A critique of the IPCC Fourth Assessment Report on Mitigation of CO2 Emissions

Contributed by Ted Trainer
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This is a summary of the full 22-page paper of the same name, which can be found at ssis.arts.unsw.edu.au

The paper argues that the IPCC's discussion of the potential for reducing CO2 emissions is quite unsatisfactory. Like the Stern Review it is based on the conclusions of economic modeling studies which give no attention to whether alternatives to fossil fuels can be scaled up by the necessary very large amounts. The paper argues that this will not be possible and therefore that the greenhouse problem cannot be solved in a society committed to high material "living standards" and economic growth.

The IPCC's Fourth Assessment Report (2007) is valuable in clarifying the emission situation and targets. It now seems widely accepted that atmospheric concentration should not be allowed to rise above 2 degrees C, corresponding to 450 ppm of CO2 equivalent gases. (Even this leaves a 50% probability of exceeding 2 degrees and thus would not be a responsible target.) This target would require emissions to be cut from the present 26 billion tonnes p.a. (GT/y) to 5 - 13 GT/y by 2050, and by 2100 probably zero and possibly negative. We must therefore in effect cease all emissions within this century. There would now be little doubt that these targets will be raised in the near future, because warming effects are being observed more rapidly than the IPCC expected.

World energy use is heading towards 2.5 times its present level by 2050. If it is assumed that conservation effort will reduce the need by 25% the task would be to supply c. 825 EJ of energy "services" by 2050.

Most of the attention in the Third Working group of the IPCC (the mitigation group) is on savings that could be made. The case is weak, consisting mostly of vague and superficial summary statements, and the conclusions are not reassuring. The savings identified add to some 7 GT/y of CO2-e, compared with a 2050 business as usual emission rate that could exceed 80 GT/y. Even if these savings were made emissions in 2050 would be higher than they are now.

Also sobering are the Summary for Policy Makers diagrams showing severely diminishing returns with increasing carbon pricing. If carbon is priced at $20/t considerable reduction in emissions would be achieved, but to increase the tax/price to $50/t would not add much to savings. In fact raising it to $100/t would at best only double the savings. This means that it will probably be easy to "pick the low hanging fruit" but then it will be very difficult to make further gains.

The IPCC does not stress how disturbing this situation is. Energy and carbon saving effort will not make much difference to the problem. This means the solution would have to be found in the energy generation sector. Yet there is almost no discussion in the report on the potential and limits of renewable energy sources. It is simply assumed that these can be adopted on the scale necessary to solve the problem.

The Report makes the same highly misleading goal statement central in Stern's account. It talks about the steps that need to be taken by 2030 (2050 for Stern) in order to be on the path to eventually stabilising atmospheric concentrations, without stressing that what has to be done by then is far less than what would have to be done after that date.

The major fault in both the IPCC and Stern Reports is their reliance on economic modelling studies. These take the dollar cost of replacing a unit of carbon fuel with wind etc. energy, then multiply this by the quantity of wind etc. energy required, without any thought about whether such a quantity can be achieved. To replace fossil fuels would require a very large multiplication of present renewable contributions and there are biological, physical and technical reasons why none of the alternative/renewable energy sources can be scaled up sufficiently. These are discussed in my Renewable Energy Cannot Sustain a Consumer Society (Springer, 2007). The limits to renewable energy sources have been almost completely ignored in the sustainability and energy literatures. Just about everyone has assumed without thought that renewables can substitute for fossil fuels and enable consumer-capitalist society to go on its merry way without a hitch.

The paper briefly summarises the issues associated with scaling up wind, biomass, solar, nuclear and geo-sequestration, and sketches the case for concluding that these cannot sustain consumer society. It attempts a world energy budget of 1100 EJ for 2050, within safe greenhouse limits, and concludes that this cannot be drawn up.

The IPCC does not discuss any of these issues, or summarise findings from studies of them, but like Stern proceeds as if renewbles can solve the problem. The critique in my paper does not dispute the IPCC findings regarding the nature and seriousness of the greenhouse problem, nor is it an argument against renewables. Its point is that renewables, plus nuclear energy, plus geo-sequestration cannot sustain consumer-capitalist society. It is not just that consumer-capitalist society is unsustainable; it cannot be made sustainable. Thus the only way out of the global predicament is to move to some form of Simpler Way, but it is very unlikely that this will be done.

"The Stern Review; A critical assessment of its mitigation optimism":
http://ssis.arts.unsw.edu.au/tsw/STERN.html

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