

## No Need for Despair - Yet

Written by Jan Kunnas

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JAN KUNNAS, MAR 6 2013

Since the 2009 Climate Convention Conference in Copenhagen, the internationally agreed climate goal has been to hold global mean warming below a two Celsius degree increase above the preindustrial level. Former chair of the Intergovernmental Panel on Climate Change, Sir Robert Watson, argues, however, that the world has missed the chance to keep greenhouse gas emissions below the level needed to achieve this goal. In a recent symposium at the London School of Hygiene & Tropical Medicine, he said that there is a 50-50 chance of preventing global average temperatures rising more than three Celsius degree above their level at the start of the industrial age, but a 5°C rise is possible. The latter would mean the Earth warming more than it has since the end of the last Ice Age. His conclusion is, though, not that of despair. On the contrary he concluded that, "There are cost-effective and equitable solutions to address climate change, but political will and moral leadership is needed, and the changes in policies, practices and technologies required are substantial and not currently under way."

A recent report for the World Bank by the Potsdam Institute for Climate Impact Research and Climate Analytics argues that even with the current mitigation commitments and pledges fully implemented, there is roughly a 20 percent likelihood of exceeding 4°C by 2100. Already this level of warming could be devastating: with the inundation of coastal cities; increasing risks for food production; many dry regions becoming dryer and wet regions wetter; substantially exacerbated water scarcity in many regions; increased frequency of high-intensity tropical cyclones; and irreversible loss of biodiversity, including coral reefs. It is likely that the poor will suffer most and the global community could become more fractured, but everyone will be affected. For example, recent extreme heat waves such as the one in Russia in 2010 resulting in an estimated death toll of 55,000 persons and the 2003 heat wave in Europe with an estimated death toll of 70,000 are likely to become new normal summer occurrences. The report concluded that the projected 4°C warming simply must not be allowed to occur – the heat must be turned down.

Despite these gloomy projections this report is also not a call for despair. It is hopeful that with action a 4°C warmer world can still be avoided. It even argues that numerous studies show that there are technically and economically feasible emissions pathways to hold warming likely below 2°C. But it also points out that only early, cooperative, international action can make that happen.

### Settling the Scores

I argue that the first step to achieve this much needed cooperative international action is to fill in the trench line dug out at the 2009 Climate Convention Conference in Copenhagen. This conference started with high hopes for a comprehensive new climate treaty to succeed the *Kyoto Protocol*. Earlier that year, G8 leaders recognized the scientific view on the need to keep global temperature rise below two degrees Celsius above preindustrial levels. Achieving this goal would require a deal on 80 percent emission cuts in the developed countries by 2050 to pave the way for a global emission cut by 50 percent. The Copenhagen conference did not deliver the deal, and three years later the global community remains at large in the same trenches. Developed countries call for emission reductions also in developing countries, while the latter argues that the developed countries caused this mess in the first place, and should also be responsible for the cleanup.

Both sides of the trench line are to some degree right. The climate goal cannot be achieved by the developed world alone. Developing countries are, however, rightly arguing that global warming is due to historical emissions by the

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developed countries. The estimates of the size of this carbon debt vary greatly. Andrew Simms et al. (1999) calculated how much of the G7 countries' gross domestic product is produced through the use of fossil fuels in excess of an equitable global per-capita allotment of carbon emissions. According to this calculation, G7 countries were already running up carbon debts of around \$13 trillion each year in the late 1990s. A more modest estimate is presented by Vinod Raina (2002); A yearly carbon debt for all Northern hemisphere industrial countries of between 30 and 60 billion USD. Olivier Ragueneau (2009) again estimated that the carbon debt of industrialized countries accumulated since the beginning of the fossil fuel-driven industrial revolution equals the total external debt of developing countries (2,860 billion USD vs. 2,850 billion USD).

This mutual indebtedness, developed countries ecological debts vs. developing countries conventional monetary debts, provides an opportunity to settle the scores. Considering this mutual debt, all developing countries joining a global climate treaty should get their debt cancelled. Then we can leave the dispute about historical responsibility behind, and start negotiations on how to cope with future emissions from a clean table. First, we need to agree on a sustainable emissions level and its fair distribution. Second, what to do with emissions above this level needs to be defined.

The last block, dealing with emissions above the sustainable level, is started by deciding an emissions path from present emissions levels to the sustainable level. The gentler the slope, the longer it takes to reach the sustainable level and the more additional warming the planet is committed to. The projected distribution of the economic impacts of climate change is such that the disparity in well-being between developed countries and developing countries is increased. The highest human costs will be borne by the poorest of the poor, as they have less capacity to adapt and are more vulnerable to climate change damage. Thus, the design of an emissions path towards sustainable emissions must be accompanied by a system to collect funds for adapting to the adverse impacts of climate change and managing inevitable climate-related risks. Following the "polluter pays" principle, the funds should be collected in proportion to the responsibility for climate change and redistributed in proportion to the needs for adaptation and disaster management. The total amount of funds needed depends on the additional warming and adaptation costs the chosen emissions path leads to. For this there is a huge difference whether we end up in a 2°C, 4°C or a 5°C degree warmer world compared to the above-preindustrial level.

### **Policy Recommendations**

Adapting to a 5°C or even a 4°C world might necessitate astronomical funds, if that is even possible. This is because the warmer the climate gets, the more likely it is that we kick start abrupt and potentially irreversible changes. Timothy M. Lenton and his colleagues have identified nine policy relevant global sub-systems, which could pass critical thresholds within the next 100 years due to climate change. Of these, the Arctic sea-ice and the Greenland Ice Sheet are identified as the most sensitive systems with the smallest uncertainty. The extent of the Arctic sea-ice is already decreasing, and accelerates global warming as a dark ocean surface absorbs more sun radiation than white ice. For the Greenland Ice Sheet, local warming of more than three degrees Celsius could cause the ice sheet to disappear within 300 years. This would result in a rise of sea level between two and seven meters. The remaining seven "tipping elements" are the collapse of the West Antarctic ice sheet, of the Atlantic thermohaline circulation or of the Indian summer monsoon, an increase in the El Nino Southern Oscillation, the disruption of the West African monsoon, and the dieback of the Amazon rainforest or of the Boreal Forests.

Unfortunately none of these systems will give signals visible enough to convince the most hard-line climate skeptics before it is too late to do anything about it. There is now overwhelming evidence for human-caused climate change, the remaining uncertainties is about how severe the warming and its impacts will be. Michael Mastrandrea and Stephen Schneider argue that the policy task, then, is to manage the uncertainty rather than wait an indefinite period to try to master it. In other words, the only sound global policy is to act now based on the evidence we have. The further we delay mitigation, the more warming we commit our planet to, making it much harder to adapt. The longer we wait for action, the larger the humanitarian and economic costs of climate change will be.

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**Dr. Jan Kunnas** has done extensive research on Finland's transition from a solar based energy system to a fossil fuel based one. His is currently working at the University of Stirling in Scotland, in a project that combines insights from economics and history to conduct long-run tests of the predictive power of indicators of sustainable development. His major articles can be found from his Academia-site.

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