

THE CASE FOR CLIMATE CHANGE

The Tyndall Climate Centre in a call for papers for its December 2013 "Radical Emissions Reductions" Conference said,

*" Today, in 2013, we face an unavoidably radical future. We either continue with rising emissions and reap the radical repercussions of severe climate change, or we acknowledge that we have a choice and pursue radical emission reductions: No longer is there a non-radical option."*¹

Business as usual is not a liveable future.

Both the World Bank² and International Energy Agency³ released reports in November 2012 and July 2013 respectively which evaluated current climate change policies and targets and concluded that "business as usual" was likely to result in four degrees of warming. As Joachim Schellnhuber said in 2011 at a gathering of international experts on climate change "The difference between two degrees and four degrees is human civilisation"⁴.

The World Bank Group President Jim Yong Kim said "A four degree warmer world can, and must be, avoided". He further stated that "Climate change is one of the single biggest challenges facing development, and we need to assume the moral responsibility to take action on behalf of future generations, especially the poorest."²

As Kevin Anderson of the Tyndall Climate Institute said, in a June 2013 interview⁵, a four degree average surface temperature rise corresponds to much larger actual temperature increases on land. "The Hadley Centre estimates that, on the hottest days, the temperature would be 6-8 degrees higher in China, 8-10 degrees in Europe and 10-12 degrees in New York. Such unprecedented increases would give rise to a host of issues about how the ageing infrastructure of our cities could deliver even survival-level services." This is due to the fact that most of the earth's surface is water which heats up at a slower rate.



FIGURE 1.1 The extent of arctic sea ice melt in September 2012 [NASA]

The 2013 atmospheric CO₂ levels are at about 400ppm⁶. It is generally accepted by climate scientists that the CO₂ level was 280ppm during the Holocene Period - a ten thousand year era of stable climates, which supported the development of human civilisation. Now there is already too much carbon in the atmosphere. The current level of emissions has led to a 0.8 degree temperature increase. Already the planet is experiencing the impact of high emissions and rising temperatures.

The 2012 summer arctic sea ice levels had record minimum in area and volume⁷. Some scientists have predicted the total loss of arctic sea ice with the next decade⁸. Positive feedback mechanisms are being triggered as the reduction in Arctic ice reduces the reflectivity of the globe and the melting of permafrost leads to release of trapped methane⁹. These feedback mechanisms could lead to a global temperature rise between 1.8°C and 2.3°C above pre-industrial levels regardless of any action that may be taken subsequently to reduce emissions¹⁰. The current estimate for the melting of Greenland's ice sheets is 1.6°C above pre-industrial levels, well within the range of two degrees that is considered a safe guardrail¹¹. The melting of Greenland's ice sheets would lead to an eventual sea level rise of seven metres.

The scientific evidence points towards significant climate disruption under a business as usual scenario. It is an imperative that society and decision makers act now to decarbonise our economies.

Source: <http://decarboni.se/publications/zero-carbon-australia-buildings-plan/2-case-change>