

Replacing coal with natural gas would reduce warming: study

July 18 2012

A debate has raged in the past couple of years as to whether natural gas is better or worse overall than coal and oil from a global warming perspective. The back- and-forth findings have been due to the timelines taken into consideration, the details of natural gas extraction, and the electricity-generating efficiency of various fuels. An analysis by Cathles, which focuses exclusively on potential warming and ignores secondary considerations, such as economic, political, or other environmental concerns, finds that natural gas is better for electricity generation than coal and oil under all realistic circumstances.

To come to this conclusion, the author considered three different future fuel consumption scenarios: (1) a business-as-usual case, which sees energy generation capacity continue at its current pace with its current energy mix until the middle of the century, at which point the implementation of low-carbon energy sources dominates and fossil fuel-derived energy production declines; (2) a gas substitution scenario, where natural gas replaces all [coal power](#) production and any new oil-powered facilities, with the same midcentury shift; and (3) a low-carbon scenario, where all [electricity generation](#) is immediately and aggressively switched to non-fossil fuel sources such as solar, wind, and nuclear.

The author finds that the gas substitution scenario would realize 40 percent of the reduction in global warming that could be achieved with a full switch to low-carbon fuel sources. The benefit for mitigating warming revolves around the fact that to produce an equivalent amount of electricity burning natural gas would release less carbon dioxide than

burning oil or coal. Though [atmospheric methane](#) traps more outgoing radiation than carbon dioxide does, at reasonable leakage rates its [atmospheric concentration](#) is much lower and what is released decomposes much more quickly. The author suggests that over timescales relevant to large-scale warming—decades to centuries—the effect of any methane released during [natural gas extraction](#) would be inconsequential.

More information: Assessing the greenhouse impact of natural gas, *Geochemistry, Geophysics, Geosystems*, [doi:10.1029/2012GHC004032](https://doi.org/10.1029/2012GHC004032), 2012

Provided by American Geophysical Union

Citation: Replacing coal with natural gas would reduce warming: study (2012, July 18) retrieved 11 May 2024 from <https://phys.org/news/2012-07-coal-natural-gas.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.