

Huge methane belch in Arctic could cost \$60 trillion

EARTH 24 July 2013

By Fred Pearce



Huge quantities of methane are locked in the Arctic ice
(Image: Danita Delmont/Alamy)

A sudden methane burp in the Arctic could set the world back a colossal \$60 trillion.

Billions of tonnes of the greenhouse gas methane are trapped just below the surface of the East Siberian Arctic shelf. Melting means the area is poised to deliver a giant gaseous belch at any moment – one that could bring global warming forward 35 years and cost the equivalent of almost a year’s global GDP.

These are the conclusions of the first systematic analysis of the economic cost of Arctic melting, which delivers a sobering antidote to other, more upbeat assessments that say melting in this area would improve access to minerals on the ocean bed, increase fishing and create ice-free shipping lanes.

Advertisement

Previous work has estimated that more than a trillion tonnes of methane lie under the shelf, trapped inside lattices of ice known as hydrates, at depths as shallow as 20 metres. Concern about a possible eruption has grown since 2010, when research cruises over the shelf by Natalia Shakhova and Igor Semiletov, both now at the University of Alaska at Fairbanks, found plumes of methane as much as a kilometre wide [bubbling to the surface](#).

The pair calculated that a release of 50 billion tonnes would be possible within a decade, through known areas of melting and geological faults. Since methane is a greenhouse gas 25 times as potent as carbon dioxide, such a scenario would trigger a “climate catastrophe”, they say, increasing the methane content of the planet’s atmosphere twelve-fold, and raising temperatures by 1.3 °C.

Now, environmental economist Chris Hope and Arctic Ocean specialist Peter Wadhams, both at the University of Cambridge, together with climate policy analyst Gail Whiteman of Erasmus University in Rotterdam, the Netherlands, have analysed the likely consequences of such a release occurring between 2015 and 2025. They did so by adding the extra emissions to an existing model used in the UK government’s 2006 [Stern Review](#), designed to assess the economic cost of coping with climate change between now and 2200.

Economic time bomb

“The global impact of a warming Arctic is an economic time bomb,” says Whiteman. A release of 50 billion tonnes of methane would bring forward by 15 to 35 years the date at which global temperature rise exceeds 2 °C above pre-industrial levels, the model shows, with most of the damage in the poorer parts of Africa, Asia and South America. The largest costs envisaged include loss of crops to heat and drought, coping with sea level rise and worsening tropical storms.

So how likely is a giant belch? An abrupt release of 50 billion tonnes is “highly possible at any time”, Shakhova says.

Around 10 million tonnes of methane a year are already leaking from the shelf, according to Shakhova’s calculations. However, it is not clear whether this is a new phenomenon, or even whether human activity is to blame. Shakhova says it may have been going on since the frozen shelf was inundated by seawater at the end of the last ice age.

Advertisement

TRENDING

We may finally k

The weird and w

Landslides have

We may have bre

Move over, DNA.