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## REPLY

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## Reply to Comment on ‘Assessing ExxonMobil’s climate change communications (1977–2014)’ Supran and Oreskes (2017 *Environ. Res. Lett.* **12** 084019)

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### Abstract

ExxonMobil Corp Vice President Vijay Swarup’s criticisms of our 2017 study (2017 *Environ. Res. Lett.* **12** 084019), which demonstrated that ExxonMobil misled the public about climate change, are misleading and incorrect. Thanks in part to his feedback, we can now conclude with even greater confidence that Exxon, Mobil, and ExxonMobil Corp have all, variously, misled the public. We introduce new evidence that by the early 1980s, more than a decade before Mobil launched a vast advertising campaign to attack climate science and its implications, they were already explicitly aware of the potential for their products to cause dangerous global warming. We also observe that part of the comment is based on material provided by a contributor recruited and paid by ExxonMobil Corp, in our opinion as part of a product defense strategy. The comment does not disclose that. This is a case in point of what we argue is misleading behavior documented in our original study.

## 1. Introduction

In 2017, we published the first peer-reviewed analysis of ExxonMobil’s 40-year history of public and private communications about anthropogenic global warming (AGW) [1].

In his comment in this issue, ExxonMobil Corp Vice President Vijay Swarup questions our conclusion that ExxonMobil misled the public [2].

In the discussion below, we demonstrate that Swarup’s assertions are misleading and incorrect. We provide additional evidence to reaffirm our conclusion and direct readers to an addendum to our original study, which provides complete documentation [3].

## 2. Swarup’s criticisms are misleading and incorrect

Swarup claims that our analysis ‘assessed only a small subset of available advertorials’ in *The New York Times* (NYT)—‘less than 3%’. This is misleading: As we show in the addendum, only 4% or less

of all advertorials published by Mobil and ExxonMobil Corp in the NYT express positions on AGW; most dealt with other things. Therefore, only a ‘small subset’ was relevant to our study by definition, and we examined all the materials in that subset to which we had access.

After our study was published, we became aware of additional relevant advertorials (which Swarup emphasizes). In the addendum, we present a document-by-document content analysis of 1448 advertisements, including the additional materials to which Swarup refers. The results strengthen our original finding: we now conclude with even greater confidence that Exxon, Mobil, and ExxonMobil Corp misled the public.

Swarup also claims that our original publication ‘obscur[ed] the separateness of the two corporations’, Exxon and Mobil, thereby rendering our conclusion ‘invalid’. This is both incorrect and misleading. It is incorrect because our original study explicitly attributed each individual advertorial to one of Exxon, Mobil, or ExxonMobil Corp. The addendum further demonstrates that both Exxon and Mobil separately misled the public, and continued to do so once they merged to become ExxonMobil Corp. Moreover,

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Swarup's claim is misleading, because when Exxon and Mobil merged, ExxonMobil Corp inherited legal and moral responsibility for the parent companies.

### 3. Exxon, Mobil, and ExxonMobil Corp all misled the public about climate change

The issue of what Mobil knew about AGW merits additional discussion.

A 1983 Mobil 'Status Report' on the 'Atmospheric Greenhouse Effect' makes clear that Mobil was well aware at the time of scientific concerns that 'increasing levels of carbon dioxide produced by burning fossil fuels could alter the world's climate by raising the earth's temperature' [4]. While the report noted 'considerable scientific uncertainty' regarding the likely severity of AGW impacts, a valid point in 1983, it also noted that 'some scientists argue that plans to cope with the greenhouse effect need to be made soon, because of the extremely long lead time for any conceivable corrective actions'. More carbon dioxide could, in principle, yield negative feedbacks to 'offset' or 'moderate' some of its positive warming effects, but if it did not, the report said, then 'global climate theories' offered the possibility that a doubling of carbon dioxide concentrations—likely 'within the next century'—could lead to average warming of 3–6 °F (1.7 °C–3.3 °C), and 12–18 °F (6.7 °C–10 °C) at the poles. 'If these estimates are correct', the report continued, 'melting of the arctic ice packs could occur, and sea levels could rise 15 to 20 feet, inundating many of the world's coastal cities'. Crucially, the report cautioned that if 'urgent national concern' about the greenhouse effect emerged, 'restrictions on fossil fuel and land use might be established'.

The 1983 report, along with other documents cited in the addendum, makes explicitly clear that Mobil—like Exxon—had direct access to the insights of mainstream climate science throughout the 1980s and 1990s [5–8]. We therefore conclude in the addendum that 'Mobil's access to...mainstream scientific resources preceded and paralleled its publication of advertorials attacking climate science and its implications, further demonstrating that Mobil knowingly misled the public'.

### 4. ExxonMobil Corp seek to discredit rather than disprove our findings

To support his complaints, Swarup cites a negative 'review' of our original study authored by Kimberly Neuendorf of Cleveland State University.

Swarup describes this review as conducted 'at ExxonMobil's request'. What he fails to disclose is that they did not merely make a request, they hired her to write it [9]. This is yet another example of the use of 'experts for hire' that one of us (NO) has documented

in previous work [10]. Neuendorf's 'white paper' has never been published in a peer-reviewed journal.

Moreover, her report was commissioned by ExxonMobil Corp specifically to defend the company against lawsuits alleging that it misled the public about AGW [9]. In that sense, it is a clear example of a product defense strategy [11, 12]. ExxonMobil Corp has subsequently used Neuendorf's report to falsely claim in a private memo to Members of European Parliament that our work has been refuted [13]. They have made the same false claim in press releases and as part of a 3-year, ongoing social media campaign [14, 15]. Swarup also claims that Neuendorf 'developed' the content analysis method our study employs. This is patently false: as her own report acknowledges, content analysis 'dat[es] to the early 20th century.'

Swarup does not deny that Exxon, Mobil, and ExxonMobil Corp all variously had early knowledge that their products have the potential to cause dangerous global warming. Nor does he deny that, simultaneously and/or subsequently, Exxon, Mobil, and ExxonMobil Corp all variously promoted doubt about climate science and its implications in order to delay action. In fact, Swarup does not challenge any of our findings about the 187 documents analyzed in our original study.

ExxonMobil Corp cannot challenge these observations, because they are verified by thousands of pages of documented evidence. Furthermore, as we explain in the addendum, our results do not stand in isolation—they are corroborated by numerous independent lines of scholarly and journalistic investigation [10, 16–22].

Faced with this, Swarup resorts to the familiar tactic of trying to create doubt about scientific conclusions by questioning the research methodologies used or the motivations of the researchers. He continues ExxonMobil's established pattern of attempting to discredit—rather than disprove—scientific findings that cannot, in fact, be disproved, because all available evidence supports them [10, 13, 23–32]. ExxonMobil Corp's reaction is predictable and ironic, because it is a case in point of what we described in our original study.

### 5. Conclusion

ExxonMobil Corp's criticisms of our 2017 study are misleading and incorrect. We now conclude with even greater confidence that Exxon, Mobil, and ExxonMobil Corp have all, variously, misled the public. ExxonMobil Corp offers its comment, in our opinion, as part of a wider effort to undermine our reputations and cast doubt on our findings. We believe this is consistent with ExxonMobil's history of promoting doubt about climate science and the adverse effects of AGW.

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## Data availability statement

No new data were created or analysed in this study.

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