

# Cost of Arctic methane release could be 'size of global economy' warn experts

July 24 2013

---

Researchers have warned of an "economic time-bomb" in the Arctic, following a ground-breaking analysis of the likely cost of methane emissions in the region.

Writing in a Comment piece in the journal, *Nature*, academics argue that a significant release of methane from thawing permafrost in the Arctic could have dire implications for the world's economy. The researchers, from Cambridge and Rotterdam, have for the first time calculated the potential economic impact of a scenario some scientists consider increasingly likely – that methane from the East Siberian Sea will be emitted as a result of the thaw.

This constitutes just a fraction of the vast reservoirs of methane in the Arctic, but scientists believe that the release of even a small proportion of these reserves could trigger possibly catastrophic climate change. According to the new assessment, the emission of methane below the East Siberian Sea alone would also have a mean global impact of 60 trillion dollars.

The ground-breaking Comment piece was co-authored by Gail Whiteman, from Erasmus University; Chris Hope, Reader in Policy Modelling at Cambridge Judge Business School, University of Cambridge; and Peter Wadhams, Professor of Ocean physics at the University of Cambridge.

"The global impact of a warming Arctic is an economic time-bomb",

Whiteman, who is Professor of sustainability, management and climate change at Rotterdam School of Management, Erasmus University (RSM), said.

Wadhams added: "The imminent disappearance of the summer sea ice in the Arctic will have enormous implications for both the acceleration of climate change, and the release of methane from off-shore waters which are now able to warm up in the summer. This massive methane boost will have major implications for global economies and societies."

Most discussion about the economic implications of a warming Arctic focuses on benefits to the region, with increased oil-and-gas drilling and the opening up of new shipping routes that could attract investments of hundreds of billions of dollars. However, the effects of melting permafrost on the climate and oceans will be felt globally, the authors argue.

Applying an updated version of the modelling method used in the UK government's 2006 Stern Review on the Economics of Climate Change, and currently used by the US Environmental Protection Agency, the authors calculate the global consequences of the release of 50 gigatonnes of methane over a decade from thawing permafrost beneath the East Siberian Sea.

"The methane release would bring forward the date at which the global mean temperature rise exceeds 2 degrees C by between 15 and 35 years," said Chris Hope. "In the absence of [climate-change](#) mitigation measures, the PAGE09 model calculates that it would increase mean global climate impacts by \$60 trillion."

If other impacts such as ocean acidification are factored in, the cost would be much higher. Some 80% of these costs will be borne by developing countries, as they experience more extreme weather,

flooding, droughts and poorer health, as Arctic warming affects climate.

The research also explored the impact of a number of later, longer-lasting or smaller pulses of [methane](#), and the authors write that, in all these cases, the economic cost for physical changes to the Arctic is "steep".

The authors write that global economic institutions and world leaders should "kick-start investment in rigorous economic modelling" and consider the impacts of a changing Arctic landscape as far outweighing any "short-term gains from shipping and extraction".

They argue that economic discussions today are missing the big picture on Arctic change. "Arctic science is a strategic asset for human economies because the region drives critical effects in our biophysical, political and economic systems," write the academics. Neither the World Economic Forum nor the International Monetary Fund currently recognise the economic danger of Arctic change.

According to Whiteman, "Global leaders and the WEF and IMF need to pay much more attention to this invisible time-bomb. The mean impacts of just this one effect—\$60 trillion—approaches the \$70-trillion value of the world economy in 2012."

Provided by University of Cambridge

Citation: Cost of Arctic methane release could be 'size of global economy' warn experts (2013, July 24) retrieved 25 April 2024 from <https://phys.org/news/2013-07-arctic-methane-size-global-economy.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.