

Press Release

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The Climate Accountability Institute is pleased to announce a new paper by Richard Heede & Naomi Oreskes: “Potential emissions of CO₂ and methane from proved reserves of fossil fuels,” published in the peer-reviewed journal *Global Environmental Change* and available online: sciencedirect.com/science/journal/09593780

This paper addresses three questions: What are the reported proved reserves held by companies with the capacity to deliver them to world markets? What are the potential emissions from their expected production? What percentage of the remaining 2°C carbon budget of ≤275 billion tonnes carbon do they represent? Our conclusions are pertinent to concerns over potential “stranded assets” on the books of oil, natural gas, and coal companies, and thus of interest to portfolio and endowment managers, investors, regulators, energy analysts, and the climate policy community.

Unlike other studies, this paper estimates emissions only from *proven* reserves, and does not extrapolate based on assumptions of future exploration and development. This is crucial for understanding what assets, now on the books of investor-owned companies, may become stranded, and for understanding the urgency of curtailing additional exploration and development of new reserves. It also estimates emissions represented by reserves held by the state-owned companies, who own the lion’s share of reserves.

KEY FINDINGS

- The bulk of proven reserves lie in the hands of state-owned companies. These 28 state-owned oil, natural gas, and coal companies embody potential emissions of 210 billion tonnes carbon (GtC), or 76% of the remaining carbon budget (RCB). Therefore, the objective of limiting future production of fossil fuels in order to achieve the 2°C target will not succeed if production of reserves held by state-owned companies is not also brought under control; international negotiation must address this fact.
- The proved recoverable reserves of the 42 world’s largest investor-owned oil, gas, and coal companies — entities with the financial and technical resources to extract, refine, and deliver carbon fuels to global markets — result in potential emissions of 44 GtC, or 16% of the RCB. Therefore, the threat of exceeding the 2°C target arises not so much from the relatively small reserves of the investor-owned companies, but from their on-going exploration for and development of *new* reserves. Therefore, we suggest that investor and consumer pressure should focus on phasing out these companies’ on-going exploration programs.

Contact information

Richard Heede, Climate Accountability Institute, heede@climateaccountability.org, 970-343-0707.

Naomi Oreskes, Professor, History of Science, Harvard University, oreskes@fas.harvard.edu, 858-699-8906.

Summary of the analysis

Much of the concern expressed to date over stranded assets is focused on the investor-owned oil and gas companies, presumably due to the leverage that investors, regulators, and lenders have over the economic and regulatory environment in which these companies operate. These companies represent a substantial risk to the 2°C target not so much because of their proved reserves (most of which will be exhausted by 2030), but because of their ability and expressed intent to continue to explore for new sources of fossil fuels, and to convert existing probable and possible reserves into additional proved reserves. Given this, we suggest that investor and consumer pressure should focus on the question of phasing out exploration for new resources, especially in high-cost environments and of carbon-intensive resources.

However, investor-owned companies hold only 7.1 percent of oil reserves and 6.6 percent of natural gas reserves; the majority of current production and the vast majority of reserves are held by companies that are not publicly traded (Table 1). While the financial risk faced by investor-owned oil and gas majors may be ameliorated by prudent shedding of high-cost reserves, or by a comprehensive change in investment priorities (including in non-carbon energy sources), the objective of limiting future production of fossil fuels in order to achieve the 2°C temperature target will not succeed if production of reserves held by state-owned oil, natural gas, and coal companies is not also brought under control.

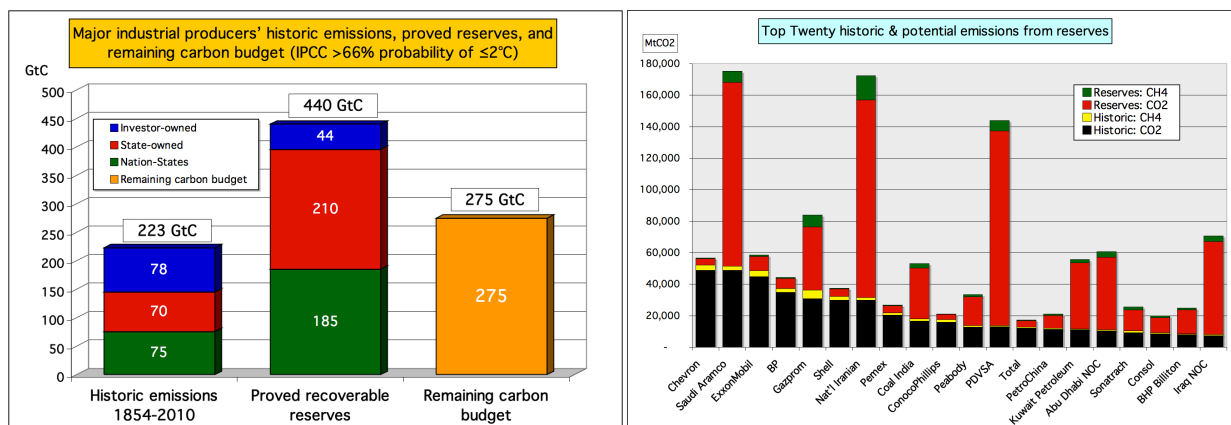


Table 1. Selected investor- & state-owned companies: potential emissions from reserves, 2013.

Entity	Oil & NGL MtCO ₂	Natural Gas MtCO ₂	Coal MtCO ₂	Vented & Flared MtCO ₂	Methane MtCO _{2e}	Total MtCO _{2e}
National Iranian Oil Company	58,426	63,741		3,085	15,583	140,835
Saudi Aramco	98,744	15,539		2,423	7,212	123,919
Gazprom	3,013	35,836		1,144	7,556	47,549
Peabody Energy			18,074		1,531	19,606
BHP Billiton	325	541	14,097	23	1,320	16,306
Consol Energy		213	9,422	6	843	10,485
ExxonMobil	4,917	3,840		213	995	9,966
BP	3,740	2,457		148	661	7,006
Royal Dutch Shell	2,459	2,269		117	570	5,416
Chevron	2,357	1,557		94	418	4,426
ConocoPhillips	2,051	1,089		74	309	3,523
Statoil	861	984		47	239	2,131

See Supplementary materials to the paper for a full list of the seventy investor- and state-owned companies.

The Climate Accountability Institute

Climate Accountability Institute engages in research & education of anthropogenic climate change, dangerous interference with the climate system, and the contribution of fossil fuel producers' fossil fuel production to atmospheric carbon dioxide content. CAI's work is funded by the Union of Concerned Scientists, Rockefeller Brothers Fund, Wallace Global Fund, and KR Foundation.

Related Publications

Heede, Richard (2014) Tracing anthropogenic CO₂ and methane emissions to fossil fuel and cement producers 1854-2010, *Climatic Change*, vol. 122(1): 229-241; doi:10.1007/s10584-013-0986-y
URL: link.springer.com/article/10.1007/s10584-013-0986-y

Frumhoff, Peter C., Richard Heede, & Naomi Oreskes (2015) The climate responsibilities of industrial carbon producers, *Climatic Change*, vol. 132:157-171. URL: link.springer.com/article/10.1007/s10584-015-1472-5

Heede, Richard, & Naomi Oreskes (2015) Potential emissions of CO₂ and methane from proved reserves of fossil fuels: An alternative analysis, *Global Environmental Change*, early online edition November; URL: sciencedirect.com/science/journal/09593780