

P1-2 Delivering GHG Reductions and Energy Security: UK Climate Change and Energy Policies

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Climate change is a major threat to our common future. The UK has a commitment to reduce its GHG emissions by at least 80% by 2050 relative to 1990 levels and carbon budgets have been set down in law to make sure the UK stays on track. We will need to achieve these emissions reductions while at the same time safeguarding energy security so that supply meets demand and the lights stay on, and while ensuring that the UK is able to take up the economic opportunities presented by global decarbonisation.

By 2008, the UK had already reduced GHG emissions by 22% from 1990 levels. We have five-year carbon budgets set out to 2022 – the first beginning in 2008 – which set us on a trajectory to our longer term target, and by summer 2011 the UK is required to set the level of the fourth carbon budget (2023–2027). However beyond 2020 there are many uncertainties about the shape of the emissions reduction trajectory, the relative contribution of different sectors, the potential for energy imports and the use of international carbon credits. The further ahead we look, the more difficult it becomes to predict the technologies that might facilitate decarbonisation, the amount of energy we will need to produce, the costs and benefits of taking any particular action and the availability of resources both here and abroad.

Despite the difficulties in looking so far ahead, a successful low carbon transition requires a clear direction and early action: investors and consumers require confidence to act. Large building and infrastructure projects require long term planning; new technology takes time to reach commercial deployment; and behaviours change gradually. But

time is short and the pace of change must be rapid. Our analysis shows that we can meet the 80% emissions reduction target and that there are a range of different routes. To achieve the ambitious 2050 targets and minimise cumulative emissions along the way, the UK will have to step up the rate of decarbonisation over the following decades.

Furthermore, energy infrastructure is long lasting. Decisions made in the next decade about the replacement of energy infrastructure will, similarly, have consequences for the next 40 years or more. Choices must therefore be based on an understanding of the long-term challenges that the UK faces in decarbonising and maintaining energy resilience. Exploring now the ways in which a 2050 energy system might be configured will help us to understand the options available and to limit the risk of making costly mistakes. Ongoing work is already looking in detail at the investment and strategic decisions which will be necessary in putting us on the right path to 2050.

The Government's Annual Energy Statement published on 27 July 2010 fulfils the commitment in the Coalition Document to present an annual statement to Parliament to set strategic energy policy and guide investment. And the Government's Electricity Market Reform Project is conducting a detailed appraisal of the way the electricity market should be designed; recognising the need to decarbonise the electricity sector and the need to secure billions of pounds of new generating capacity, transmission and distribution infrastructure. This depends on developers having confidence in the investment environment. The Electricity Market

¹ This is an 80% reduction in greenhouse gas emissions from the '1990 baseline' (as defined in the Climate Change Act, which means 1990 for carbon dioxide, methane and nitrous oxide and 1995 for hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride). Not all sectors are necessarily required to reduce emissions by 80% and emissions cuts within the UK energy system may have to be greater than 80% if emissions from other sectors, such as agriculture and industrial processes, are harder to achieve.

Reform Project will involve engagement with industry, investors and other groups as well as detailed analysis and economic modelling.

Finally, science, technology and innovation lie at the heart of the transition to a low-carbon future. To take the best decisions and make informed choices regarding the above issues we require a sound scientific and technical evidence base. Further to this, the emissions reductions targets set are very ambitious and some of the technology required to deliver them does not yet exist, or has yet to be proven. If we are to succeed, we will need to be working with and supporting the best innovators, inventors and technologists. Just as important as recognising the scale of the challenge, is to recognise its complexity. What is called for is an integrated analysis of 'systems' which covers:

- climate;
- energy – both supply and demand;
- economics; and
- social issues.

Therefore we need engagement and collaborative working across disciplines to provide the necessary evidence base. Above all, we need 'synthesis' as well as 'analysis' to achieve the transformational change that is required. These are not things that DECC can do alone and can only be achieved through close collaboration with academia, industry and communities.