impact would the Government's proposals have on electricity generators and suppliers that export or import electricity?

No comment

4.D2: What impact might the proposals have on trading arrangements for electricity?

No comment

4.D3: What impact might the proposals have on electricity generation, trading and supply in the single electricity market in Northern Ireland and Ireland?

No comment

Carbon price support mechanism

4.E1: How should the carbon price support rates be set in order to increase certainty for investors, in particular over the medium and long term?

Carbon price support rates need to have a binding trajectory over at least fifteen to twenty years from plant operation, i.e. perhaps twenty-five years from project inception.

However, the UK carbon floor price should not be allowed to increase substantially above the ETS market price of allowances. If it does so the the situation would be deemed to be unsustainable due to UK commercial power consumers becoming uncompetitive. This could result in a policy review undermining the long term Carbon price stability that was intended. 4.E2: Which mechanism, or alternative approach, would you most support and why?

No comment

4.E3: What impact would the proposals have on you carbon trading arrangements?

No comment

Future price of carbon

4.F1: Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?

The Government's objective of providing price stability in carbon is creditable; however, there is a danger that if the trajectory turns out to be much steeper than the market then, for reasons of UL competetiveness, a future Government would be inclined to reduce the tax rate undermining the long term price signal.

4.F2: What is the most appropriate carbon price for the UK to meet its emissions reduction targets in the power generation sector? How would this be affected by changes in the structure of the electricity market?

The primary incentive mechanism will be the FITs so the level of the carbon support price should be as low as possible beyond the ETS price. The objective of the carbon price floor should be to provide price stability only.

4.F3: When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?

Generators need to understand the likely impact of this measure as soon as possible because of its impact on investment decisions on coal fired plant upgrades to meet the requirements of the IED necessary

Electricity investment

5.B1: What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?

The impact on investment on CCS and new coal fired generation depends on an early understanding of the rules. See 4.C3.

However, the primary mechanism for incentivising low-carbon investment will be the FIT

5.B2: What other impacts would you expect carbon price support to have on investment decisions in the electricity market?

Carbon price support will clearly act against high carbon fuels. Taken together with an EPS this package penalises unabated coal. The question that needs to be resolved is whether there are still good strategic reasons for the UK to maintain fuel diversity incorporating coal. If so, then these proposals run the risk of threatening UK energy security.

There is a risk that public money provided for the CCS demonstration programme will not be deemed good use of public funds if the policy regime beyond demonstration does not encourage investment in CCS.

5.B3: How should carbon price support be structured to support investment in electricity generation whilst limiting impacts on the wholesale electricity price?

Carbon price support will inevitably impact the price of electricity, since the additional tax will have to be paid for from electricity sales. There will be benefit for investment if the revenues are re-cycled via FITs for low carbon electricity generation from fossil fuels (ie with CCS)

Existing low-carbon generators

5.C1: Can you provide an assessment of the impact of the proposals on your generation portfolio and overall profitability?

No comment

5.C2: What would be the implications of supporting the carbon price for existing electricity generators and how should the Government take this into account?

Existing fossil generators will be penalised by this measure with the impact on coal roughly twice that on coal.. This will increase the risk of early retirement of fossil plant with consequential effects on supply

diversity and security and potential lost opportunity to refit flexible fossil generation sites with low-carbon CCS.

Of the existing 28GW of coal fired capacity, 8 GW is opted out under the LCPD and will close by 2016. The remaining coal power plants (20GW), which under the IED (formerly the LCPD) are facing the need to fit SCR if they wish to stay open with reasonable load factors after 2016, would now under this proposal find their economics vs unabated gas fired power stations worsened by the additional cost to the extent that they may well opt for the reduced running hours option and close by 2023. This is more likely under Scenarios 2 and 3 than for Scenario 1.

Redpoint's modelling has non-CCS coal capacity reducing to18GW in 2020 and 5 GW in 2030. However the reduction could be faster - at the current time only one power plant (2GW out of the current total coal capacity of 28GW) has committed to SCR.

Electricity price impacts

5.D1: How do you currently manage fluctuations in the wholesale electricity price?

No comment

5.D2: What difference will supporting the carbon price make to your business?

There will be an impact on the coal industry and coal fired power generation which should be included in the impact assessment.

5.D3: As an electricity generator or supplier, how much of the cost of the carbon price support would you pass on to consumers?

We cannot see how less than the full cost will be passed on.

5.D4: As a business, how much of the cost of energy bills do you pass on to customers?

No comment

5.D5: How might your company or sector be affected and would there be any impact on your profit margins?

The Yorkshire Coal Task Force is concerned about the proposals impact on the coal industry and employment in coal and related power generation in the region and nationally.

5.D6: Do you have any comments on the assessment of equality and other impacts in the evidence base of the Impact Assessment, included at Annex D?

Annex D.100 refers to the interaction with other policies, specifically other parts of the overall EMR package which are addressed in the DECC consultation. However, of the four package options studied, all options include CPS and all assume a level of carbon price support of £30/tCO_2. Furthermore, all options include EPS. The CCSA believes that the modelling should test the impact at different price levels including zero as well as with or without EPS.

Responses to Specific Questions in DECC Consultation on Electricity Market Reform

Current Market Arrangements

1. Do you agree with the Government's assessment of the ability of the current market to support the investment in low-carbon generation needed to meet environmental targets?

From our experience the current market is not delivering the investment required.

2. Do you agree with the Government's assessment of the future risks to the UK's security of electricity supplies?

The current market will not deliver on the Government's objectives for security of supply and affordability for consumers.

Options for Decarbonisation

Feed-in Tariffs

3. Do you agree with the Government's assessment of the pros and cons of each of the models of feed-in tariff (FIT)?

FITs for low carbon fossil fuel and biomass generation need to be linked to fuel prices or will not be bankable.

The competition for low carbon generation with fossil fuels and CCS is unabated gas fired generation. Wholesale electricity prices generally follow the price of gas fired generation plus carbon allowances so there is little fuel price risk to the gas fired generator. The FIT must be designed to provide a benefit over the unabated gas which is maintained if gas or coal prices increase.

4. Do you agree with the Government's preferred policy of introducing a contract for difference based feed-in tariff (FIT with CfD)?

We agree with this providing that there is a linkage to fuel price as above, otherwise we would prefer the Premium FIT

5. What do you see as the advantages and disadvantages of transferring different risks from the generator or the supplier to the Government? In particular, what are the implications of removing the (long-term) electricity price risk from generators under the CfD model?

This will certainly make the business model for low-carbon generation more efficient and more bankable.

6. What are the efficient operational decisions that the price signal incentivises? How important are these for the market to function properly? How would they be affected by the proposed policy?

No comment

7. Do you agree with the Government's assessment of the impact of the different models of FITs on the cost of capital for low-carbon generators?

We agree that stability of price and therefore confidence in revenue generation will contribute to lower cost of capital.

8. What impact do you think the different models of FITs will have on the availability of finance for low-carbon electricity generation investments from both new investors and existing the investor base?

See question 3 above. There is a considerable difference between fossil generation with high exposure to the variable cost of fuel and the other forms of generation where fuel costs are low.

9. What impact do you think the different models of FITs will have on different types of generators (e.g. vertically integrated utilities, existing independent gas, wind or biomass generators and new entrant generators)? How would the different models impact on contract negotiations/relationships with electricity suppliers?

No comment

10. How important do you think greater liquidity in the wholesale market is to the effective operation of the FIT with CfD model? What reference price or index should be used?

No comment

11. Should the FIT be paid on availability or output?

FIT should most logically be paid on output but there is a case for fossil fuel plant with CCS operating in mid merit or peak to be paid a capacity payment (see question 29 below).

Options for Decarbonisation

Emissions Performance Standard

12. Do you agree with the Government's assessment of the impact of an emission performance standard on the decarbonisation of the electricity sector and on security of supply risk?

No. These proposals do not incentivise the construction of new plant with CCS; they merely disincentivise the construction of new coal fired plant. This will reduce, not increase security of supply.

We do recognize that an EPS may be necessary in order to define what is meant by low carbon generation in the context of Feed-in Tariffs or Carbon Price Support exemption.

Potential investors in coal fired power plant with CCS need clarity on how the proposed rules will apply to coal plant and also to gas plant and also how the rules relate to the funding rules for CCS demonstrations and exemption from the CCL levy (Carbon Price Support)

13. Which option do you consider most appropriate for the level of the EPS? What considerations should the Government take into account in designing derogations for projects forming part of the UK or EU demonstration programme?

We interpret the proposals as follows:

Existing power plant – EPS not applicable

New coal power plant – such plant must meet the EPS applicable at its date of consent. A level based on 600g/kwh would require CCS on 25% of the plant whilst one of 450g/kwh would require CCS on 50%.

The rules on demonstration funding (currently proposed 300/400MW of CCS) would then determine the maximum sizes of plant to be built.

If such a plant was classified as Low Carbon generation and thereby gained exemption from the Carbon Price Floor/CCL levies this would be a valuable incentive. The effect of Carbon Price Support would be to incentivize retrofit of CCS on the full plant as the cost of emissions rises.

New gas power plant – neither 600 nor 450 g/kwh require CCS and with the grandfathering principle this will be the case for the life of the plant. The incentive for CCS will come from the effect of the Carbon Price Support. CCS will only be possible if plants are built CCR so this requirement should continue.

We find these proposals discriminate against coal to a greater extent than justified by the relative unabated emissions.

The proposal as written will have a very negative impact on investment in new cleaner, more efficient capture and storage ready (CCR) coal power plant and CCS (gas or coal) and fails to send any signals in the direction of reducing carbon emissions from gas fired power stations.

An EPS should not be used which allows gas plant to be built unabated whilst effectively imposing CCS on coal generation. This would give no incentive to invest in coal generation and operators would simply invest in gas with no carbon abatement. This would lock in carbon over the next 30 years and further weaken our diversity and security of supply by locking in import dependency and leaving consumers highly exposed to future moves in international gas prices and supply interruptions.

Demonstration projects should be given full derogation reflecting their status as technology pathfinders.

14. Do you agree that the EPS should be aimed at new plant, and 'grandfathered' at the point of consent? How should the Government determine the economic life of a power station for the purposes of grandfathering?

Yes.

Twenty years.

15. Do you agree that the EPS should be extended to cover existing plant in the event they undergo significant life extensions or upgrades? How could the Government implement such an approach in practice?

Any possible extension of the EPS to existing plant should be considered after the CCS Review and its implementation should be timed to allow plants (coal and gas) that are upgraded to meet IED requirements from 2016 to recover their capital expenditure.

16. Do you agree with the proposed review of the EPS, incorporated into the progress reports required under the Energy Act 2010?

Yes.

We anticipate that new coal fired plant commissioned after the Review would have to meet a new EPS established during the Review in the light of the results of the CCS Demonstrations.

If there is sufficient urgency and progress on the four UK demonstrations, members confident of the technology would expect that an EPS based on a level of 100g/kwh could be applied from 2025.

In order to encourage early implementation of CCS, we would urge a relaxation of this to say 150 g/kwh for plants consented before 2020 and for retrofits to complete CCS on Demonstration Projects.

The government's intention to apply tighter EPS's which will require CCS on all new gas and coal power plant needs to be signaled now.

17. How should biomass be treated for the purposes of meeting the EPS? What additional considerations should the Government take into account?

The EPS should apply to emissions from fossil fuels, hence emissions from biomass should be zero-rated.

18. Do you agree the principle of exceptions to the EPS in the event of long-term or short-term energy shortfalls?

Yes

Options for Market Efficiency and Security of Supply

19. Do you agree with our assessment of the pros and cons of introducing a capacity mechanism?

We understand Government's concern that there will be insufficient investment in new generation capacity to replace the plants that close. The consultation describes a large number of different potential responses to a capacity shortage. It is necessary to consider separately three types of capacity shortfall which need different solutions:

i) the capacity shortage that could occur at the relatively short teatime peak of demand. Such shortage would be for just a few hours, and a few GW maximum

Solutions would be more interconnection, more pumped storage, demand side reduction, open cycle gas turbines.

ii) the capacity shortage that could occur due to the difference in demand between day/evening and the middle of the night in winter lasting, each day for about twelve hours and measured around 10 -15 GW

Currently this capacity is provided by older less efficient coal power plant and gas CCGTs which are "two shifted", with consequentially modest load factors (30- 40%), which are acceptable commercially because the capital investments in these plants have been written off.

It is technically feasible for coal with CCS to provide flexible, low carbon capacity but there would need to be capacity payments to compensate for the high capital costs and modest load factors.

iii) the capacity shortage that could occur at periods of low wind across the whole generation system, sometimes lasting several days and up to 25 GW if wind targets are met.

It is technically feasible for coal with CCS to provide flexible, low carbon capacity to back up gaps in wind generation but there would need to be capacity payments to compensate for the high capital costs and low load factors. Further consideration should be given to the relative economics of different mixes in the whole system.

20. Do you agree with the Government's preferred policy of introducing a capacity mechanism in addition to the improvements to the current market?

Yes, for the reason mentioned above.

21. What do you think the impacts of introducing a targeted capacity mechanism will be on prices in the wholesale electricity market?

No comment

22. Do you agree with Government's preference for the design of a capacity mechanism:

• a central body holding the responsibility;

We agree with this

• volume based, not price based; and

We agree that it should be volume based to guarantee the capacity margin.

• a targeted mechanism, rather than market-wide.

We agree that it should be targeted on those types of generators that can respond to the specific need – see 19 above

23. What do you think the impact of introducing a capacity mechanism would be on incentives to invest in demand-side response, storage, interconnection and energy efficiency? Will the preferred package of options allow these technologies to play more of a role?

See 19 above.

24. Which of the two models of targeted capacity mechanism would you prefer to see implemented:

• Last-resort dispatch; or

• Economic dispatch.

No comment

25. Do you think there should be a locational element to capacity pricing?

Yes if specifically required.

Analysis of Packages

26. Do you agree with the Government's preferred package of options (carbon price support, feed-in tariff (CfD or premium), emission performance standard, peak capacity tender)? Why?

We believe that the feed-in tariff and targeted capacity payments are the main instruments of the package supported by carbon price support to provide an investment environment which de-risks the carbon price. Concern has been expressed that CPS should not be allowed to deviate too much from the market price for reasons of competitiveness.

We do not agree that emissions performance standards as proposed should be included in the package.

27. What are your views on the alternative package that Government has described?

No comment

28. Will the proposed package of options have wider impacts on the electricity system that have not been identified in this document, for example on electricity networks?

No comment.

29. How do you see the different elements of the preferred package interacting? Are these interactions different for other packages?

From the point of view of coal with CCS we see the following combination of the different elements of the package working:

Carbon Price support will disincentivise unabated coal and gas and, so long as CCS is given exemption for carbon dioxide stored, then there will be a corresponding benefit for CCS, but insufficient for some time to be enough to promote investment. Too rapid an escalation of the carbon price support can have a major impact on the coal power plant operators and the coal industry leaving little chance of renaissance later.

Emissions Performance Standard as proposed is highly favourable to unabated gas and would stop investment in new coal, even with partial CCS. An alternative in which levels are signalled for 2025 and relaxation given for early CCS projects would help promote CCS

Capacity Payments should be used to support investment the capital costs of investment in low carbon flexible generating capacity such as coal or gas with CCS.

Feed-in tariffs should then be used to encourage generation with coal or gas with CCS, with the level determined by what is necessary to cover the operating costs

Implementation Issues

30. What do you think are the main implementation risks for the Government's preferred package? Are these risks different for the other packages being considered?

The most significant risk is that the reform package militates against coal fired generation with consequent impact on supply security and fails to divert future investment from unabated gas-fired plants to low carbon alternatives.

31. Do you have views on the role that auctions or tenders can play in setting the price for a feed-in tariff, compared to administratively determined support levels?

If there are auctions there will be winners and losers. It means project developers have to factor the risk of losing into their decisions on project development. Furthermore, the risk will be an unknown. This will be inhibitory to project developers and especially for new entrants.

Auctions also require projects to come to a certain stage of development simultaneously. This is very constraining and is likely to lead to inefficiencies.

• Can auctions or tenders deliver competitive market prices that appropriately reflect the risks and uncertainties of new or emerging technologies?
There may well be costs associated with new technologies that should be met outside the EMR package. Examples would be the costs of an offshore transmission network and for CS pipeline and storage infrastructure. Support could be provided from the revenue received from the CCL and EUA auctions as it will have originated from fossil generation.

• Should auctions, tenders or the administrative approach to setting levels be technology neutral or technology specific?
There seems to be no alternative but to make the levels technology specific otherwise one technology would tend to dominate.

It will be necessary to set quantity limits to prevent any one technology dominating. We suggest that limits consistent with targeting 30% nuclear, 30% CCS and 30% renewables in the first 20 GW of new capacity.

• How should the different costs of each technology be reflected? Should there be a single contract for difference on the electricity price for all low-carbon and a series of technology different premiums on top?
We note the suggestion of a single FIT for low carbon generation with premiums for new, more difficult technologies such as offshore wind and wave/tide
.
• Are there other models government should consider?
Individual project negotiation.

• Should prices be set for individual projects or for technologies
For CCS projects since costs are likely to be very location specific if that element is not covered in capacity payments then prices should be set by project.

• Do you think there is sufficient competition amongst potential developers / sites to run effective auctions?
In the early days of CCS there will not be sufficient competition and certainly not if location is included.

• Could an auction contribute to preventing the feed-in tariff policy from incentivising an unsustainable level of deployment of any one particular technology? Are there other ways to mitigate against this risk?
More likely that it will favour one particular technology.

32. What changes do you think would be necessary to the institutional arrangements in the electricity sector to support these market reforms?

No comment.

33. Do you have view on how market distortion and any other unintended consequences of a FIT or a targeted capacity mechanism can be minimised?

No comment

34. Do you agree with the Government's assessment of the risks of delays to planned investments while the preferred package is implemented?

There are serious risks of delay to the CCS demonstration programme given that work is under way now to put business cases together for the NER 300 and UK projects 2-4. There needs to be assurance that these projects get grandfathered in some way and a guarantee of funding support ahead of the Parliamentary decision on FITs. Moreover the projects may involve partial CCS initially with retrofit of full CCS later. Developers will need to know in advance that the full CCS cost will be paid for.

35. Do you agree with the principles underpinning the transition of the Renewables Obligation into the new arrangements? Are there other strategies which you think could be used to avoid delays to planned investments?

No Comment.

36. We propose that accreditation under the RO would remain open until 31 March

2017. The Government's ambition to introduce the new feed-in tariff for low carbon in 2013/14 (subject to Parliamentary time). Which of these options do you favour:

• All new renewable electricity capacity accrediting before 1 April 2017 accredits under the RO;
• All new renewable electricity capacity accrediting after the introduction of the low-carbon support mechanism but before 1 April 2017 should have a choice between accrediting under the RO or the new mechanism.

No Comment.

37. Some technologies are not currently grandfathered under the RO. If the

Government chooses not to grandfather some or all of these technologies, should we:

• Carry out scheduled banding reviews (either separately or as part of the tariff setting for the new scheme)? How frequently should these be carried out?
• Carry out an "early review" if evidence is provided of significant change in costs or other criteria as in legislation?
• Should we move them out of the "vintaged" RO and into the new scheme, removing the potential need for scheduled banding reviews under the RO?

No Comment.

38. Which option for calculating the Obligation post 2017 do you favour?

• Continue using both target and headroom
• Use Calculation B (Headroom) only from 2017
• Fix the price of a ROC for existing and new generation

No Comment.

I trust you will feel able to take these comments on board when revising the proposals.

Yours sincerely,

YorkshireWater

Martin Shaw
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8th February 2011

Dear Mr Shaw

Re: Carbon price floor: support and certainty for low–carbon investment

Thank you for the opportunity to respond to the Carbon price floor: support and certainty for low–carbon investment consultation which sets out how the Government will encourage investment in low carbon electricity generation by setting a clear long term price for carbon.

The carbon floor price will impact on our Company in a number of ways because we are a large consumer of grid electricity. In 2009/10 we used 500GWh of electricity which accounts for up to 70% of our operational carbon footprint and a large proportion of our operating expenditure.

We support the Government's plans to reduce the carbon impact of grid electricity by providing greater support and certainty to the carbon price. From our perspective the key questions in the proposal concern the future price of carbon for 2020 to 2030. It is essential that we understand how the price of carbon will be set or escalated. This will allow us to predict the impact that the changes to the Climate Change Levy (CCL) will have on our business and on our customers' bills and therefore enable us to plan, invest and respond. We particularly wish to see clarity of electricity and carbon costs in the medium term (7–10 years) to allow us to plan an efficient and considered response to the price increases. One way of achieving such clarity over costs would be for the new CCL on fuel supplies to work in a similar manner to the current Landfill Tax escalation mechanism which sets out the escalating costs over the coming years.

There is an obvious direct cost impact arising from the proposals in the consultation. We expect the majority of costs imposed on electricity generators to be passed on to consumers through increased wholesale and retail electricity costs. We therefore expect to see our costs and those of our customers, to rise proportionally. As a customer service business we have a large number of domestic and industrial business customers. The cost impact of the levy on our industrial customers is additionally concerning because costs which make the UK uncompetitive may drive industry abroad and thereby significantly impact on our income.

The water industry faces considerable business cost risk from the fluctuating electricity prices because we operate within a regulated industry which currently works on a 5 year planning cycle. Whilst we do not expect Government to provide cost certainty in a competitive electricity market place, we need to understand the likely trajectory in carbon prices and electricity costs which result from government policy so that we can make appropriate assumptions in our 5 year business plans.

YorkshireWater

We also believe there is an opportunity for the carbon floor price incentive (for investment in low-carbon energy generation) to be further integrated with other incentives, such as Feed In Tariffs (FITs), to encourage low carbon generation throughout the economy. We currently work with a number of Government incentive mechanisms that encourage business to support the Government's objectives through energy efficiency and renewable self generation, for example the Renewables Obligation Certificates (ROCs). Therefore, we seek alignment between the various Government incentive mechanisms to fully support low carbon generation. For example we would appreciate clarity about how the changes to the CCL and fuel duty impact on the wider carbon and energy agenda and how the new CCL will align with, or impact on, the price of carbon in the Carbon Reduction Commitment.