

The Clerk
Energy and Climate Change Committee
14 Tothill Street
London
SW1H 9NB

Inquiry on low carbon innovation

Submission by the Energy Policy Group, University of Exeter

Thank you for the opportunity to respond to the inquiry. Our brief comments are below.

Will the Government's current approach towards low carbon innovation help to achieve the UK's legally binding targets at the lowest possible cost?

1. Innovation is a process stretching from the research and development phases to initial deployment and full scale commercialisation. While innovation clearly involves technical development and refinement, a consideration of the full innovation chain must also take account of broader factors which may enable or inhibit the deployment of those new technologies. These broader factors include issues such as market conditions, company readiness to invest, consumer perceptions and regulatory frameworks, all of which can have a decisive influence on whether or not a technology succeeds, and at what cost. The dependencies between the early stages of technology development and market conditions are shown in Figure 1 below: integrating market conditions in innovation activities is an essential component in cost reductions. This can be seen in a comparison of the costs of wind in the German system, where there is a much more supportive approach to deploying new technologies under the Feed in Tariff system, versus the much higher costs of wind generation in the British system.

2. In other words, in order for technologies to progress from the early stages of the innovation chain to widespread deployment and competitiveness with established technologies, more is needed than just investment in RD&D activities. At the moment, we would argue that the enabling environment¹ necessary to develop new technologies (particularly renewables) and new practices is not in place. This bigger picture is also somewhat neglected in the terms of reference for the inquiry, and also in the LCICG's Technology Innovation Needs Assessment (TINA) reports. The TINA reports identify

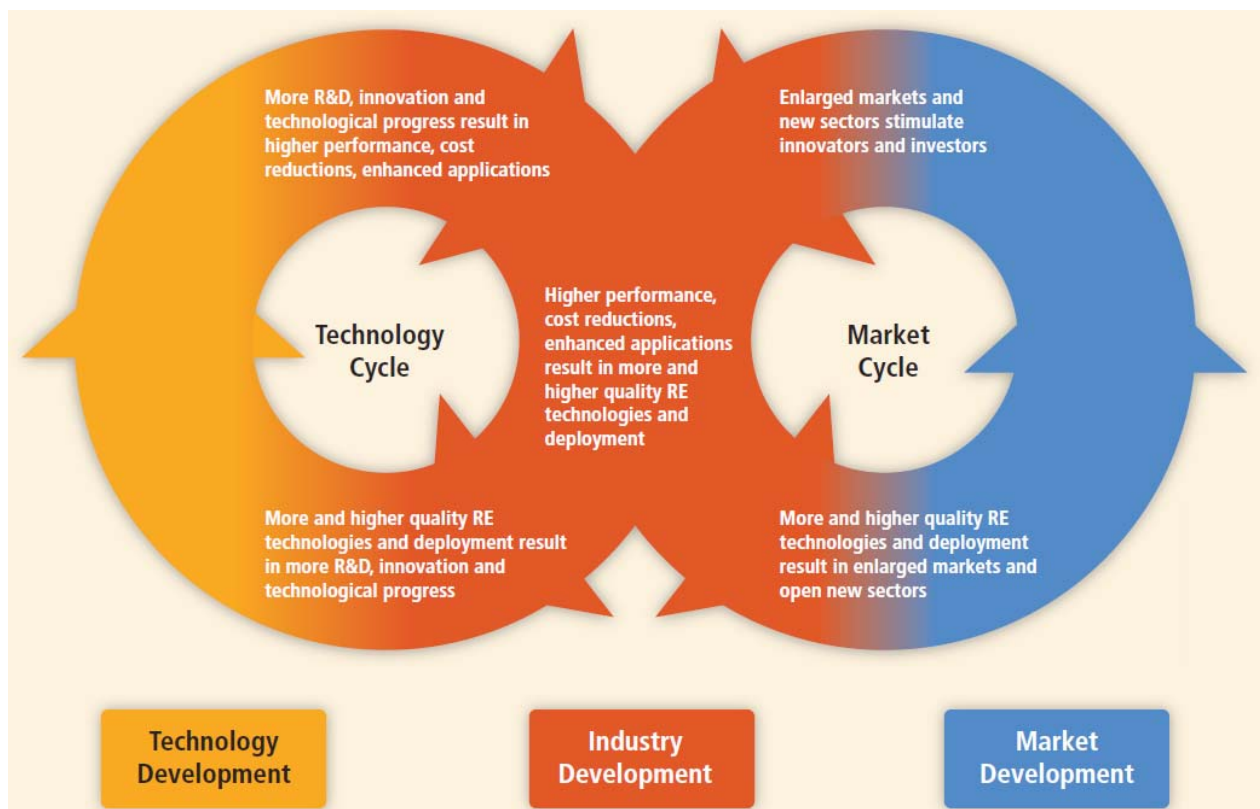
¹ See Chapter 11, IPCC, 2011: IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation. Prepared by Working Group III of the Intergovernmental Panel on Climate Change [O. Edenhofer, R. Pichs-Madruga, Y. Sokona, K. Seyboth, P. Matschoss, S. Kadner, T. Zwickel, P. Eickemeier, G. Hansen, S. Schlömer, C. von Stechow (eds)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. <http://srren.ipcc-wg3.de/report>

the issues which may hinder deployment but do not address what could be done to mitigate these problems. It seems to us that this is a missed opportunity to develop a more holistic approach to innovation which may deliver both cost reductions and more investment in new technologies and practices in the longer term.

3. The overall lack of integration between innovation activities and the market context is exacerbated by the uncertainty about the status of energy objectives which has been created by the Treasury's current hostility to carbon targets and its emphasis on short term economic objectives rather than a longer term, more strategic approach to changing energy systems.

4. The second part of the Committee's question relates to achieving the UK's targets at the lowest possible cost. We recognise that this is the Government's policy approach, but believe it is unhelpful in the context of innovation, given the inherent uncertainty surrounding the development and costs of new technologies. Low carbon innovation is slow and/or lacking exactly because the payback benefits are both uncertain and externalised. Emphasising the lowest possible costs also neglects the positive economic spillovers that could be expected to result from innovation activities.

Figure 1: The mutually reinforcing cycles of technology development and market deployment drive down technology costs



Source: IPCC (2011) p889

Does the Government have the right balance of focus between energy efficiency, renewable energy and other low carbon technologies?

5. We welcome the increase in spending on energy efficiency measures over the last few years, though we believe that this should be increased further. Reducing energy demand and increasing energy efficiency are at the moment the most cost effective options for rapidly reducing carbon emissions as well as delivering other social and energy security benefits.

6. The Committee and the NAO focus on low carbon supply and demand-side technologies. However, it is important to consider the role of innovative infrastructure (eg smart grid/distribution network technologies) and practices (eg new business models, electricity market design) as well. The required shift in our energy systems will not be achieved without new ways of integrating and managing innovative technologies, and investment will not be forthcoming unless companies are able to make money from them. The Committee should therefore be ensuring that innovation activities are directed across energy systems rather than just considering traditional supply and demand side research activities.

How is the Government maximising opportunities to learn from and partner with international partners within and beyond the EU?

7. There is a great deal of innovation activity in energy system development globally, and economics of energy and technological change in terms of integration and operation of systems are changing rapidly. It is not clear to us what the processes for keeping up with these activities is, nor whether there is a clear plan to integrate international best practice into UK innovation and policy making. If the UK is to be able to maximise international cooperation opportunities, as well as maximise its potential to develop world leading innovations, then there needs to be a strategic approach to learning from best practice in both research and policy making in other countries.

8. It is important to remember that innovative policies are an intrinsic part of any strategic approach to technical development and change. We would argue that this is not yet happening in the UK's energy policy making. So, for example, the policies put in place to deliver energy efficiency have not so far been successful, not because of a lack of good intent, but because little account has been taken of best practice elsewhere. As an example, the design of the Green Deal does not build on the Germany KfW bank's experience with 0% revolving loans for energy efficiency measures².

We hope these comments are useful. If you would like more information, please let us know.

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² <https://www.kfw.de/inlandsfoerderung/EN/Domestic-Promotion/Our-offers/Housing-home-modernisation-and-energy-conservation/index-2.html>