Department of Energy & Climate Change

A 2030 framework for climate and energy policies

UK Government Response to Commission Green Paper COM(2013) 169 final

1 July 2013

UK Government response to the European Commission's consultation on a 2030 framework for climate and energy policies

Executive Summary

The UK believes the EU should adopt an ambitious emissions reduction target for 2030, delivered in a flexible, technology neutral way, supported by a robust, reformed emissions trading system, and underpinned by a global agreement in 2015. The framework should be designed to achieve the most cost-effective emissions reductions. We believe this means that the EU should:

- adopt a unilateral EU wide greenhouse gas emissions reduction target of 40% for 2030;
- make an offer to move to a target of up to 50% in the context of a global comprehensive agreement on climate change;
- urgently deliver structural reform of the EU ETS, on the basis of legislative proposals from the European Commission, put forward well before the end of this year;
- continue to work towards completion of the single energy market in line with recent European Council Conclusions;
- not include a renewable energy target or mandatory energy efficiency target, either of which risk pre-judging the cost effective pathway to 2030 GHG outcomes; and
- continue with key enabling actions including support for R&D and product standards.

Climate change and energy security remain two of the greatest challenges in the modern world, and for the European Union. The EU has been a world leader in tackling these twin challenges; developing ground-breaking legislative measures to cut emissions, promote renewable energy and improve energy efficiency. But to meet our agreed goal of reducing greenhouse gas emissions by 80-95% on 1990 levels by 2050 in a way that maximises the

economic opportunities, is cost effective and maintains the EU's global competitiveness, we need to urgently look to developing a future framework for 2030 now. This framework should be ambitious, cost-effective and flexible.

Ambitious: cost-effective emissions reductions in the EU and providing global leadership on climate change

The EU has agreed a long-term objective of cutting emissions by 80-95% on 1990 levels by 2050 (European Council October 2009). Our emissions reductions must follow a pathway to this target that is cost-effective i.e. that avoids costly action and lock-in to high carbon technology and infrastructure by spreading effort across the period. The European Commission's Low Carbon Roadmap sets out such a cost-effective pathway for domestic EU emissions reductions; this passes through a milestone for 2030 of reductions of 40% on 1990 levels. The UK has supported the milestones in the Low Carbon Roadmap and believes that it is crucial to stay on such a trajectory and so **the EU should adopt a unilateral EU wide greenhouse gas emissions reduction target of 40% for 2030.**

We believe that this:

- balances the need to avoid overly expensive action now with the need to avoid overly expensive future action to bring emissions back towards our ultimate goal;

- delivers a strong message to EU investors giving them the long-term certainty necessary for them to make the investments needed to minimise the long-term costs of decarbonisation; and

- helps keep the EU at the frontier of global action and able to take the lead in the technologies and industries of the future global low carbon economy.

However, 40% represents only the cost-effective trajectory for domestic action to reach the EU's 2050 objective of an 80-95% reduction. The UK believes that the **EU should make an offer to move to a target of up to 50% conditional on a comprehensive global agreement on climate change** whereby other developed countries commit themselves to comparable emissions reductions and developing countries contribute adequately**.** This represents a strong offer to our international partners and gives us the best chance of securing in 2015 an ambitious global climate deal which would help deliver the two degree target and avoid the dangerous effects of climate change.

Anything that the EU does to combat climate change and ensure secure energy supplies, must take account of the importance of affordable energy for the EU's global competitiveness. The EU must be able to compete with other developed and developing economies. In recent years we have seen the dramatic impact of Shale Gas on the US economy giving North America a substantial cost-advantage in fuel prices. Whilst this may or may not be repeated in the EU, it reinforces the fact that the EU must ensure that all of the EU's policies must be based on cost-

effectiveness, and maximising economic efficiency, as part of our wider jobs and growth agenda.

Cost-effective: maintaining global competiveness while cutting emissions

In support of an ambitious GHG target, the UK Government believes that a strengthened and reformed EU Emissions Trading System (ETS) will be a key instrument in a 2030 climate and energy framework. The ETS provides:

- an emissions cap for the power and industrial sectors giving high levels of certainty that emissions reductions will be made;
- a carbon price to provide an investment signal that applies across the EU and all sectors covered by the System; and
- through trading, a means to allow emissions reductions to be made wherever it is most cost-effective.

However, due to a combination of factors, including that the current emissions cap is too high compared with the emissions reductions we need to make, the ETS is not functioning effectively and the low carbon price (which has fallen by nearly 90% since 2008) means it provides little incentive for low carbon investment.

Therefore, the UK Government calls on the Commission urgently to present legislative proposals to deliver structural reform of the EU ETS, well before the end of the year. The UK favours an increase in the EU's 2020 GHG target to 30%, with the new target reflected through changes to the ETS cap and the Effort Share decision. In the absence of such an increase, the UK supports cancellation of an ambitious volume of EU allowances to reduce the surplus and help restore the balance between supply and demand. These changes should take effect as soon as possible and definitely before 2020.

The ETS cap must also be set to be consistent with the EU's trajectory to an 80%-95% emissions reduction by 2050 and with the UK goals of a 40% reduction in 2030 or up to 50% in the context of a global deal.

However, the EU ETS alone will not be sufficient to ensure we reduce emissions at least cost. The IEA[1] identifies the need for a carbon price to be flanked by additional targeted measures to unlock energy efficient potential where it is cost-effective to do so; and policy packages to drive scaled-up deployment of emerging technologies and thus lower costs. Many such measures will be best implemented at a Member State level, but in certain areas e.g. product standards, the EU has a key role to play.

[1] Energy Technologies Perspectives report, 2012

Finally, these measures must be underpinned by a well-functioning single market for energy. **The EU must continue to work towards completion of the single market**, as a means to integrate national energy markets and increase their efficiency. A well-functioning single market will help to integrate low carbon energy, improve energy security and reduce energy prices. It is vital for a competitive EU.

Flexible: responsive to future uncertainties and differences between Member States

A crucial element of cost-effectiveness is flexibility. The EU will need to continue to pursue a wide range of low carbon technologies and support energy efficiency in order to decarbonise in a way that is cost-effective and maintains security of supply and mitigates the risk of carbon leakage because:

- allowing a wide range of potential markets to develop maximises the opportunities to engage in growing markets and potentially introduces competition which can drive down prices;
- a diverse range of low carbon generation technologies benefits security of supply by reducing our dependency on any one fuel or technology and reducing our exposure to fossil fuel prices;
- there are still significant uncertainties as to which technologies will best meet our future needs – focusing on only some risks not developing others which may better meet our needs;
- as we begin to substantially decarbonise, physical limitations such as land area or sustainability issues may prevent reliance on only one type of technology; and
- climate change policies can have a direct impact on industrial electricity prices which can create a risk of carbon leakage.

This is also a key part of EU global leadership – we must play our part in developing technologies, such as CCS, which will be critical to global decarbonisation, even if individual Member States choose not to incorporate them into their energy mix. Any EU framework must therefore be flexible enough to enable the full breadth of technology options to be pursued. We must also learn the lessons from the 2020 framework and recognise that different circumstances in different Member States means that they will need to pursue different technologies, in different proportions and at different times. The world in 2013 is a different place from that of 2007 and the EU is not at the end of a decade long economic boom. We can no longer do anything that costs more than is absolutely necessary; to do so will risk the consent of Europe's citizens for action on climate change and will limit the ability of Member States to take the necessary actions. And we cannot undertake policies that will risk the global competitiveness of the EU. Member States must have the ability to make the judgements for themselves as to the best way to meet their emissions reduction commitments.

This essential need for flexibility means that, while being fully supportive of renewable energy and the role it plays as part of a diverse energy mix, **the 2030 framework should not include a renewable energy target.** Such a target would constrain the full breadth of technology options from being pursued and it would not allow Member States to choose the best and most cost effective way to meet their emission reduction commitments. Further, it could risk unnecessary subsidies, be inconsistent with the development of a mature, sustainable and competitive low carbon energy market and interact in a complex and unhelpful manner with other measures, notably the EU ETS, increasing energy costs unnecessarily at a time when household and business budgets are squeezed. And flexibility must be paramount in all areas, for example the EU should not prejudge the balance between energy efficiency and other low-carbon measures.

If we are to maximise the benefits of a flexible approach, developing a diverse range of technologies and allowing Member States to choose their own approaches, then there is a vital role for the EU in helping to coordinate these actions – maximising synergies and reducing unhelpful interactions. In particular **to continue with key enabling actions:**

- **Support for R&D:** we see a vital role for EU level research and innovation activities - this must focus on cost reduction for new low carbon technologies, focusing on whole energy systems as well as individual technologies and be flexible to adapt to new opportunities or priorities. We welcome the Commission's Communication on Energy Technologies and Innovation;

- **Product standards**: setting energy performance standards, in particular for goods for which there is a free market across the EU, is a valuable way of providing investors certainty while allowing a technology neutral approach to meeting the standard;

- **Coordination of MS measures***:* Member States must be able to introduce measures which enable cost-effective emissions reductions and ensuring security of supply; however there is a role for the EU in ensuring effective coordination of these measures.

- **Effective state aid rules** which enable Member States to provide support for all low carbon energy in order to meet emissions targets, ensure security of supply and preserve the competitiveness of European energy intensive industries during the transition to a low carbon economy.

If the EU is to meet the challenge of climate change then we must act with ambition, putting ourselves at the forefront of international efforts, but also with efficiency - protecting our global competitiveness, ensuring all our efforts are cost effective and allowing Member States to make the most appropriate decisions for themselves.

1. GENERAL

Lessons learned from the 2020 framework and the current energy system

Greenhouse Gas Targets

1.1. The UK considers that a key success of the 2020 framework was the agreement of a single, binding EU-wide greenhouse gas (GHG) target. This has played an important role in driving emissions reductions – both directly in the EU, where by 2011 emissions were already down 18.4% on 1990 levels [Reference: European Environment Agency], and also globally where EU leadership has enabled other countries to come forward with commitments and actions to tackle climate change. Countries accounting for over 80% of global emissions have now made mitigation pledges under the UNFCCC framework; and climate change legislation is being implemented in at least 18 of the world's largest emitters [Source: GLOBE].

1.2. The 2020 framework has also helped the EU to become a global leader in the growing world market for low carbon goods and services - worth £3.3 trillion In 2010/11. This translates into investment and jobs in Member States: latest figures show that around 940,000 people were employed in green business[2].

1.3. But we must also learn the lessons from the 2008 package as we consider our objectives for 2030. First, the 20% GHG target for 2020 was not sufficiently ambitious: it fell short of the level of ambition demanded by climate science (the IPCC's 4th Assessment Report recommended that developed countries should reduce emissions by 25-40% by 2020). The European Commission's 2050 Low Carbon Roadmap shows that the current target is also not on the cost effective trajectory to the EU's own objective of cutting emissions by 80-95% by 2050; risking higher overall costs in the long-term. The lack of ambition in the current 2020 target has also contributed to a depressed carbon price in the EU Emissions Trading System, which is failing to incentivise low carbon investment and so risks lock-in to inefficient high carbon technologies and infrastructure, resulting in higher overall costs of meeting climate change targets. This is why the UK remains committed to an increase in the EU climate target for 2020 to 30% and is pushing strongly for urgent structural reform of the EU ETS.

[2] UK Department of Business, Innovation and Skills, Low Carbon Environmental Goods and Services report for 2010/11, April 2012

Renewable Energy Targets

1.4. The UK strongly believes that renewable energy is a crucial part of decarbonising our economy. As we set out in section 2.6, pursuing a range of technologies is crucial to reducing emissions in a cost effective and energy secure way. As such, the UK is committed to increasing renewables in its energy mix. For electricity, we are tripling the support available for low carbon technologies, particularly renewables, to reach about €9bn per year by 2020. Similar efforts are being made in heat and transport, as a result of which we expect the proportion of UK total energy provided by renewables to increase tenfold between 2005 and 2020.

1.5. The EU's 2020 renewables target was set in 2007, a time when limited progress on increasing renewables levels had been made; supply chains were still in an early stage of development and most renewable technologies were technologically immature. However, these circumstances have changed significantly. Now, all Member States have a climate change policy framework, including measures to support renewables; markets are more developed and deployment levels are much higher; and the costs of some renewable technologies are declining. For example, it is likely that solar PV will be viable without subsidy in the next decade and onshore and offshore wind are becoming cheaper. Given these significant changes, there is no reason to assume that we should continue with the existing framework for renewables.

1.6. Furthermore, the renewable energy target has had a number of significant undesirable impacts:

- The level of renewables deployment required to meet the target has been higher than that consistent with a cost-effective decarbonisation pathway. In part, this stems from the decision to burden-share the target on the basis of GDP rather than on what would be cost-effective[3]. The costs of saving each tonne of CO2 under the UK's Renewable Obligation scheme in 2011-12 was £96.61[4]. Similarly the cost of saving each tonne of CO2 under the UK's Renewable Transport Fuels Obligation (RTFO) currently range from the low hundreds £/tCO2 for crop bioethanol and waste-derived biodiesel to thousands £/tCO2 for crop biodiesel when full lifecycle GHG emissions (including indirect land use change) are taken into account.
- Our commitment to meeting the target and so to deploying renewables earlier than other technologies has had distortionary effects. For example, we have made a disproportionate effort in the heat sector. On a cost-effective decarbonisation pathway, the UK heat sector would decarbonise later than much of the EU because of the existing gas central heating network.
- The UK's vision is of an electricity market of low carbon technologies competing on price, in a technology neutral way. We see this as a vital element of a long-term and sustainable

[3] http://ec.europa.eu/clima/policies/package/docs/sec_2008_85_ia_en.pdf
[4] Ofgem, Renewables Obligation Annual Report 2011-12

low carbon energy system. The target has limited our ability to work towards this goal by directing effort towards certain low carbon technologies rather than others.

- The drive for renewable energy, spurred by the target, has arguably undermined other innovation efforts not least those to commercialise CCS, which the IEA ETP spells out as crucial to global decarbonisation. We have also focused more on renewable transport fuels than electric vehicles.

1.7. The significant changes in Member States' energy and climate policies and in renewable technologies' development since 2007, coupled with the considerable negative impacts resulting from the target, make it imperative that we learn from this experience and avoid repeating the same mistakes for 2030.

Energy Efficiency

1.8. In November 2012, the UK published its Energy Efficiency Strategy. This set out our key energy efficiency policies for the next couple of decades, building on the progress already made. The UK has already made reductions in energy intensity and is now one of the least energy intensive economies in the developed world. Over the last 10 years UK energy intensity has fallen by 27%, compared with 16% in Japan and United States.

1.9. We have seen that energy efficiency belongs at the heart of a low-carbon economy. It has a key role to play in reducing our energy use and cutting down on waste, reducing energy bills at a time of rising prices' making the energy system more sustainable; and driving down greenhouse gas emissions in a cost-effective way. It can also improve energy security, making the economies of Europe more resilient to external energy price shocks. Long term investment in energy efficiency technologies can drive economic growth, creating a virtuous circle as innovation leads to cost reductions which can make it cheaper and easier to invest in energy efficiency in the future. However, this does not mean that a mandatory energy efficiency target should be incorporated into the 2030 package.

1.10. The UK is committed to implementing the recently agreed Energy Efficiency Directive. The Directive represents an important step forward by the EU and it has a significant role to play in achieving the EU's non-binding target to reduce primary energy consumption by 20% by 2020, against business as usual projections. The UK is committed to meeting its target of reducing final energy consumption by 18% by 2020 (equivalent to reducing primary energy consumption by 20%) relative to the UK's 2007 business as usual projection.

1.11. All EU Member States but two had set indicative targets by 30 April 2013; the Commission's recently published assessment[5] of progress towards the 2020 targets noted

[5] http://ec.europa.eu/europe2020/pdf/themes/16_energy_and_ghg.pdf

that “appreciation of the importance of energy efficiency is growing and with it the commitment to action”. The preliminary conclusion drawn was that “Member States are collectively working towards a level of ambition that is close to, if not compatible with, the overall EU target for 2020”. The report notes that there are now a number of good examples of energy efficiency policies in place across the whole EU. The current situation shows that this approach of non-binding targets can yield substantial progress.

Interactions between targets

1.12. The three 2020 targets have had complex interactions. Both the renewables and energy efficiency target deliver emissions reductions, but unlike the GHG target specify a particular way in which this must be done. While a cost effective approach will inevitably include action on renewables and energy efficiency, it has not been possible to set additional targets for these that match the least cost approach to decarbonisation of each Member State and that are robust as circumstances change. This has the potential to lead to perverse outcomes, especially when economic conditions are significantly differently than expected.

1.13. As such, there continues to be a risk of unpredictable and unhelpful interaction between the targets in the face of future surprises, for example to the economy, technology costs, or other barriers to deployment. The global recession has highlighted just how important this is. For example, the fixed absolute energy efficiency target is more easily met if growth is lower than anticipated. It has been nearly impossible to guard against all unexpected events and unintended consequences. Further interactions occur between the targets and EU ETS, as discussed below.

EU Emissions Trading System

1.14. The EU ETS is experiencing a low allowance price (dropping by around 90% since 2008 to around €3) as the result of an oversupply of allowances, arising from a combination of factors, including the rules of the pre-2013 ETS Phases, weak ambition for 2020, interaction with targets that overlap with the system such as the Renewable Energy Target and heavily reduced emissions due to the dramatic drop in industrial production in the recession. Despite being on track to deliver the agreed environmental ambition, its credibility as an effective mechanism for driving industrial decarbonisation is now being called into question, as evidenced by responses to the European Commission’s recent consultation on options to strengthen the system. No market commentator is predicting a significant rise in price without structural reform.

1.15. The EU ETS is designed to deliver a fixed reduction in GHG emissions at least cost to the European economy. The cap imposes scarcity on carbon allowances, creating the carbon

price. This incentivises installations in the traded sector to make the most economically efficient choice – to reduce emissions through investment in abatement or to purchase allowances from the market where the carbon price indicates that other installations are able to reduce emissions at lower cost.

1.16. Targets and policies that act in the same space as the EU ETS have tended to reduce demand for allowances, thereby depressing the carbon price and potentially increasing the cost of abatement. Even where this interaction has been anticipated, it has proved very difficult to estimate the impact of other policies on the EU ETS allowance price accurately because there are so many different factors that influence it. While these measures do not deliver any additional reductions in emissions, they may still be justified by the need to bring down the costs of technologies needed for future decarbonisation, in order to reduce overall costs to 2050 or to meet wider objectives, such as improving energy efficiency. The lesson to learn here for the 2030 framework is the need to design measures in a holistic way and for the impact of overlapping measures to be fully factored into the level of the cap.

Performance Standards

1.17. EU-wide performance standards have been successful in helping Member States to achieve their domestic emission reduction targets. Rather than mandating particular technology solutions, they have set clear overarching policy goals, provided a clear signal to investors, and allowed the market to identify the most cost-effective solutions.

1.18. EU-wide emissions performance standards for new passenger cars and light commercial vehicles are already driving down emissions from the transport sector (transport makes up 25% of emissions in the EU and 22% in the UK, of which 93% come from road transport). Binding standards have ensured vehicle manufacturers have increased efforts to enhance efficiency, encouraging original research and development of innovative technologies to reduce emissions across all vehicle types and build the market for low carbon transport.

1.19. The UK backs the Commission's plan to work with stakeholders to establish views on a post-2020 framework for transport, and looks forward to engaging with the Commission on this issue.

1.20. Measures such as product labelling and standards have had significant success to-date and played a key role in enhancing energy efficiency. For example, EU labelling policy has already played a substantial role in securing above average energy savings from electrical appliances; and there still remains huge potential to reduce residential, commercial and industrial consumption through product standards and labelling. Given the high turnover of products/equipment, policies in this area have shown that they are capable of securing quick wins. In addition, the benefits of product labelling and standards have extended beyond emissions reductions to economic efficiency by improving consumer information in the single market. By 2020, Ecodesign and Labelling measures already agreed will provide annual

benefits to the UK economy of around £1bn and save 5 million tonnes of greenhouse gas; the next tranche of measures will generate around a further £0.5bn / 6 million tonnes of savings [REF][6].

[6] http://www.legislation.gov.uk/ukia?title=EuP

2. TARGETS

Objectives

2.1. Before considering specific targets and measures, it is helpful to consider the objectives and rationale for the EU's post-2020 energy and climate framework. Any targets agreed as part of a 2030 framework should be designed to drive the EU's decarbonisation objectives while also respecting the other main objectives of energy policy, in particular security of supply, EU competitiveness and affordability. As already stated, the EU's overall goal should be to help to reach our agreed decarbonisation targets for 2050 and limit global temperature rises to 2°C. The focus of a 2030 framework, particularly in the current economic circumstances, should as such be on ensuring that the EU takes an economically efficient decarbonisation pathway towards 2050 (recognising the need to manage the uncertainties that exist around this), while continuing to grow its economy and to maintain secure and affordable energy supplies for its households and businesses.

2.2. Potential targets should be judged by their likely effectiveness in supporting the goals of EU energy and climate policy. There must be consideration of the interactions between targets and the potential consequences. It is also essential that consequences for Member State competency of any framework are taken into account, particularly over issues such as energy mix and the ability to maintain security of supply.

Greenhouse Gas Targets

2.3. The level of a 2030 GHG target must ensure that the EU is able to cut emissions to a level consistent with the internationally agreed goal of limiting global warming to below 2 degrees Celsius and ensure a cost effective transition to a low carbon economy by 2050. The European Commission's 2050 Low Carbon Roadmap identifies a domestic EU emissions reduction milestone for 2030 of –40% on 1990 levels. The UK has supported the milestones in the 2050 Low Carbon Roadmap. **The UK Supports a unilateral 40% EU target for 2030 and believes that the EU should make an offer to move to a target of up to 50% conditional on a comprehensive global agreement whereby other developed countries limit themselves to comparable emissions reductions and developing countries contribute adequately.**

2.4. Our assessment of the UN climate negotiation dynamics is that the level of the EU GHG target for 2030 will be an intrinsic part of securing this action from other major economies in the run up to the 2015 UN climate conference.

2.5. An important difference between the EU's approach at and following the 2011 Durban conference and the difficult 2009 Copenhagen negotiations is how we have now built important alliances with the most vulnerable, poorest countries as well as with other progressive countries across Latin America, Africa and Asia. This progressive alliance played a leading role in finally moving all key countries at the Durban meeting to commit to a legally binding agreement post-2020, to be finalised by 2015.

2.6. The EU's track record on climate mitigation is the main basis for this alliance. Our 2030 target will be the focal point of negotiations running up to the 2015 climate conference. An EU 50% 2030 GHG offer in the context of a global deal will ensure this alliance remains intact and maximise our collective abilities to compel other big emitters into an ambitious deal. Conversely, the EU being perceived to lower its ambition would release diplomatic pressure built up on the major economies. This would be a major missed opportunity just one year before from the 2015 conference, particularly at a time when the majority of countries are supporting a global deal and where leaders in both the US and China have demonstrated a renewed willingness to focus on climate change.

Renewable Energy Targets

2.7. The essential need for flexibility means that, while being fully supportive of renewable energy and the role it plays as part of a diverse energy mix, the 2030 framework should not include a renewable energy target.

2.8. The EU will need to continue pursue a wide range of low carbon technologies in order to fully decarbonise in a way that is cost-effective and maintains security of supply because:

- It is hard to pick now which technologies will be winners; by allowing a wide range of potential markets to develop we can maximise the chance of the EU playing a leading role in the technologies of the future so maximising the benefits to growth. Furthermore, allowing a range of technologies can introduce competition which can in turn drive down prices;
- diversifying our energy system can reduce our dependency on any one fuel or technology and help to insulate our energy supply from global events and volatility in fuel prices;
- there are still significant uncertainties as to which technologies will best meet our future needs. Therefore we should not limit our options now. We should not focus on energy supply above energy reduction or storage, biofuels over electric vehicles or renewable electricity to the exclusion of CCS as we currently do under the renewables target.
- as we begin to substantially decarbonise, physical limitations such as land area or sustainability issues may prevent reliance on only one type of technology. For example, the currently framework requires significant levels of biofuel use despite increasing concerns that many biofuels do not save significant amounts of GHG relative to fossil fuels and that some many even emit more GHG emissions than fossil fuels. There are

also concerns over the food price impacts of crop-based biofuel. A flexible, diverse approach mitigates such risks.

2.9. This is also a key part of EU global leadership – we must play our part in developing technologies, such as CCS, which will be critical to global decarbonisation (both for the power sector and later to decarbonise some industrial processes), even if individual Member States choose not to incorporate them into their energy mix. The IEA's WEO 2012 showed that without significant CCS deployment, more than two thirds of the world's proven fossil fuel reserves cannot be commercialised in a 2°C world before 2050. ETP 2012 showed that the IEA expect CCS to deliver over a fifth of CO2 reductions needed to move from a 4°C to a 2°C world.

2.10. Further, Member States must have the ability to make the judgements for themselves as to the best way to meet their emissions reduction commitments. We have seen that technology specific targets are extremely hard to set correctly at an EU level so they are consistent with what is cost-effective for each Member State, given the diverse nature of the EU. For example, the appropriate timing for deploying renewables will depend on the type of renewable technology a country is likely to employ. For instance, conditions in the UK mean that we are likely to make more progress from opportunities like offshore wind than converting district heat networks. It is very difficult to set a general, prescriptive target in a way that reflects these nuances, and which accurately incorporates potential supply and costs. We need to look more carefully at how to sequence and time the deployment of renewables in each sector – and how each country's cost effective decarbonisation pathways shape this. The pace, order and extent of deployment will be different between countries; by removing the flexibility to reflect this, a renewable energy target threatens to needlessly increase cost.

2.11. Flexibility is also essential to respond to technological change. For example, there remains uncertainty as to the levels of intermittent generation that can be accommodated and the degree to which technologies such as CCS will develop. Failure to respond to developments will expose energy bill and tax payers to an unquantifiable (but large) future liability. Furthermore, if a future target seems potentially untenable it will not give investors the certainty they need.

2.12. Some renewable technologies will be cost-competitive with fossil fuel alternatives well before 2030, although others will be much further up their commercialisation curve. For example, the IEA's "Tracking Clean Energy progress 2013" shows that in 2012, onshore wind investment costs had already met the IEAs 2020 target range for the 2 °C scenario, and solar PV costs were falling rapidly towards their goal. Other technologies, such as CSP remain more expensive, and will be in 2020 even under the IEA's 2°C scenario target range. This means that post 2020 will be a very different world to the situation when the 2020 renewable energy target was agreed. A renewable energy target for 2020-2030 will include relatively mature technologies that are capable of deployment without public support. This can distort the energy market and risks Member States over-rewarding technologies that can already

compete on cost leading to windfall profits and deadweight losses while potentially neglecting those technologies that are still emerging.

2.13. Furthermore, we do not see emissions reductions or security of supply as valid arguments for a renewable energy target. A GHG target is essential and a renewable target will not provide additional emissions reductions but may instead just shift emissions from one sector to another, potentially making overall emissions reductions across the EU more expensive. While renewable energy may improve security of supply through greater diversification and reduced import dependency, this is also not a valid reason for such a wide-sweeping and unfocused measure to address something which is predominantly a Member State issue.

2.14. There are a number of important areas in which EU-level action may help to enable increased levels of renewables, but these would be better addressed through targeted interventions than an unfocused target. As deployment increases across the EU, we are identifying new issues deserving of attention. For example, enabling effective integration of energy systems into a single energy market; meeting the balancing challenges associated with increasing levels of intermittent electricity, and from changes in patterns of demand in other sectors like transport; coherence of support schemes; addressing supply chain constraints; and the sustainability of bio-energy (including indirect land use change). It is important that, where relevant, the EU seeks to address these issues through specific targeted interventions. The measures identified in the Recent EU Communication should help address these issues, and we hope that these will be in place well before 2020, negating the need to do more in this respect post-2020. The achievement of further cost reductions is not universally reliant on achieving further deployment as incentivised through a renewable energy target.

2.15. There is a need to give investors certainty beyond 2020 and more still needs to be done to bring costs down and support developing technologies. We feel these can best be done in a number of ways:

- Investor certainty: in the UK Contracts for Difference will provide individual power sector investors with high levels of long-term certainty and we plan to have the option to introduce a decarbonisation target for the power sector for 2030 if additional certainty is needed. In the heat and transport sectors product standards provide high levels of certainty for investors.
- Reducing costs: beyond 2020 Member States are still likely to need to provide some support to deployment of technologies such as renewables and CCS to bring about further cost reductions. Member States should focus on those that best suit their individual characteristics. Some co-ordination between Member States in how they support and deploy technologies may be helpful (but this does not require a binding target). In addition, Member States should work collaboratively with industry on the specifics of planning, regulation, finance, the supply chain, and technology development– an approach pioneered with the UK's offshore wind taskforce. It is not clear that a binding RES target will result in further technology cost reductions. The technologies delivering the majority of generation have been commercialised for some time and are now being deployed at scale.

- Supporting developing technologies: some low carbon technologies (including some renewables technologies will need on-going EU level action in this area. Specific instruments are discussed further below.

Energy Efficiency Targets

2.16. As discussed in paragraph 1.9, energy efficiency is a key part of the energy puzzle. We need to ensure that the framework put in place for 2030 is flexible enough to account for the different drivers and opportunities that exist across Member States for carbon abatement, including energy efficiency.

2.17. The current indicative 2020 target allows Member States the flexibility to implement their own policies and decarbonise in the most cost-effective way, and this flexibility will remain crucial as we look towards 2030. The EU framework for energy efficiency policy has only just been updated through the Directive. The Commission should maintain an active role in monitoring progress and the UK notes the requirement for the Commission to review progress towards the 2020 energy saving target in 2014. This review must inform any decisions which are made in the future on this issue.

2.18. Targets must not remove Member States' flexibility to determine how to achieve GHG emissions reductions most cost-effectively, balancing both reductions in energy use and decarbonisation of energy supply. This balance will be different for each Member State, and may change over time, as the costs of different interventions and technologies change. We believe that a 2030 mandatory energy efficiency target could risk pre-judging the cost effective pathway to 2030, restricting Member States flexibility to decarbonise at the least cost.

2.19. We also need to ensure that targets do not cut across other EU instruments– such as ensuring alignment with the overall GHG target in order not to undermine the ETS. And this is why the UK is pushing for an ambitious binding GHG target and reform of the EU ETS as part of the 2030 climate and energy package.

2.20. As we look towards 2030, the Commission should explore with Member States the opportunities to build on already successful measures. The UK notes the Commission's intention to review the directives on eco-design and energy labelling before the end of 2014. Already, the existing Eco-design Directive has driven significant progress, banning the least efficient products from the market, where cost effective; whilst the Energy Labelling Directive is providing consumers with the information they need to make informed decisions. Similarly, EU-wide standards for passenger cars and light commercial vehicles are driving down emissions and stimulating the research and innovation needed to build a market for low carbon transport. The UK calls on the Commission to continue to press for ambitious action on standards, where we have seen real progress to-date; whilst ensuring that other energy efficiency measures strike a balance between incentivising the action that is needed, without

reducing Member States flexibility to implement measures where they are most cost effective.

3. INSTRUMENTS

3.1. It is essential that we meet our emissions reduction targets at the least cost, while taking into account wider considerations including security of supply, affordability and competitiveness. These considerations should underpin the rationale and design of additional instruments. A strengthened and reformed **EU Emissions Trading System (ETS)** will be a key instrument in a 2030 climate and energy framework. However, the ETS alone will not be sufficient to ensure we reduce emissions at least cost. The IEA[7] identifies the need for a carbon price to be flanked by additional targeted measures to unlock energy efficient potential where it is cost-effective to do so; and policy packages to drive scaled-up deployment of emerging technologies and thus lower costs. Many such measures will be best implemented as **national measures.** These will need to be underpinned by a well-functioning **single market for energy** and there will often be an essential role for the EU to **coordinate these actions, including through effective state aid.** Areas in which measures at an EU level have benefits over action solely at a Member State level include **research and innovation** and **product standards.**

EU Emissions Trading System

3.2. The UK Government believes that the ETS must remain a key policy tool for delivering emission reductions in Europe to 2030 and a cornerstone of the EU's climate and energy policy. A sufficiently strong EU ETS and higher carbon price is needed to ensure that we deliver the least cost trajectory to the EU's 2050 targets and prevent loss of confidence in carbon markets. Failure of the ETS would require replacement with a more costly and burdensome regulatory approach, or a patchwork of national level measures.

3.3. In order to ensure that the ETS can deliver its goals of cutting emissions in the most cost effective way and of driving investment in low carbon technology, it must be reformed as soon as possible. The UK Government therefore calls on the Commission urgently to present legislative proposals to deliver structural reform of the EU ETS. The UK favours an increase in the EU's 2020 GHG target to 30%, with the new target reflected through changes to the ETS cap and the Effort Share decision. In the absence of such an increase, the UK supports cancellation of an ambitious volume of EU allowances to reduce the surplus and help restore the balance between supply and demand. These changes should take effect as soon as possible and definitely before 2020.

[7] IEA Energy Technology Perspectives report, 2012

3.4. The EU ETS cap must also be set on a trajectory to achieve 40% EU emissions reduction by 2030 or up to 50% in the context of a global climate deal and put the EU on track to meet its objective of an 80%-95% reduction by 2050.

3.5. Carbon pricing is an inherently flexible mechanism that adapts to changes in supply and demand, i.e. changes in other markets that make meeting the EU ETS cap easier or more challenging. This flexibility allows price discovery in the EU ETS, maximising economic efficiency of the instrument. However, it can be argued that the lack of certainty reduces the incentive for low-carbon investment needed for cost-effective decarbonisation in the long term. In the UK, the Carbon Floor Price and Contracts for Difference will provide long-term certainty to electricity generators. Discussion of structural reform of the EU ETS will provide an opportunity to consider whether it might be desirable to introduce EU level measures that increase certainty for investment, while preserving the flexibility and economic efficiency of the EU ETS.

3.6. In establishing the interaction between EU targets and the international carbon market, the Commission and Member States will need to take into account the interests of both the EU and global mitigation and finance through the carbon market. This means ensuring that the EU decarbonises itself effectively. It also means identifying opportunities to link carbon markets, as the EU is seeking to do with Switzerland and Australia. In this context, it is notable that many developing countries are preparing plans for domestic carbon markets, for example through the Partnership for Market Readiness. For developing countries, it is important that the EU framework takes into account the need for a reliable source of climate finance and incentivises low carbon development

National Instruments

3.7. As discussed in the introduction, in addition to an EU-wide GHG target and a strong and credible ETS, additional national measures will be essential to ensure that countries can continue to take a cost-effective approach to GHG savings and to ensure security of supply while doing so. The EU 2030 framework must take this into account. Both the EU and the UK must ensure that we are working to ensure that we are creating the right environment to make us a leading destination for investment in new low-carbon energy infrastructure and ensure we maintain our strong share in the global market for low carbon goods and services. At the EU level the work under the State Aid modernisation agenda to improve and speed up state aid approval processes and to the revise EU state aid rules should support this.

3.8. The UK's Electricity Market Reforms are aimed at ensuring a 2030 energy system that is secure, low carbon and affordable. Around a fifth of Great Britain's 2011 capacity is expected to close by the end of the decade as a result of the requirements of environmental directives. The UK's is legislating to create two key mechanisms within Electricity Market Reform– Contracts for Difference (CfDs) and the Capacity Market.

3.9. CfDs will bring on investment in low carbon generation – including nuclear, renewables and Carbon Capture & Storage – by giving greater certainty and stability of revenues by removing exposure to volatile wholesale prices, and protect consumers from paying for support when electricity prices are high. This should make the development of low carbon generation cheaper for both investors and consumers relative to the current Renewables Obligation (RO). These national measures underpin a GHG target and ETS by acting as a backstop in providing continued certainty to investors in low carbon generation when the EU carbon price is low; increases in the carbon price will reduce the fiscal impacts of CfDs. CfDs will not be necessary when the carbon price is sufficiently high.

3.10. A combination of market failures and an increase in low carbon capacity with low running costs makes the investment case for the new reliable gas capacity needed very difficult. That is why, alongside CfDs, the UK is legislating for a Capacity Market to ensure UK consumers continue to benefit from secure electricity supplies as the UK energy system is decarbonised.

3.11. The responsibility for ensuring national security of supply rests with Member States. The UK considered numerous potential solutions to the problem of ensuring adequate security of supply, including improvements to the existing market and all types of capacity mechanism. The Capacity Market was chosen because it puts in place an efficient, competitive framework for delivery of sufficient capacity.

3.12. The Capacity Market will ensure that there is sufficient reliable capacity to meet peak demand while the UK decarbonises its energy system to achieve its environmental objectives. Generation and non-generation capacity, such as demand side response, will be able to participate in the capacity auction; and all generation plant – including existing plant – will be eligible to participate with some exceptions (e.g. low carbon plant receiving the CfD).

3.13. Despite work with experts including DG Energy, it has not been possible to find a way for interconnected capacity to participate in the GB Capacity Market. However, we are continuing to work closely with stakeholders to explore possible solutions that would enable this.

3.14. The UK Capacity Market has also been designed so that it will be possible to exit from the mechanism if the underlying electricity market develops sufficiently, particularly through development of greater market liquidity, an active demand side, and more interconnection. Work to improve the functioning of the electricity market, such as the rollout of smart meters; Ofgem's work on cash out reform; and work across the EU to complete the internal energy market, are all important complements to the Capacity Market. By supporting the development of the demand side, the Capacity Market itself will also contribute to the market developments that could render it unnecessary in the longer term.

Completion of the single market

3.15. The EU must continue to work towards completion of the single market, as a means to integrate national energy markets and increase their efficiency. A well-functioning single market will help to integrate low carbon energy, improve energy security and reduce energy prices. It is vital for a competitive EU.

3.16. The Commission's communication on the internal market[8] identified the issue of the interaction between the single market and national instruments such as the Capacity Market. The UK supports continued implementation of the Third Energy Package. The UK believes that badly designed capacity mechanisms can undermine the efficient functioning of the internal market. They should therefore be designed to support the development of the underlying electricity market, and Member States must bear in mind the potential need to exit from these mechanisms if in future they are no longer required.

3.17. We see benefit in the European Commission providing guidance on capacity mechanisms this summer. This guidance should reduce risks to the single market, but must recognise that Member States face different security of supply challenges, and that different solutions may be appropriate for different markets.

3.18. The UK recognises the need to minimise aid within the EU energy system, consistent with stimulating sufficient investment and for greater consistency between support schemes to ensure the integrity of the single market and prevent subsidy-shopping. However markets vary between Member States and attempting to apply a one-size-fits-all approach across the EU may be counterproductive. Support measures need to deliver cost efficiency to ensure delivery of and maintain energy security during the transition to a low carbon economy.

State Aid

3.19. Effective State Aid rules contribute to delivery of growth, investment and climate and energy policy objectives by ensuring a well-functioning Single Market, preventing subsidy races and enabling businesses to compete and grow on a level playing field. However state aid rules also need to provide flexibility for Member States to intervene quickly where aid is necessary to address real market failures and unlock key investments to deliver policy objectives. It is vital for both the UK and EU economies that we work to make the EU a leading destination for investment in new low-carbon energy infrastructure. The current State Aid modernisation programme should support this.

[8] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0663:FIN:EN:PDF

3.20. For all areas of the economy, but particularly in this policy area in light of rapidly developing and changing markets and policy, innovative new state aid measures may be necessary to bring forward vital investments and projects or to manage the impacts of environment and energy challenges. It is vital that state aid rules allow innovative measures to be implemented and that the approval process in such cases is swift and efficient whilst remaining effective.

3.21. The environmental aid rules need to be expanded to cover wider energy issues. In particular the rules need to acknowledge the need for Member States to provide support, where necessary, for all low carbon forms of energy generation, including nuclear, in order to meet EU GHG emissions targets. Nuclear faces many of the same market failures to those faced by other low carbon generation – notably, high upfront costs that may not be recovered in the future. The market does not offer long-term hedges for this risk; so state intervention is necessary. New nuclear in the UK is not currently cost competitive with gas; third generation nuclear reactors have some of the characteristics of a new technology and it will take time for a competitive market in nuclear generation technology to emerge.

3.22. Along with other Member States, the UK faces significant security of supply challenges in the coming years. A number of Member States, including the UK, are taking action to tackle this issue. It is important that any guidance the Commission develops to assess the suitability of national capacity mechanisms take into account wider EU objectives including likely post-2020 objectives as well as providing a check to ensure that any such interventions do not undermine the development of the single market, but do not prevent the UK and other member states taking sensible precautions to ensure security of supply.

3.23. State aid should also reflect the need for the EU to minimise the risk of carbon leakage and its impacts and to preserve the international competitiveness of energy intensive industries during the transition to a low-carbon economy.

Research and Innovation policies

3.24. The UK is a strong supporter of the Strategic Energy Technology (SET) Plan and of its three way focus on competitiveness, security of supply and sustainability. Energy is a uniquely strategic resource, influencing the EU's ability to deliver on a broad range of its programmes and policies, from industry through to health, transport and climate change commitments.

3.25. There is already a clear focus in SET Plan-related activities and work programmes, on the importance of cost reduction for new low carbon technologies. This is a key target, particularly in the current financial situation, but also to maximise long term growth and competitiveness in world markets generally, not just for energy. Strong and consistent attention should be given to developing an energy system approach rather than simply a

focus on individual technology development – both approaches are needed to achieve the maximum benefits from the development of these new technologies.

3.26. In addition, EU-level research and innovation activities should remain sufficiently flexible to adapt to new opportunities or priorities; the importance of risk sharing as a means of encouraging the necessary private sector match funding and strategic investment should be fully recognised. The UK supports a true partnership approach between the Commission and Member States to ensure that energy research and innovation activities, for example under Horizon 2020, are developed in close co-operation and consultation with Member States, to ensure the necessary alignment is secured with Member State National programmes and leverage effects maximised. This will require governance arrangements for Horizon 2020 to facilitate this.

3.27. Most of these points are covered in the Commission's Communication on Energy Technologies and Innovation, which the UK generally welcomes and supports.

3.28. The size of the investment challenge surrounding the timely research, development, demonstration and deployment of secure, sustainable and competitive energy technologies, means that we must look to innovative and complementary financing options between the public and private sectors. The UK fully supports this, including the extension of the Risk Sharing Finance Facility; the use of structural and cohesion funding to complement national funding and EU level funding under Horizon 2020; and the development of other financing models if they can be shown to offer clear, significant and cost effective benefits beyond what is available already.

3.29. The UK is against the hypothecation of auctioning revenues, though we recognise that this is an important source of finance for Member State action on climate change in some other Member States. Each individual Member States should have the flexibility to decide how to distribute the revenue from allowances.

Performance standards

3.30. We recognise that setting performance standards, in particular for goods for which there is a free market across the EU, is a valuable way of providing investors certainty while allowing a technology neutral approach to meeting the standard.

Transport standards

3.31. The EU level mechanism to constrain tailpipe emissions from cars and vans, the largest sources of road transport emissions, has been an effective way of driving action. We look forward to engaging further with the Commission in due course on developing a post-2020 framework. We see that this, combined with setting appropriately ambitious standards beyond 2020, will be an essential element of meeting a 2030 greenhouse gas target. Such

standards give investors a high degree of certainty while performance standards offer manufacturers technological flexibility as to how to meet targets.

Product standards

3.32. The UK supports action by the Commission to explore opportunities to increase EU-wide ambition on already successful measures such as product standards and labelling, where this does not restrict Member States flexibility to decarbonise cost-effectively.

3.33. The Eco-design Directive has proven successful in raising standards of energy using products and appliances, whilst the Energy Labelling Directive has improved information available to consumers, helping them to make informed product choices. Improvements in the sustainability, mainly energy efficiency of domestic, commercial and industrial energy-using products and appliances, are one of the most cost-effective means of reducing energy demand and CO2 emissions, as well as reducing the cost of energy bills.

3.34. An additional benefit of minimum standards, such as those on energy performance, is that they create a level playing field for manufacturers and importers operating in the EU market, helping to alleviate competitiveness concerns.

Heat

3.35. The supply and demand of heat is complex, and varies significantly across different Member States. It is therefore particularly important that sufficient flexibility is retained in this sector to allow Member States to move to a low carbon heat supply in a way that reflects their individual circumstances.

3.36. In considering the challenge of decarbonising heat it is important to recognise that, unlike electricity, different types of heat are required for different purposes. The heat requirement is highly dependent on the circumstances: where it is needed, what it is needed for, when it is needed and how hot it needs to be.

3.37. Moving to a low carbon heat supply will include finding more efficient ways of using fossil-fuel derived heat; this can be achieved through heat technology product standards, CHP (co-generation) and heat networks, for example (as covered by the Energy Efficiency Directive). It will also lead to an increase in renewable heat. It is important to note that industrial heat is an important heat sector, and heavy industry is already inside the EU ETS.

3.38. As such, there may be a case to extend and expand mechanisms such as the Energy Performance of Buildings Directive and the Energy-Related Products Directive in order to help accelerate progress in the deployment of low carbon heat supply in a way analogous to what has been achieved for vehicles, helping to provide a clear signal to investors of the direction of travel at European level.

3.39. However, in seeking opportunities to extend the ambition of existing policy measures, the Commission will need to work closely with Member States to ensure that measures strike a balance between incentivising action and the ability of Member States to retain the flexibility

to decarbonise cost effectively. This is important as further rigid prescription in some areas, for example on building standards, may not be cost-effective for Member States, given the varying climatic zones and nature of the housing stock across the EU.

4. COMPETITIVENESS AND SECURITY OF SUPPLY

International competitiveness

4.1. The EU is competing globally in the production of goods and services. The decisions taken on adopting a framework for our 2030 ambition will have substantial implications for our economies – around the costs of meeting our target, but also implications for growth and competitiveness. It is important to be ambitious on tackling climate change, but especially in the current economic climate, we need to ensure that the EU approach we agree allows all Member States, and hence their businesses and citizens, the flexibility to follow their most cost effective and economically efficient approach to reducing emissions.

4.2. Moreover, the EU is competing in a global race in the international low carbon goods and services sector. Competition from other developed countries and in particular the emerging economies is strong, in part driven from the commitments and actions to 2020 already pledged to reduce emissions under the UNFCCC framework.

4.3. An ambitious international deal on climate change will be important in both helping to expand this global market for low carbon industries, but also for addressing any adverse competiveness issues between the EU and external countries that might exist for more carbon intensive industries (assuming that under such a deal other countries commit themselves to comparable action).

Carbon leakage

4.4. Energy-intensive industries are crucial to the UK and EU's economic growth and rebalancing the economy. They also manufacture the goods needed to move to a low carbon economy. The UK Government has made very clear that decarbonisation does not mean deindustrialisation and that measures must be in place to protect European energy intensive industry against losing competitiveness from climate policies and to minimise the risk of carbon leakage which would result in increased global emissions.

4.5. The best way to address carbon leakage would be an ambitious international climate agreement. This would create a level playing field for industry inside and outside the EU. Agreeing an ambitious EU 2030 GHG target to be set in the context of a global deal will

increase the likelihood of other countries raising their ambition and achieving that deal in 2015.

4.6. In the context of the EU ETS, smarter support for Energy intensive industry and protection against carbon leakage must be part of the wider debate about structural reform, and industry must be part of the conversation.

4.7. To mitigate the risk of carbon leakage, the EU ETS Directive currently favours the free allocation of allowances. We support this in the absence of an international climate agreement. We believe the proportionate free allocation of allowances gives relief to sectors at significant risk of direct carbon leakage, without raising barriers to international trade. The current system of free allocation under the EU ETS is under review by 2014 as stipulated in the Carbon Leakage legislation. Whilst we recognise the complexity of this area, the carbon leakage assessment should be based on a robust system that recognises the latest available evidence.

4.8. The UK is undertaking a study with Vivid Economics to examine the evidence for carbon leakage due to the direct impact of the EU ETS to date and explore options for addressing the risk in future. This study will be completed in the autumn[9]. The UK Committee on Climate Change's (CCC) recently published report on carbon leakage[10] concluded that the fall in UK production emissions has not been due to significant carbon leakage.

4.9. Climate change policies can also have an indirect impact on industrial electricity prices. A decrease in the competitiveness of energy intensive industries due to increased electricity prices as a result of these policies risks causing global GHG emissions to increase. This risk of carbon leakage and the economic value of internationally competitive energy intensive industries to EU prosperity and economic growth, justifies the need for appropriate measures to mitigate the indirect cost impact of climate change policies on electro-intensive industries.

4.10. The UK Government intends to compensate energy intensive industries for the indirect emission cost due to the EU ETS, in accordance with the Commission's state aid guidelines. The state aid rules should address the risk of carbon leakage and enable the competitiveness of European energy intensive industries to be maintained during the transition to a low-carbon economy.

[9] Existing evidence suggests that the risk of carbon leakage is likely to be limited to a small number of sectors. See: Climate Strategies (UK) Reports (2007 – 2009) on: Tackling Leakage in a world of unequal carbon prices
Hourcade et al (2007) Differentiation and Dynamics of EU ETS Industrial Competitiveness Impacts, Climate Strategies.
Öko-Institut (Germany), Fraunhofer ISI, DIW (September 2008) Impacts of the EU Emissions Trading Scheme on the industrial competitiveness in Germany

[10] http://www.theccc.org.uk/publication/carbon-footprint-and-competitiveness

Energy efficiency

4.11. Energy efficiency will have a key role in enhancing the EU's energy security, by lowering the exposure of EU energy markets to international energy market price rises and volatility. The UK is pushing ahead with proposals for electricity demand reduction, which will have a key role to play in managing energy systems. The assessment of generation adequacy at regional and member state level could be helpful measure progress being made in Europe to ensure secure electricity supplies.

4.12. As noted above, the Commission should explore opportunities to increase EU ambition on those measures which are already proving successful, such as EU standards across transport and products; working with Member States to ensure energy efficiency measures strike a balance between incentivising action where it is needed and the ability of Member States to retain the flexibility to decarbonise cost effectively, as noted above.

Other measures

4.13. The UK supports completion of the single market, which by increasing the integration of national energy markets and making them work more efficiently should reduce energy prices and increase competitiveness. The development of indigenous resources could also contribute to Europe's growth and competitiveness, as well as helping protect security of supply.

Carbon Capture and Storage

4.14. CCS has a critical role to play in reducing emissions and allowing coal, and gas, to continue to participate in the future low carbon energy mix. To this end the UK wants to see CCS deployed at scale from 2020, and competing on cost with other low carbon technologies. The UK government response to the Commission's Communication on the Future of Carbon Capture and Storage in Europe sets out UK views on how the EU can best encourage the development of CCS.

4.15. UK industry is signalling that sharing infrastructure and clustering are crucial to reducing the costs of CCS, and this might be an area where EU infrastructure funding could be used. We agree this should be considered. We also support continued investment in research, including at European level. The UK also supports a review of the CCS Directive when it is up for renegotiation in 2015, to ensure that it strikes the right balance between risk and reward for storage operators.

Shale

4.16. Exploitation of unconventional hydrocarbon resources may provide important benefits, notably to security of supply, and the EU should not develop a position which prevents

Member States which choose to exploit them from doing so. New industries should of course develop on a basis of high levels of protection for the environment, but there may be a need to adjust current EU requirements to suit the specific character of new industries. The UK supports the Commission's work on an assessment framework for unconventional hydrocarbons.

Research and Innovation

4.17. There is a need to ensure that research, development, demonstration and then deployment of storage and demand side response (smart meters etc.) technologies are supported to address the security of supply and balancing risks inherent in intermittent and inflexible low carbon power. This will allow low carbon generation s to play its full role in the UK and other Member States' energy mix. It is therefore important that support continues through Horizon 2020 and the SET Plan, as envisaged by the recent Commission Communication on Energy Technologies and Innovation.

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13D/171