

Climate change: can the world meet the targets agreed in Paris?

Summary: British Pugwash discussion meeting 5 April 2016

In December 2015, the nations of the world met in Paris and agreed to try to reduce greenhouse gas emissions so as to hold “the increase in average surface temperature to well below 2°C”. How this was to be achieved was a question left unanswered.

Three recent reports by British Pugwash examine the possible options. The first, [Pathways to 2050](#) focuses solely on the UK; the second widens the scope to Europe¹ and the [third](#) takes in the whole of the world. This meeting presented our findings and described the technology options and, as important, their economic and social implications. This work has made use of public-domain software and has involved collaboration with colleagues in the European Physical Society.

In his presentation, Dr Christopher Watson began by reviewing the early history of the evidence for climate change threats, as outlined by the International Panel on Climate Change, and the early UK response, in the form of legislation, and the development of the DECC UK energy strategy software ‘Pathways to 2050’, published in July 2010. He then summarised the British Pugwash response – to make use of the DECC software to examine the feasibility of three different energy pathways leading up to 2050 – *Pathways to 2050: Three possible UK energy strategies*.

He then compared energy policy and practice in key European states: Belgium, France, Germany, Italy, Spain, Sweden, and the UK, and examined the drivers of policy which have led to different decisions in each country. Then he critically evaluated the broader EU record in response to climate change, covering both nuclear and renewables.

In the run-up to the December 2015 Paris conference on Climate Change, an international team assembled by DECC developed a ‘Global Calculator’, a piece of software which drew on the work done by DECC for the UK, but now with a worldwide perspective. This software has been used by a number of NGOs and academic organisations to develop pathways to 2100, and these were reviewed in the paper presented by Ongena and Watson at the EPS Conference in Rome, and in further work presented at this meeting.

The overall conclusion is that on a world-wide basis, there are several alternative strategies that would enable the required reductions in emissions to be achieved, but none of these options will be either easy or cheap: in each case there are technical and political difficulties that could turn out to be show-stoppers. Consequently there is an urgent need for R&D. Equally important is the need to achieve international consensus that significant changes in human behaviour will be required. Ultimately, it may be these, rather than the technical issues, that determine the actual trajectory of events and, hence, success or failure.

Among the topics addressed in the Q & A that followed were:

- The contribution that nuclear fusion might make
- The scope for advances in technology – e.g. in some forms of renewable energy, and the use of low-cost energy storage or long-range energy transmission to address its intermittency
- Ways to address consumer resistance to the needed lifestyle changes
- The difficulty of managing conflicting institutional interests (commercial/industrial/international organisations) in developing national, regional and international energy policy
- Critiques of DECC methodology and the reliability of the statistics used in making its calculations.

¹ EPS Energy Science & Technology conference Karlsruhe May 2015 1.09-4 Jef Ongena & Christopher Watson