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Introduction

Thank you for inviting me to speak to you this evening and for giving me the opportunity to participate in this debate.

How much we are prepared to pay to meet carbon reduction targets is an important question to discuss.

I am going to talk to you about how we in DECC are rising to this challenge:

1. The national decarbonisation challenge;
2. Reform of the UK electricity market;
3. Low carbon innovation is a huge opportunity for the UK – both for cost reduction, and for greening our planet as well as for helping us to compete in the global race for jobs and growth;
4. Several challenges still remain to capitalise on innovation, and
5. Collaboration between Government and innovators is essential.

1. The decarbonisation challenges

We have ambitious climate and renewable targets in place to build a cleaner and cheaper energy future for Britain and the world: Our Carbon Plan suggests that to meet these carbon target's around 60 to 80 Gigawatts of new electricity generating capacity will need to be built by 2030, and that around 40 to 70 Giga Watts of this will need to come from low carbon technologies.

As you know, the government has embarked upon one of the most radical overhauls of the UK's energy infrastructure and markets since privatisation in the 1980s.

We are taking powers through the Energy Bill to implement Electricity Market Reform (EMR), a package of measures to incentivise the investment needed to replace our ageing electricity infrastructure with a more diverse and low-carbon energy mix as the lowest possible cost to the consumer.

The estimated level of required investment between now and the end of the decade is between 100 and £110 billion, of which 60 to £70 billion is attributable to generation and around £40 billion to networks.

So what are we doing to meet these costs?

2. Reform of the UK electricity market

As we see new low carbon technologies mature along with nuclear andCarbon Capture and Storage, we will undoubtedly see fossil fuel generation reduce, this will see secure cleaner energy at an affordable cost to consumers.

Through the Contracts for Difference we are providing certainty and stability on revenues: energy generators will receive a fixed price for the low carbon electricity they produce, known as the 'strike price'.

Contracts for Difference will help to pull innovative technologies through to market, raise productivity, and support the growth of new UK industries, such as manufacturing for offshore wind.

Electricity Market Reform will reduce the amount that prices – and therefore bills – will increase.

The most recent Impact Assessment estimated that average annual household electricity bills would be 9% (£63 per year) lower over the period 2016 to 2030 under EMR compared to existing policy instruments.

The Net Present Value of the EMR package is strongly positive, generating benefits of around £9.5 billion up to 2030.

EMR will ensure that the UK remains a leading destination for investment in the electricity sector, boosting our economy by generating skills, expertise and helping the UK to compete in the global race for jobs and growth - EMR could support as many as 250,000 jobs in the energy sector.

There are also potential benefits to the supply chain: government considers that encouraging open and competitive supply chains and promoting innovation and skills in them will drive down the cost of low carbon generation over the long term and result in lower energy costs to consumers.

We have already seen over £30 billion investment in the energy and energy related sectors since 2010, we have seen almost 1 million jobs created in what can be seen to be a growing sector of this century.

Our long-term vision for the electricity market is for a decreasing role for Government over time, and to transition to a market where low-carbon technologies will compete fairly on price.

This competition between technologies will drive down costs and allow us to meet our objectives in the most cost-effective way.

The EMR is a market pull mechanism, but incentives to deploy technologies can only be achieved with the market push of technology innovation. We need to have lower costs and more efficient technologies.

Which brings me to my third point:

3. Low carbon innovation is a huge opportunity for the UK

UK innovation in low carbon technologies provides significant opportunities for the economy.

The DECC carbon plan identifies that innovation is essential to meet the UK future energy needs.

Investment in innovation now will improve the affordability of the technologies we deploy in the future, reduce bills for householders and businesses, and strengthen energy security by offering a range of technology options for the UK to deploy.

Indeed, recent growth figures show that green investment is paying back in spades and helping the UK to stay ahead in this global race.

The UK now has a share of the global low carbon goods and services market worth more than £120 billion annually, equivalent to 8% of GDP, and a third of the recent growth in the UK economy.

In a global market forecast to be worth £4 trillion by 2015, we need to continue to innovate to maintain our competitive advantage.

The key to this progress has been our unrelenting focus on driving innovation up while driving costs down.

We must capitalise on this and continue to innovate to maintain our competitive advantage.

In addition, meeting our 2050 carbon targets will require rapid and large-scale changes in energy efficiency, electricity generation, heating, transport and industrial processing.

But equally the Coalition understands the pressure put on hardworking families up and down the country of rising energy bills.

Cost savings through innovation are helping consumers against the upward trend in energy prices.

Over the next 40 years, the Energy Technologies Institute's Energy Systems Modeling Environment suggests that savings to the UK economy could be up to £600 billion. So the opportunity is there.

But how do we ensure the UK takes it?

This brings me to my fourth point.

4. Challenges to overcome to capitalise on innovation

By understanding the challenges we need to overcome, we can capitalise on our innovation.

The 2 key challenges we face are:

- Finance and
- Risk.

The first challenge innovators face is securing financing at the right time and throughout their development journey.

This is a particular challenge for smaller businesses which are not generating sufficient revenue to borrow from banks and which are developing complex technologies which are not widely understood.

It is in our interest to ensure companies can find the support they need within the UK so that we can all benefit from their innovation.

The other challenge, which is closely tied to costs, is risk.

New technologies of course have unpredicted risk.

Independent performance verification and certification that a technology will work has to be met and trust has to be built.

If we can help reduce this risk we will speed up the uptake of new technologies, and encourage further private investment.

To my final point, collaboration between government and innovators is essential.

The private sector alone cannot deliver the innovation we need.

We cannot rely on other countries to innovate in all key areas, and innovating ourselves puts us at a competitive advantage.

DECC has a skilled innovation team that delivers our innovation programme and works with others in the landscape.

I am pleased that the National Audit Office has recognised the effectiveness of this team and that our innovation is managed in line with best practice.

UP to 2050, DECC's innovation programme could save the UK up to £160 billion in energy costs. Over £100 billion of private investment could be leveraged and generate up to £89 billion to GDP.

Between 2011 and 2015, this £160 million programme is contributing to growth in some 150 entrepreneurial companies developing low carbon technologies.

We have the most offshore wind deployed anywhere in the world. It is a good example where innovation is recognised as vital to business success.

Technology innovation analysis highlights that by 2050, offshore wind innovation alone has the potential to deliver cost savings of £45 billion and business creation for the UK worth £18 billion.

And that's why we are continuing to support innovation in this important sector of our economy through the Offshore Wind Component Technologies Scheme.

With a budget of up to £15m, this Scheme aims to help companies to test and demonstrate devices and to develop component technologies that can cut the costs of offshore wind energy in the run up to 2020 and in the subsequent decade.

To date we have awarded some £11 million to 15 projects, with further projects to be announced over the next few months.

Each of these fifteen projects is either led or jointly led by UK companies and two-thirds of them are led by UK small and medium sized enterprises.

We are also investing in Carbon Capture and Storage technology Innovation.

We are helping to develop new carbon capture technologies including processes and chemicals.

The Netpower project aims to reduce the costs of power generation by over 20% compared and capture all of the CO2.

The projects which we've announced so far are expected to leverage around £19 million of private sector funding. In addition, in the past year alone, DECC has announced funding for a number of innovative technologies including £19 million for energy storage, £5 million to integrate UK nuclear research infrastructure, and £10 million for energy efficiency technologies through the 'Invest in Innovative Refurbishment' programme.

Also, DECC's Energy Entrepreneurs Fund provides incubation support alongside project grants to ambitious, potentially high growth companies.

To date, we have awarded some £25 million to 50 projects since the Fund was launched in 2012, and we expect to launch another funding Call early next year.

Two examples are Radfan and Ultramo.

Radfan is being funded to develop and market a radiator mounted fan to make room heating more efficient.

And Ultramo is being supported to develop a new type of highly efficient engine.

The second phase of the Energy Entrepreneurs Fund has recently closed and we will have a whole host of exciting new projects to announce soon.

We are also working across government with other funders of innovation, including the BIS and the Energy Technologies Institute here on the stand with me this evening, to maximise the impact of UK public sector funding for low carbon technologies through the Low Carbon Innovation Coordination Group (LCICG).

Together we will provide 1 billion pounds between 2011 and 2015 to directly support energy innovation.

To determine how best to identify and target our support the LCICG has published a series of Technology Innovation Needs Assessments (TINAs).

The TINAs focus on meeting targets at lowest cost and boosting economic growth.

These reports cover technologies from domestic buildings to energy storage and next generation nuclear.

The LCICG are now building on the TINAs to develop a strategy, due to be published shortly, which will provide a framework to help guide our innovation programmes and determine our priorities over the next decade.

The strategy will deliver greater confidence to the energy sector, supporting de-risking and alignment of investment.

And we will work with innovators and private investors to build development pathways and flexible finance so companies can secure the help they need to grow.

These are just a few examples of where government is collaborating with industry to support cost reduction through innovation.

Conclusion

In conclusion, we are creating a market that will support the transition to a low carbon future, drive competition and place the lowest possible cost burden on consumers.

My department and the other members of the Low Carbon Innovation Coordination Group are providing £1 billion between 2011 and 2015 to directly support energy supply and energy efficiency innovation.

This support for low carbon innovation is a huge opportunity for the UK, the portfolio of technologies available tomorrow depends on what is done today.

But there are challenges we need to overcome and collaboration between business and government will be central to this.

This government plays a key role as an enabler.

But it is our scientists, engineers and entrepreneurs that are the sources of innovation.

It is their ideas that will reduce energy costs, create jobs and stimulate growth.

It is a diverse landscape, and transforming our economy is a broad and complex challenge.

But to borrow a quote from the Prime Minister:

"Together we can make Britain a global showcase for green innovation and energy efficiency"

Thank you.