

## **Burying the climate change problem**

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Burying the greenhouse gas carbon dioxide, a byproduct of burning fossil fuels, has been mooted as one geoengineering approach to ameliorating climate change. To be effective, trapping the gas in geological deposits would be the for the very long term, thousands of years. Now, a team in Brazil, writing in the *International Journal of Global Warming* has reviewed the risk assessments for this technology and suggests a lack of knowledge means we should be cautious of turning to this method rather than finding sustainable ways to reduce emissions at their source.

Maísa Matos Paraguassú of the Federal University of Bahia and colleagues there and at Salvador University explain how the scientific consensus suggests that anthropogenic <u>carbon dioxide</u> entering the atmosphere underpins the <u>greenhouse effect</u>. Rising concentrations of the gas could lead to an uncontrollable rise in global average temperatures with concomitant effects on our planet's climate and devastating local effects in extreme cases.

Numerous proposals have been put forward to sequester carbon dioxide from emissions sources, such as power stations the electricity-generating turbines within which are powered by fossil fuels, and vehicle exhausts. But, ultimately, there need to be global repositories within which the gas can be stored indefinitely in sublimed or mineralized form. Of course, the sequestration, conversion and transportation of trapped carbon dioxide has its own energy and emissions costs. Nevertheless, if sufficient of this greenhouse gas can be held within geological formations, then there might be a way to tame the potentially runaway



effect of <u>climate change</u> that would ensue if atmospheric levels continue to rise.

"Risk can be obtained from the 'combination of uncertainty and damage', the 'ratio between hazard and safeguard', and the 'combination of probability and consequence'," the team reports, quoting various research teams from the last thirty years or so. For geological storage of carbon, there are technological risks as well as risks associated with the geology and geography of any chosen deposition site. The risks of a leak from a large deposit might well be enormous. It is difficult to determine how big that risk actually is because geological sites do not conform to the standardized structures and materials one would expect with a design industrial storage facility, for instance.

**More information:** Paraguassú, M.M., Câmara, G., Rocha, P.S. and Andrade, J.C.S. (2015) 'An approach to assess risks of carbon geological storage technology', *Int. J. Global Warming*, Vol. 7, No. 1, pp.89-109.

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