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The Opinion Pages **OP-ED CONTRIBUTORS**

What Exxon Mobil Didn't Say About Climate Change

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Scrutiny is mounting on the world's largest publicly traded oil and gas company. On multiple legal fronts the question is being asked: Did Exxon Mobil's communications about climate change break the law?

That's what some of Exxon Mobil's current and former employees think. In

February, they filed a lawsuit arguing that the company deceived them by making false and misleading statements about the financial risks of climate change, which they argue affected the value of shares they bought as part of a company-sponsored savings plan. Other Exxon Mobil shareholders are bringing similar charges against the company in a separate class-action securities fraud case.

And just last month, three California communities sued 37 oil, coal and gas companies, including Exxon Mobil, for contributing to sea level rise while engaging in a "coordinated, multifront effort to conceal and deny their own knowledge of those threats." At the same time, the New York and Massachusetts attorneys general continue to investigate whether Exxon Mobil may have violated racketeering, consumer protection or investor protection statutes. And the federal Securities and Exchange Commission started a probe of its own last fall, asking the company about its longstanding policy of not writing down the value of its oil reserves, as other companies had done.

The question dominating these cases is whether the company misled consumers, shareholders or the public about the environmental or business risks of climate change, or about the risk that oil and gas reserves might become stranded assets that won't be developed, affecting shareholder value.

Part of the impetus for these suspicions was reporting by Inside Climate News and The Los Angeles Times in 2015 that concluded Exxon Mobil had long known about the risks of climate change but denied them in public. The company responded that the allegations were false and "deliberately cherry-picked," and that anyone who looked into the matter would see that.

"Read the documents," the company said, "and make up your own mind."

A year ago we took up this challenge. We have read all of the documents, analyzed them according to established social science methods, and made up our minds. Today, we are publishing the results of our peer-reviewed analysis in the journal Environmental Research Letters. To our knowledge, this is the first academic, empirical analysis of Exxon Mobil's 40-year history of climate change communications. (Our research was funded by Harvard University Faculty Development Funds and by the Rockefeller Family Fund, which also helped finance the reporting by Inside Climate News and the Columbia University

Graduate School of Journalism, which published its examination of Exxon Mobil with The Los Angeles Times.)

Our findings are clear: Exxon Mobil misled the public about the state of climate science and its implications. Available documents show a systematic, quantifiable discrepancy between what Exxon Mobil's scientists and executives discussed about climate change in private and in academic circles, and what it presented to the general public.

We applied an empirical method known as content analysis to all relevant, publicly available internal company files that have led to allegations against Exxon Mobil, as well as all peer-reviewed and non-peer-reviewed publications offered by the company in response. We also analyzed 36 of the company's paid "advertorials" about climate change that appeared as editorial-style advertisements on the Op-Ed pages of The New York Times between 1989 and 2004.

In total, we analyzed 187 documents generated between 1977 and 2014. We coded each document to characterize its positions on climate change as real, human-caused, serious and solvable. (Research has shown that these four factors are key predictors of public support for climate policies. Not coincidentally, they also underpin most narratives of climate skepticism and denial.) We found that, from as early as the 1970s, Exxon Mobil (and its predecessors Exxon and Mobil) not only knew about emerging climate science, but also contributed research to it. Scientific reports and articles written or cowritten by Exxon Mobil employees acknowledged that global warming was a real and serious threat. They also noted it could be addressed by reducing fossil fuel use, meaning that fossil fuel reserves might one day become stranded assets.

For the most part their research was highly technical, hidden behind the walls of Exxon Mobil offices, or reported in academic publications with access only through a paywall.

In contrast, the company's advertorials in The New York Times discussing climate change were designed to reach and influence the public, and the potential readership was in the millions. Each advertorial cost roughly \$31,000. They overwhelmingly emphasized scientific uncertainties about climate change and promoted a narrative that was largely inconsistent with the views of most climate

scientists, including Exxon Mobil's own. [The Times's policy on accepting such advertising can be found here.]

In 1997, for instance, in an ad titled "Reset the Alarm," the company argued: "Let's face it: The science of climate change is too uncertain to mandate a plan of action that could plunge economies into turmoil." The company added, "We still don't know what role man-made greenhouse gases might play in warming the planet."

Some advertorials conflicted with Exxon Mobil research published the very same year.

In some cases, they included explicit factual misrepresentation, for instance, directly contradicting the Intergovernmental Panel on Climate Change and presenting data in a "very misleading" way, according to the independent researcher who produced that data, Lloyd Keigwin, a senior scientist in geology and geophysics at the Woods Hole Oceanographic Institution.

In short, Exxon Mobil contributed quietly to climate science and loudly to raising doubts about it. We found that, accounting for reasonable doubt given the state of the science at the time of each document, roughly 80 percent of the company's academic and internal papers acknowledged that climate change is real and human-caused. But 81 percent of their climate change advertorials in one way or another expressed doubt.

Of course, any analysis of words is subject to interpretation. It's for this reason that we used established social science methods and subjected our analysis to peer review, to verify that our claims are supported by evidence, were analyzed according to tested methods and are not just a matter of our opinion.

Exxon Mobil will no doubt challenge our peer-reviewed study, just as it has challenged three decades of peer-reviewed climate science. (In a comment, Exxon Mobil disagreed with our conclusion and said that its statements on public policy and climate science "have always reflected the global understanding of the issue.") But while we can debate the details, the overall picture is clear: Even while Exxon Mobil scientists were contributing to climate science and writing reports that explained it to their bosses, the company was paying for advertisements that told a

very different tale.

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