Do you want Geoengineering with your climate change?

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This weeks *New Scientist* carries an editorial calling for "robust public debate on geoengineering". Geoengineering is the idea that if climate change cannot be avoided through a reduction in carbon emissions its worst effects can be avoided through large-scale engineering of our environment. The failure of the Climate Summit in Copenhagen has seen many scientists look to what is perceived as the only possible alternative.

Coincidentally I'd just been reading *SuperFreakonomics: Global Cooling, Patriotic Prostitutes, and Why Suicide Bombers Should Buy Life Insurance*[1] which includes an entire chapter arguing for a geoengineering solution for climate change. The chapter is a little odd, it opens with the authors making some standard climate change denial arguments (farting cows etc) before suddenly plunging off in the search for 'cheap' solutions to a problem that a couple of paragraphs earlier they were suggesting did not exist. I can see why a couple of pro-capitalist economists would jump at any solution that would leave the fundamental capitalist requirement of constant and expanding growth untouched. They advocate 'Budyko's Blanket', the idea of running a hose into the stratosphere through which liquid sulfur dioxide is pumped. The resulting sulfur aerosol would reflect heat, 'balancing' the warming due to CO2 release.

Perhaps the most alarming part of their argument is that doing this would be cheap enough that it could be done by a wealthy individual. They say a cheap 'save the arctic' version would cost 20 million plus 10 million per year. While a full 'save

[1] www.amazon.com

the planet' version would cost 150 million to set up and then 100 million a year to run. I've no idea of the accuracies of these figures (*New Scientist* has similar ones) but the implications of the concept are serious. The costs are well within the level that any of the energy corporations could pocket as an alternative to having emission targets imposed on them.

The idea itself seems similar to trying to deal with the heat being given our by a fire burning down the building next door by pumping liquid nitrogen into the building on the other side and hoping you balance this right to create a cool zone in the middle suitable for habitation. Perhaps if all your calculations are correct you manage to do this, but make a mistake and you either get burnt or frozen. Actually it's a bit worst that that, its more an argument that its OK to keep throwing petrol on the burring building because you're going to pump even more liquid nitrogen into the freezing one.

The potential problems are not insignificant. The Wikipedia entry includes triggering drought through monsoon failure in Africa or Asia, depletion of the Ozone layer and reduced solar energy for plant growth (and therefore reduced CO2 uptake). Sulfur dioxide is also responsible for acid rain and is linked to respiratory disease, difficulty in breathing, and premature death. Interestingly an unconnected article (Monsoons send Asian pollution round the world[2]) in the same issue of *New Scientist* says it appears the summer Monsoon is already pumping Sulpur Dioxide into the stratosphere, something that this article refers to as a 'global threat'! The aerosols are thought to stay in the atmosphere for years opening up the possibility that a miscalculation in the balancing act Superfreakonomics advocates could result in a rather icy planet.

The New Scientist editorial is making the argument to scientists who advocate geoengineering that if they don't want a repeat of the mass protests that limited GMO's they need to woo the public. And that the decision to embark on such programs should be made by a global body with the United Nations behind it. Inside the article 'To hack the planet, first win trust'[3] looks at some of the geoengineering 'solutions' that have been put forward, e.g. shifting westerly winds to reduce the rate of Antarctic ice melting. It includes a neat chart that graphes cost against effectiveness but which also color codes the risk the author perceived in each technique. You might wonder what risk means, reforestation is colored for fairly low risk but the rather mysterious artificial trees which the 'Carbon Engineering' corporation refuses to release details are rather puzzlingly given a green dot for a clear bill of health.

[2] www.newscientist.com

[3] www.newscientist.com

This article also reveals that the US is arguing that the decisions should be made by a group of 14 of the most powerful countries. Pretty much the same countries where much of the carbon release that is causing climate change originated from. Given the blocking role the US has played in relation to global agreements to tackle Climate Change you have to be cynical about this proposal that such key decisions should be left to 14 countries including the US whose capitalist classes created the problem in the first place.

Now I find geoengineering exciting to read about, in particular if it is about terraforming Mars as in the Red, Green, Blue Mars Science Fiction trilogy. But Mars already has a lethal climate a good distance off without any population (as far as we know) to kill off when the experiment goes wrong. Earth on the other hand is where we all live, miscalculations in these geoengineeering experiments could, in worst cases forecasts, kill everyone on the planet. That sort of geoengineering discussion I find more than a little alarming.

I might be able to see a day when we get desperate enough to try these 'solutions' because the failure to deal with Climate Change through reducing emissions starts to threaten the lives of billions of people. But the discussion that is emerging is all about avoiding ways to deal with emissions. The risky solutions that are proposed are not the last choice remaining but rather, as the authors of Superfreakonomics readily admit, a way of doing things on the cheap. Capitalism demands unregulated growth, their sulfur dioxide hose to the sky 'solution' offers a way of the most powerful imperialist countries to head off the demand for carbon reduction and instead impose a 'solution' based on balancing a seesaw between dangerously hot and dangerously cold climates. If we get that balance wrong we are in big trouble.

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