
Bath tubs, forests, carbon trading and climate change

In 2008, the value of the carbon market increased by 84 per cent, with total transactions increasing from US\$64 billion in 2007 to US\$118 billion in 2008. Surely, with all that money changing hands, there must be some good news to report about the amount of carbon dioxide in the atmosphere?

Unfortunately not. The US government's National Oceanic and Atmospheric Administration (NOAA) reports that in 2008 global concentrations of carbon dioxide increased by 2.28 parts per million.

Carbon traders are now looking at trading the carbon stored in the world's forests. They hope that reduced emissions from deforestation and forest degradation (REDD) will generate large quantities of carbon to be traded. But there are three major problems with this.

First it would drive down the price of carbon, perhaps even making the carbon market crash. Recently, carbon prices have fallen dramatically, making investments in renewable energy less attractive. As the Financial Times notes, "The price of carbon dioxide in the European Union has fallen so low it no longer provides an incentive to low-carbon development, and seems unlikely to do so in the near future."

The second problem with trading the carbon stored in forests is that it would create an enormous loophole for the world's worst greenhouse gas polluters. We need to reduce the amount of greenhouse gases in the atmosphere. This means that we need to dramatically reduce emissions of greenhouse gases, not find new ways of allowing continued emissions.

Underlying this is a common misunderstanding about climate change. In order to prevent runaway climate change, we need to reduce the concentration of greenhouse gases in the atmosphere. This means cutting emissions radically – it is not enough to stabilise emissions.

Currently the concentration of carbon dioxide in the atmosphere is 386 parts per million. The Intergovernmental Panel on Climate Change's Fourth Assessment Report states that to prevent global warming exceeding 2°C, emissions need to be reduced globally by 85 per cent (compared to 2000) by 2050. The IPCC's target is 450 ppm, but according to James Hansen of NASA the target has to be 350 ppm.

Perhaps the best way of understanding the difference between concentrations and emissions is the "bathtub analogy" put forward by John Sterman, at the Massachusetts Institute of Technology, and Linda Booth Sweeney at Harvard Graduate School of Education. They explain that the atmosphere is like a bathtub: the running tap represents greenhouse gas emissions; the plughole represents absorption by plants and the ocean; and the water in the bath represents the concentration of greenhouse gases in the atmosphere. With the current rate of greenhouse gas emissions, the amount of water coming out of the tap is more than double that going down the plughole. So, the level of water in the bath is increasing. To make matters worse, we keep turning the tap a bit further, increasing the amount of water going in. To prevent the bath from overflowing, it is not enough just to leave the tap alone (the equivalent of stabilising emissions), we have to turn it right down, so that less

water is going into the bath than is going out through the plughole.

Reducing deforestation is the equivalent of unblocking the plughole. But trading the carbon stored in forests is the equivalent of cranking open the tap at the same time.

The third problem with trading carbon stored in forests is that in terms of the climate, the carbon stored in forests is not the same as the carbon stored in fossil fuels. The carbon stored in fossil fuels is stable and will not enter the atmosphere unless it is dug out and burned. Carbon stored in forests is unstable and can easily be released back to the atmosphere. The recent fires in Australia illustrate the point well. Such fires are likely to increase with climate change. To quote the IPCC Fourth Assessment Report: "An increase in fire danger in Australia is likely to be associated with a reduced interval between fires, increased fire intensity, a decrease in fire extinguishments and faster fire spread."

The fires in Australia were a tragedy, killing more than 200 people and destroying 1,800 homes. They also resulted in the release of millions of tonnes of carbon dioxide to the atmosphere – more than one-third of Australia's annual CO₂ emissions.

But what would have happened if the carbon that had been stored in Australia's burnt forests had been traded? By allowing emissions elsewhere to continue, the amount of carbon dioxide emitted to the atmosphere would have been doubled.

Certainly, deforestation needs to be stopped. But trading the carbon stored in forests guarantees that greenhouse gas emissions continue elsewhere. Carbon trading does not reduce emissions. Trading the carbon that is stored in forests will only make matters worse.

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