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

V Swarup

ExxonMobil Research and Engineering, Annandale, NJ, United States of America

E-mail: vijay.swarup@exxonmobil.com

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Abstract

Supran and Oreskes (*Environ. Res. Lett.* **12** 084019) employ a textual content analysis and comparison of 187 climate change communications from ExxonMobil (and its predecessor companies) to determine whether a discrepancy exists between published opinion pieces (‘advertorials’) and internal technical documents. Based on their analysis, the authors conclude that the company (ExxonMobil) misled the public. That conclusion is premised on at least two methodological flaws. First, the authors largely compared data from two different companies who were direct competitors to determine whether there was a discrepancy between them. Ignoring that before 1999 Exxon Corporation and Mobil Oil Corporation were two separate companies, the authors compare the internal documents of one company to the public statements of another in an effort to find discrepancies in the messages conveyed. Second, the publication assessed only a small subset of available advertorials. The authors note that ‘the company [Mobil] took out an advertorial every Thursday between 1972 and 2001’ or approximately 1560 times. Yet they chose to review only the 36 advertorials (or less than 3%) that were selected by another entity, Greenpeace, which has a well-documented history of animosity toward ExxonMobil. The authors’ reliance on limited data sets and their comparison of two unlike data sets call into question the publication’s conclusions.

In ‘Assessing ExxonMobil’s climate change communications (1977–2014)’ [1], Supran and Oreskes claim that ExxonMobil¹ purposely deceived the public by communicating a position on climate change in a series of published advertorials that is inconsistent with other statements contained in internal documents and published in technical journals. To reach that conclusion, the authors conducted textual content analysis and compared 187 documents generated between 1977 and 2004.

The publication is premised on at least two methodological flaws. First, the publication largely compared data from two different companies to determine whether there was a discrepancy between them. This comparison ignores that before 1999, Exxon Corporation and Mobil Oil Corporation were

two separate companies; they were incorporated and headquartered in different states and did not share management or employees.

It would be illogical therefore to compare the internal documents of one company during the pre-merger period (Exxon) with the contemporaneous public statements of the other company (Mobil). Yet the authors have done just that, obscuring the separateness of the two corporations by ‘refer[ring] to ExxonMobil Corporation, Exxon Corporation, and Mobil Oil Corporation as “ExxonMobil” throughout the publication and regardless of whether the companies were independent at the relevant point in time.

Tables 1–4 show the data set that was used for the publication. The vast majority of the public statements evaluated by the authors were issued solely by Mobil before the merger. Of the public statements, 25 of 36 (approximately 70%) pre-date the merger and were generated entirely by Mobil. Conversely, the overwhelming majority of internal documents from

¹ The authors acknowledge that ‘[a]dvertorials are sourced from a collection compiled by PolluterWatch.’ PolluterWatch is a project of Greenpeace, an activist group engaged in a long running anti-ExxonMobil campaign.

Table 1. Pre-Merger Peer-Reviewed Documents Cited in Supran & Oreskes Study.

Index	Year	1st Author (affiliation)	Other Authors (affiliation)	Exxon Employee	Title of Document	Source	Company
1	1982	Garvey	Prahl; Nazimek; Shaw	Garvey; Prahl; Nazimek; Shaw	Exxon Global CO ₂ Measurement System	IEEE Trans. Instrum. Meas.	Exxon
2	1983	Hoffert (NYU)	Flannery; Callegari; Hsieh (NYU); Wiscombe (NYU)	Flannery; Callegari	Evaporation-Limited Tropical Temperatures as a Constraint on Climate Sensitivity	Journal of the Atmospheric Sciences	Exxon
3	1984	Flannery	N/A	Flannery	Energy Balance Models Incorporating Transport of Thermal and Latent Energy	Journal of the Atmospheric Sciences	Exxon
4	1984	Flannery	Callegari; Hoffert (NYU)	Flannery; Callegari	Energy Balance Models Incorporating Evaporative Buffering of Equatorial Thermal Response	Climate Processes and Climate Sensitivity, Geophysical Monograph Series	Exxon
5	1985	Hoffert	Flannery	Flannery	Model Projections of the Time-Dependent Response to Increasing Carbon Dioxide	Projecting the Climatic Effects of Increasing Carbon Dioxide, United States Department of Energy	Exxon
6	1985	Flannery	Callegari; Hoffert (NYU); Hsieh (NYU); Wainger (NYU)	Flannery; Callegari	CO ₂ Driven Equator-to-Pole Paleotemperatures: Predictions of an Energy Balance Climate Model with and without a Tropical Evaporation Buffer	The Carbon Cycle and Atmospheric CO ₂ : Natural Variations Archean to Present, Geophysical Monograph 32	Exxon
7	1988	Thomas	Denton	Thomas; Denton*	Conceptual studies for CO ₂ /natural gas separation using the controlled freeze zone (CFZ) process	Gas Separation and Purification	Exxon
8	1991	Kheshgi	Hoffert (NYU); Flannery	Flannery	Marine Biota Effects on the Compositional Structure of the World Oceans	J. Geophys. Res.	Exxon

Table 2. Pre-Merger Non-Peer Reviewed Documents Cited in Supran & Oreskes Study.

Index	Year	1st Author (affiliation)	Other Authors (affiliation)	Exxon Employee	Title of Document	Source	Company
1	1980	Shaw	N/A	Shaw	Draft statements of findings and recommendations	National Commission on Air Quality CO ₂ Workshop	Exxon
2	1981	Hoffert (NYU)	Callegari; Hsieh (NYU)	Callegari	A Box-diffusion Carbon Cycle Model with Upwelling, Polar Bottom Water Formation and a Marine Biosphere	Carbon Cycle Modeling, SCOPE 16	Exxon
3	1981	Angell (NOAA)	Flannery; many others (none from Mobil)	Flannery	The Atmosphere	Proceedings of the Workshop on First Detection of Carbon Dioxide	Exxon
4	1982	Warner Jr. (Mobil)	N/A	N/A	Energy and the Environment: the Next Decade	UNEP Industry and Environment Special Issue 1982	Mobil
5	1984	David Jr.	N/A	David Jr.	Inventing the Future: Energy and the CO ₂ 'Greenhouse' Effect	Climate Processes and Climate Sensitivity, Geophysical Monograph Series	Exxon
6	1989	Kheshgi	N/A	Kheshgi	The sensitivity of CO ₂ projections to ocean processes	Third International Conference on Analysis and Evaluation of Atmospheric CO ₂ Data	Exxon
7	1992	Hadlow	N/A	Hadlow	Update of Industry Experience With CO ₂ Injection	SPE Annual Technical Conference and Exhibition, 4-7	Exxon
8	1995	Kheshgi	N/A	Kheshgi	Research relevant to the integrated assessment of climate change	Proceedings of the Third Japan-US Workshop on Global Change Modeling and Assessment	Exxon
9	1995	Kheshgi	Jain (UIUC); Wuebbles (UIUC)	Kheshgi	Accounting for the Missing Carbon-Sink with the CO ₂ -Fertilization Effect	Tsukuba Global Carbon Cycle Workshop	Exxon
10	1995	Jain (UIUC)	Kheshgi; Wuebbles (UIUC)	Kheshgi	Use of carbon isotopes for the calibration of global carbon cycle models	Tsukuba Global Carbon Cycle Workshop	Exxon
11	1996	Edmonds (PNNL)	Brown (PNNL); Wise (PNNL); Kheshgi; Sands (PNNL)	Kheshgi	Agriculture, Land Use, and Commercial Biomass Energy	Pacific Northwest National Lab, prepared for the US Dept. of Energy	Exxon
12	1996	Raymond	N/A	Raymond	Climate change: do not ignore the facts	'Global Warming: who's right?'—Exxon Spring Publication, The Lamp	Exxon
13	1996	Adler	N/A	Adler	Global warming. What to think? What to do?	'Global Warming: who's right?'—Exxon Spring Publication, The Lamp	Exxon

Table 2. (Continued).

Index	Year	1st Author (affiliation)	Other Authors (affiliation)	Exxon Employee	Title of Document	Source	Company
14	1997	Flannery	Kheshgi; Marland (ORNL); MacCracken (USGCRP)	Kheshgi	Geoengineering climate	Engineering response to global climate change: planning a research and development agenda	Exxon
15	1997	Raymond	N/A	Raymond	Energy—key to growth and a better environment for Asia-Pacific nations	Speech at World Petroleum Congress (October 13, 1997)	Exxon
16	1998	Raymond	N/A	Raymond	Global climate change, everyone's debate	N/A [Pamphlet]	Exxon
17	1999	Kheshgi	Archer (Chicago)	Kheshgi	Modeling the Evasion of CO ₂ Injected into the Deep Ocean	Greenhouse Gas Control Technologies	Exxon
18	1999	Kheshgi	Jain (UIUC)	Kheshgi	Reduction of the atmospheric concentration of methane as a strategic response option to global climate change	Greenhouse Gas Control Technologies	Exxon

Table 3. Pre-Merger Internal Documents Cited in Supran & Oreskes Study.

Index	Year	1st Author (affiliation)	Other Authors (affiliation)	To	CC	Title	Company
1	1977	Shaw	N/A	Harrison	Alpert	Environmental Effects of Carbon Dioxide	Exxon
2	1978	Black	N/A	Turpin	N/A	The Greenhouse Effect	Exxon
3	1978	Shaw	N/A	David Jr	N/A	Untitled (request for a credible scientific team)	Exxon
4	1978	Weinberg	N/A	Gornowski	N/A	CO2	Exxon
5	1979	Shaw	N/A	Weinberg	Werthamer	Research in Atmospheric Science	Exxon
6	1979	Mastracchio	N/A	Hirsch	Black	Controlling Atmospheric CO2	Exxon
7	1979	Garvey	Shaw; Broecker; Takahashi	Machta	N/A	Proposed Exxon Research Program to Help Assess the Greenhouse Effect	Exxon
8	1980	Weinberg	N/A	Shaw; Werthamer	N/A	Greenhouse Program	Exxon
9	1980	Eckelmann	N/A	O'Loughlin	David	Exxon's View and Position on 'Greenhouse Effect'	Exxon
10	1980	Shaw	N/A	Kett	McCall	Exxon Research and Engineering Company's Technological Forecast	Exxon
11	1980	Werthamer	N/A	Weinberg	N/A	CO2 Greenhouse Effect	Exxon
12	1981	Gervasi	N/A	Northington	Preston	CO2 Emissions Natuna Gas Project	Exxon
13	1981	Shaw	N/A	David	Barnum	CO2 Position Statement	Exxon
14	1981	Cohen	N/A	Glass	Weinberg	Untitled (catastrophic effects letter)	Exxon
15	1981	Long	N/A	Luccesi	Barnum	Atmospheric CO2 Scoping Study	Exxon
16	1982	Weinberg	Cohen; Callegari; Flannery	N/A	N/A	CO2-Greenhouse Effect; Corporate Research Climate Modeling	Exxon
17	1982	Glaser	N/A	Cohen	N/A	CO2 'Greenhouse' Effect	Exxon
18	1982	Natkin	N/A	Weinberg	Forshee	CRL/CO2 Greenhouse Program	Exxon
19	1982	Cohen	Levine;	Natkin	Callegari	Untitled (consensus on CO2 letter)	Exxon
20	1982	Cohen	N/A	Kimon	Berner	Untitled (Esso project terminated letter)	Exxon
21	1983	Gervasi	N/A	Downing	Gates	Background Paper Environmental Issues Natuna Gas Project	Exxon
22	1983	Natkin	N/A	Preston	Gervasi	Untitled (ocean storage environmental concerns letter)	Exxon
23	1984	Flannery	Callegari; Nair; Roberge	N/A	N/A	The Fate of CO2 from the Natuna Gas Project if Disposed of by Subsea Sparging	Exxon

Table 3. (Continued).

Index	Year	1st Author (affiliation)	Other Authors (affiliation)	To	CC	Title	Company
24	1984	Callegari	N/A	N/A	N/A	Corporate Research Program in Climate/CO2-Greenhouse	Exxon
25	1984	Shaw	N/A	N/A	N/A	CO2 Greenhouse and Climate Issues	Exxon
26	1985	Flannery	N/A	N/A	N/A	CO2 Greenhouse Update 1985	Exxon
27	1985	Shaw	Henrikson	Lab Directors/Program Managers	Cohen	CR Interactions (handout for June 12th meeting with Lee Raymond)	Exxon
28	1988	Carlson	N/A	Levine	N/A	The Greenhouse Effect	Exxon
29	1989	Levine	N/A	N/A	N/A	Potential Enhanced Greenhouse Effects, Status and Outlook	Exxon
30	1989	Flannery	N/A	N/A	N/A	Greenhouse Science	Exxon
31	1994	Bernstein	N/A	Members of Global Climate Coalition	N/A	Primer on Climate Change Science	Exxon, Mobil (Global Climate Coalition)

Table 4. Pre-Merger Advertorials Cited in Supran & Oreskes Study.

Index	Date	Title	Company
1	7/6/1989	People Who Live in Greenhouses	Mobil
2	6/9/1994	33/50: An experiment that works	Mobil
3	9/28/1995	The sky is not falling	Mobil
4	12/12/1996	A policy agenda for tomorrow	Mobil
5	7/18/1996	Less heat, more light on climate change	Mobil
6	7/26/1996	With climate change, what we do not know can hurt us	Mobil
7	3/6/1997	Stop, look and listen before we leap	Mobil
8	6/23/1997	Climate change: let us get it right	Mobil
9	7/31/1997	The Senate Speaks	Mobil
10	8/14/1997	When facts do not square with the theory, throw out the facts	Mobil
11	10/16/1997	CNN and the value of instant replay	Mobil
12	10/23/1997	Global climate change	Mobil
13	10/30/1997	Reset the alarm	Mobil
14	11/6/1997	Science: what we know and do not know	Mobil
15	11/13/1997	Climate change: a prudent approach	Mobil
16	11/20/1997	Climate change: where we come out	Mobil
17	12/4/1997	Climate change: a degree of uncertainty	Mobil
18	12/18/1997	The Kyoto conference	Mobil
19	1/29/1998	Post Kyoto, what's next?	Mobil
20	11/5/1998	The Kyoto Protocol: a painful response	Mobil
21	4/15/1999	Helping Earth breathe easier	Mobil
22	7/29/1999	Where we are and where we may be heading	Mobil
23	8/5/1999	Some ways to make a difference	Mobil
24	8/12/1999	Scenarios for stabilization	Mobil
25	8/19/1999	Lessons Learned	Mobil

the pre-merger period were generated by Exxon. In fact, only two out of 78 documents (approximately 3%) can be attributed to Mobil. All (29 out of 29) peer-reviewed articles, virtually all (17 out of 18) non-peer-reviewed documents, and virtually all (30 out of 31) internal documents considered by the publication in the pre-merger time period are attributable to Exxon. Accordingly, the bulk of the publication is devoted to comparing Mobil's public statements to Exxon's publications and internal documents during a period of time when Exxon bore no responsibility for Mobil's public statements and Mobil bore no responsibility for Exxon's publications and internal documents. Having compared fundamentally dissimilar data sets in search of a discrepancy, the authors committed a fundamental methodological error that renders their conclusions invalid.

Second, the publication assessed only a small subset of available advertorials. The authors report that the 'the company [Mobil] took out an advertorial every Thursday between 1972 and 2001' or approximately 1560 times. Yet they chose to review only 36 advertorials (or less than 3%) that were cherry-picked by another entity, Greenpeace, an activist group engaged in a long running anti-ExxonMobil campaign.² This reliance on limited and

non-representative data sets (generated with undisclosed selection criteria) further calls into question the validity of the data used to support the publication's conclusions.

Based on these two methodological flaws, it is clear that valid conclusions cannot be drawn from the data sets analyzed.

As further proof that the article is fundamentally flawed, at ExxonMobil's request, Dr Kimberly Neuendorf, a professor at Cleveland State University who developed the content analysis method the authors relied on and cited in their research, conducted a review of the publication [2], and found the content analysis contained 'numerous fundamental and fatal flaws.'

Dr Neuendorf concluded the content analysis used in the publication 'is unreliable, invalid, biased, not generalizable, and not replicable.' Dr Neuendorf said the publication did not provide scientific support for either a discrepancy among ExxonMobil's climate change communications, or a claim that ExxonMobil misled the public.

In addition to data selection deficiencies, Dr Neuendorf identified defects in the coding of documents. According to Dr. Neuendorf, 'To maintain objectivity, content analysis coding ought to be conducted by coders who are at arm's-length with regard to the research.' Dr Neuendorf observed that the authors' 'selection of themselves as coders is inappropriate because they are not blind to the purpose of the research or independent of each other.'

² The authors acknowledge that '[a]dvertorials are sourced from a collection compiled by PolluterWatch,' which is a project of Greenpeace.

Dr Neuendorf's comments on the process and the coding further reinforce our assertion that several errors were made in the process of developing the argument. The publication does not provide scientific support for either a discrepancy among ExxonMobil's climate change communications, or a claim that ExxonMobil misled the public.

In light of the authors' comparison of two unlike data sets, their reliance on limited and targeted data sets, and their questionable coding practices, the conclusions set forth in the publication cannot be credited.

Any data that support the findings of this study are included within the article.

ORCID iD

V Swarup  <https://orcid.org/0000-0003-2511-5819>

References

- [1] Supran G and Oreskes N 2017 Assessing ExxonMobil's climate change communications (1977–2014) *Environ. Res. Lett.* **12** 08401
- [2] Neuendorf K A 2018 Evaluation of the study 'Assessing ExxonMobil's climate change communications (1977–2014)' by G Supran and N Oreskes 2017 *Environ. Res. Lett.* **12** 084019 Report (<https://corporate.exxonmobil.com/-/media/Global/Files/climate-change/Neuendorf-Report.pdf>)