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Grantham Research Institute
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Chair: Professor Lord Stern
of Brentford

8 July 2014

Dear Representative Smith and other Committee members,

I am writing to alert you to inaccurate and misleading testimony that was provided to the Committee during the hearing on ‘Examining the UN Intergovernmental Panel on Climate Change Process’, held on 29 May 2014.

Many of the witnesses made erroneous statements during the hearing, but I would like to draw your attention to a particularly serious mistake in the opening statement by Professor Richard Tol of the University of Sussex.

His testimony, a copy of which is posted on the Committee’s website, included the following statement: “The Fifth Assessment Report [of the Intergovernmental Panel on Climate Change] shows that the Stern Review overestimated the impacts of climate change and underestimated the impacts of climate policy.” This statement is untrue in two important respects.

Firstly, ‘The Economics of Climate Change: The Stern Review’, which was published in October 2006, estimated the damage that would be caused by global warming of 5°C or more, but the IPCC Fifth Assessment Report only provides an incomplete quantification of the economic impacts of warming of about 2.5°C, so no comparison between the two reports is possible. This means Professor Tol was wrong on this point.

Secondly, The Stern Review considered the mitigation costs of stabilising atmospheric concentrations at a much less ambitious target than the main scenario described in the IPCC Fifth Assessment Report, and assumed earlier action. When this is taken into account, the two reports are broadly consistent with each other, so Professor Tol was also wrong on this point.

Comparison of the costs of impacts of climate change

The Stern Review stated:

“Using the results from formal economic models, the Review estimates that if we don’t act, the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year, now and forever. If a wider range of risks and impacts is taken into account, the estimates of damage could rise to 20% of GDP or more”.

It pointed out that if no action was taken to reduce emissions of greenhouse gases, “in the longer term, there would be more than a 50% chance that the temperature rise would exceed 5°C”.

The contribution of Working Group II of the IPCC to the Fifth Assessment Report stated in its Summary for Policymakers, which was published on 31 March 2014:

“Global economic impacts from climate change are difficult to estimate. Economic impact estimates completed over the past 20 years vary in their coverage of subsets of economic sectors and depend on a large number of assumptions, many of which are disputable, and many estimates do not account for catastrophic changes, tipping points, and many other factors. With these recognized limitations, the incomplete estimates of global annual economic losses for additional temperature increases of ~2°C are between 0.2 and 2.0% of income (± 1 standard deviation around the mean) (*medium evidence, medium agreement*). Losses are more likely than not to be greater, rather than smaller, than this range (*limited evidence, high agreement*). Additionally, there are large differences between and within countries. Losses accelerate with greater warming (*limited evidence, high agreement*), but few quantitative estimates have been completed for additional warming around 3°C or above.”

Hence, it is clear that the IPCC Fifth Assessment Report does not include any quantitative estimates of the economic damage that would be caused by global warming of 5°C or more, which was considered in The Stern Review. Professor Tol’s testimony was, therefore, wrong on this point.

Comparison of the costs of impacts of climate policy

The Stern Review concluded that “the costs of action – reducing greenhouse gas emissions to avoid the worst impacts of climate change – can be limited to around 1% of global GDP each year”.

This was based on the assumption that the atmospheric concentration of greenhouse gases would be stabilised at between 450 and 550 parts per million of carbon-dioxide-equivalent when taking into account the six gases covered by the Kyoto Protocol. It stated: “An estimate of resource costs suggests that the annual cost of cutting total GHG to about three quarters of current levels by 2050, consistent with a 550 ppm CO₂e stabilisation level, will be in the range -1.0 to +3.5% of GDP, with an average estimate of approximately 1%”.

The contribution of Working Group II of the IPCC to the Fifth Assessment Report stated in its Summary for Policymakers, which was published on 13 April 2014:

“Estimates of the aggregate economic costs of mitigation vary widely and are highly sensitive to model design and assumptions as well as the specification of scenarios, including the characterization of technologies and the timing of mitigation (high

confidence). Scenarios in which all countries of the world begin mitigation immediately, there is a single global carbon price, and all key technologies are available, have been used as a cost-effective benchmark for estimating macroeconomic mitigation costs. Under these assumptions, mitigation scenarios that reach atmospheric concentrations of about 450 ppm CO₂eq by 2100 entail losses in global consumption - not including benefits of reduced climate change as well as co-benefits and adverse side-effects of mitigation - of 1% to 4% (median: 1.7%) in 2030, 2% to 6% (median: 3.4%) in 2050, and 3% to 11% (median: 4.8%) in 2100 relative to consumption in baseline scenarios that grows anywhere from 300% to more than 900% over the century.”

These estimates referred to the concentration of all greenhouse gases, including halogenated gases and tropospheric ozone, together with aerosols and albedo change. For this reason, the concentrations cited in the IPCC Fifth Assessment Report cannot be directly compared with those referred to in the Stern Review. Moreover, stabilisation at 450 parts per million carbon-dioxide-equivalent as used in the Fifth Assessment Report is still significantly more stringent than the target of 500 to 550 parts per million outlined in the Stern Review. A closer comparison is afforded between the Stern Review and the reference in the IPCC Fifth Assessment Report to stabilisation at 480 to 530 parts per million of carbon-dioxide-equivalent, which was estimated to cost 1.5 to 4.2 per cent of global consumption in 2050, with a median of 2.7 per cent. The Fifth Assessment Report assumed mitigation action starting from a higher atmospheric concentration of greenhouse gases in 2010 and higher annual emissions than was assumed by the Stern Review in 2006.

Hence the figures cited in the IPCC Fifth Assessment Report overlap, and are broadly consistent, with the figures in the Stern Review, taking into account that they assume different starting points for mitigation action. Therefore, Professor Tol’s testimony was also wrong on this point.

Overall, both the Stern Review and the IPCC Fifth Assessment Report agree that the risks associated with unabated greenhouse gas emissions are far greater than the investments that will be required to avoid dangerous climate change.

Please contact me if you require any further information.

Yours sincerely,

A handwritten signature in black ink that reads "R.E.J. Ward". The signature is written in a cursive, slightly slanted style.

Bob Ward
Policy and Communications Director