Temperature targets revisited under climate sensitivity uncertainty

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While the 2° target has become an official goal of the COP (Conference of the Parties) process recent work has shown that it requires re-interpretation if climate sensitivity uncertainty in combination with anticipated future learning is considered (Schmidt et al., 2011). A strict probabilistic limit as suggested by the Copenhagen diagnosis may lead to conceptual flaws in view of future learning such a negative expected value of information or even ill-posed policy recommendations. Instead Schmidt et al. suggest trading off the probabilistic transgression of a temperature target against mitigation-induced welfare losses and call this procedure cost risk analysis (CRA). Here we spell out CRA for the integrated assessment model MIND and derive necessary conditions for the exact nature of that trade-off.

With CRA at hand it is for the first time that the expected value of climate information, for a given temperature target, can meaningfully be assessed. When focusing on a linear risk function as the most conservative of all possible risk functions, we find that 2° target-induced mitigation costs could be reduced by up to 1/3 if the climate response to carbon dioxide emissions were known with certainty, amounting to hundreds of billions of Euros per year (Neubersch et al., 2014). Further benefits of CRA over strictly formulated temperature targets are discussed.

References:

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