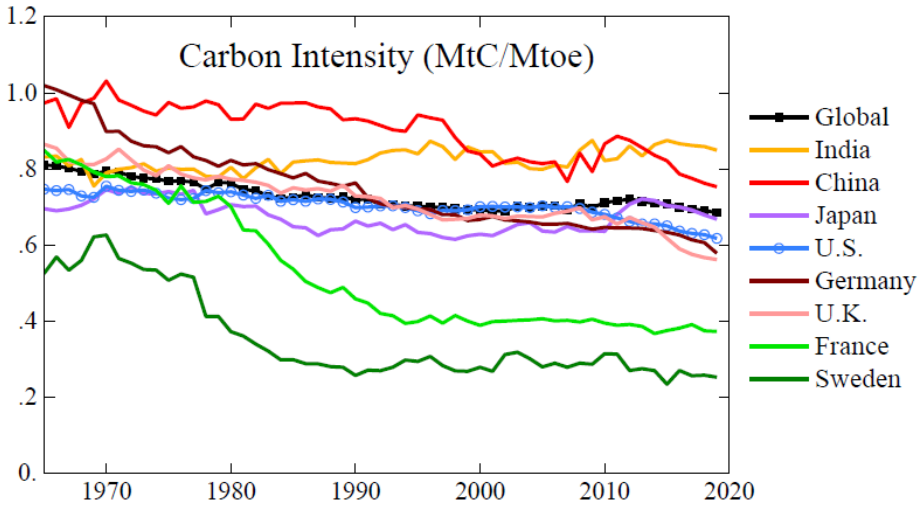

Fig. 1. Carbon intensity (carbon per unit energy) of global and national energies. MtC is megatons of carbon. Mtoe is megatons of oil equivalent.

Uncensored Science

2 July 2021

James Hansen

Here is a draft Foreword to a book on conservation by Dominick DellaSala, which I provide for the sake of fact checking. I will write a communication on his book soon – it addresses issues of censorship and activism. I'm afraid that it's too late for corrections to my Foreword, but I would appreciate criticisms anyhow, for the sake of getting things right in *Sophie's Planet*. The last few chapters of *Sophie's Planet* must wait until I see what COP26 accomplishes or – perhaps more likely – fails to accomplish. Sorry that I have not been checking Twitter – I'm working on a paper on climate science that needs to be finished this summer.

Reality differs from what you read in the "news." The single graph that captures reality best is the 50 years of "progress" in reducing carbon intensity of our energy use, as shown in Fig. 1, which is discussed in the Foreword. Then you must remember that total energy use is increasing – you must multiply carbon intensity times energy use to get carbon emissions, which thus have been increasing markedly.

Still, the picture is not quite that bleak: the climate forcing by the chief culprit gas, CO_2, increases more slowly than linearly. Fig. 2 sums up the story. We need to get the climate forcing added each year to decrease from its present ~0.04 W/m^2 to zero over the next several decades and then even become negative. Scenario RCP2.6 is a successful example. Reality is the line at the top of the red area. We are not making progress.

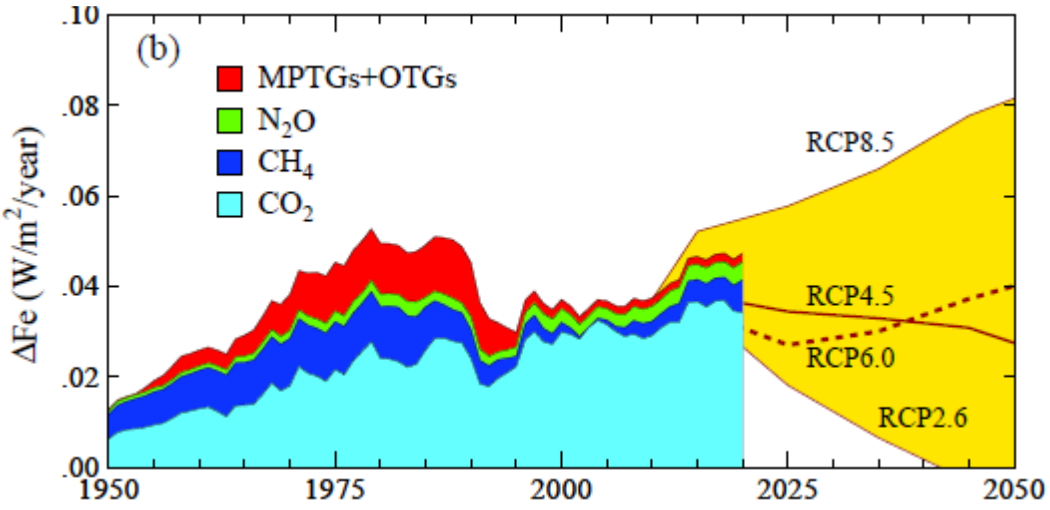

Fig. 2. Greenhouse gas climate forcing annual growth rate; historical data is 5-year running mean.

Principal references for the Foreword and this communication:

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