

## **University of Warwick Workshop – The Challenge of Climate Change Tuesday, Jan. 22, 2008**

The University of Warwick workshop entitled “The Challenge of Climate Change” was a one day event, held in collaboration with CIGI. Approximately 30 people were in attendance for the event from both academia and various NGOs.

The purpose of this workshop was threefold: to look at the various issues surrounding global negotiations for climate change mitigation, from important facts to analysing different framework negotiating structures; to attempt to envision what is necessary for and what a low carbon economy would be like; and finally, to discuss new potential areas of research and opportunities for collaboration in light of the issues presented during the workshop.

The morning session concerned issues surrounding a global climate change agreement and consisted of presentations by Dr. Michael Grubb (University of Cambridge & Imperial College, London), Dr. Axel Michaelowa (University of Zurich), Professor John Whalley (University of Western Ontario & CIGI), and Professor Sayantan Ghosal (University of Warwick). The afternoon session consisted of presentations focused on building a low carbon economy. Presentations were given by Professor Paul Ekins (Kings College, London), Dr. Andrew Sentance (CSGR dept., University of Warwick), and Christopher Moir (Warwick Manufacturing Group and formerly DTI). Opening the rounds of discussion throughout the day was Benito Mueller (Oxford Institute for Energy Studies).

Several issues arose during the proceedings including the Dec. 2007 Bali meeting of the Conference of the Parties, whether using 1990 as a base year in determining emissions reductions is wise, the strengths and weaknesses of clean development mechanisms (CDMs) and what can be done to improve them, and also a bit on greenwashing (intentionally calling yourself a ‘green’ company while only putting forward a token effort to live up to the distinction).

The first morning discussion period travelled through several areas including the unwillingness of developing countries to set emissions targets for fear of traps in any agreement reached; the effectiveness, impact and most desirable type of CDMs to use, and the merits of measuring emissions on a per capita basis along with the difficulties of switching ongoing projects from the level based framework. It also looked at green investment schemes – both inside and outside the Kyoto process; the fact that, even on a theoretical level, countries cannot agree where the balance point between environment and development should be; the morality of asking developing countries to do anything to help combat climate change; and finally, on what would force the conclusion of a round of environmental negotiations as happens in trade rounds?

The presentations thereafter concerned the history of climate change negotiations, the theoretical economic underpinnings of the problem as an externality, alternate bargaining frameworks, the need for financial innovation if the financial system is to avoid a potentially devastating blow, and the perceived narrowness of scope of the current negotiations on emissions reductions. Other points included enforcement issues, issues of uncertainty, property rights, embedment of carbon in trade, and the need for negotiations to be in the private interest.

A research proposal from Sayantan Ghosal was also presented which was centred on a dynamic model of optimum distribution for climate change mitigation activities. Along with the model came the idea of attempting to use technological innovation to make the global externality positive (rather than negative), at which point the market would automatically internalize it<sup>1</sup>. Key in this process would be a high price

of carbon. The implications of an allowance for eventual and cumulative participation in a global environmental agreement were then examined.

The morning session closed with a discussion of whether linking trade and environmental negotiations is possible. Regardless of this, countries of large size are determined to be critical for the process to proceed forward due to the nature of the externality, thus China and India are key players. Save for when a major entity is doing it, free riding is determined to be an insignificant problem. The physical linkage aspect of environmental negotiations is determined to add a dynamism and evolutionary aspect to such negotiations. Finally, theories such as Pareto<sup>2</sup> are determined to be ill suited to cover the issues of restorative justice that arise in the climate change debate.

The afternoon session began with the observation that we are 80% likely to go over the 2 degree mark of warming (from 1990 levels). The Stern Review established the need for action, and Pacala & Socolow's stabilization wedges<sup>3</sup> were presented as a starting point as to how to get to 0% emissions growth. The costs of the UK's plan for a 60% reduction were estimated to be between 0.4 and 2.0% of 2050 GDP and several potential actions to reach that goal were highlighted as having overall profits rather than costs attached to them, most notably those pertaining to building insulation and fuel efficiency for various types of vehicles. Some of the alternate energy sources are very negatively sloped in terms of costs over time and scale as well. The EU emissions trading system was analysed and was viewed as being too juvenile to meaningfully aid in time for the 2020 deadline; alternatively, carbon taxes were viewed as being useful only in the short term. The politics behind the shadow price of carbon were then discussed, leading to a policy paradox stating that the more abatement you assume to be going on, the lower you can set the shadow price of carbon and the less you need to restrict carbon- intensive infrastructure and projects. An auction style Emissions Trading System (ETS) was also briefly analysed, but the adjustment costs involved in switching to such a style were determined to be prohibitive.

The issue of where green technology is going to come from was also discussed in the afternoon session. Industry and government are the choices here and the hypothesis is that it will take joint actions by both to reach sufficient levels of innovation. This is a bit speculative since little theory exists on this topic.

The main afternoon discussion session looked at the growing importance of viewing technology in economic theory as endogenous, the difficulties in increasing innovation levels (including the need for excess profits to invest and a lack of policy instruments), and on 'greening' the development process of various countries. High carbon industries that are well entrenched and of low growth, such as steel, are mentioned as being barriers to change. The need for producers/consumers to feel the impact they have on the environment more immediately was emphasized. Lastly, the importance of the energy structure in determining the oil and gas mix of a country was examined.

More general discussion ensued on the need for more research and, specifically, on truly interdisciplinary research, as that is viewed as offering the most potential for answers to the questions brought up in the day's session. It is also a different research path than that previously taken and it would make any potential consortium stand out. Interdisciplinary/interregional/inter-sectoral synergies are hypothesized to be immense if the correct matches can be found. However, broad/general interdisciplinary projects are restrictively difficult for all group members to keep track of/understand, thus this methodology would work best for very small or very specific tasks. As a final positive note to the workshop, a few of the achievements that have come out of climate change research were mentioned.

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<sup>1</sup> It was not mentioned in the actual workshop, but an example of this might be the Air Car, which runs on compressed air and is much more efficient than conventional gas engines for city driving in terms of cost (both initial purchase and fuel), emissions and mileage. See <http://www.theaircar.com/> for further details.

<sup>2</sup> Pareto optimality is a situation which exists when economic resources and output have been allocated in such a way that no one can be made better off without sacrificing the well-being of at least one person.

<sup>3</sup> Only 7 wedges are theoretically needed at this time out of 15 presented. For further details, see: Pacala, S., and R. Socolow, 2004. "Stabilization wedges: Solving the climate problem for the next 50 years with current technologies." *Science* 305: 968-972.