



Taking on Climate Lies – Climate Disinformation Initiative at Boston University

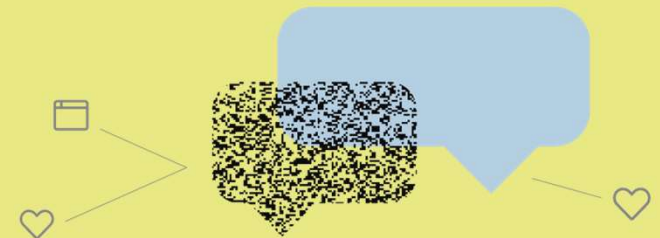
Symposium
May 16, 2023





Benjamin Sovacool

Professor of Earth and Environment
Director, Institute for Global Sustainability



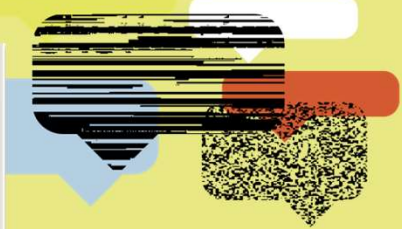


Jonathan Schrag

Deputy Climate Chief and
Director of Investment for Decarbonization and Resilience
Office of Climate, Innovation, and Resilience - Commonwealth of Massachusetts



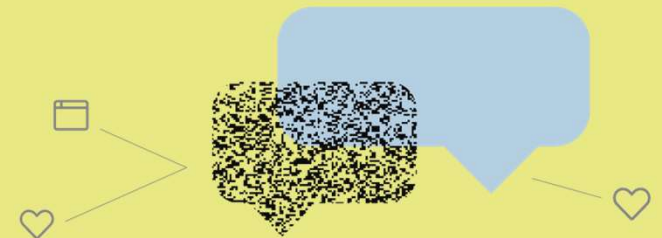
Number of tweets related to climate Lies February, 2007





Focused Research Project Introduction

Twitter
Reddit
Native Advertising
Public Opinion



Meet the Team



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College of Communication



Irena Vodenska

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- Sarah Garvey



How to tackle climate disinformation?



- How to defend the integrity of climate science and scientists?
- How to respond to challenges in climate policy and corporate disclosure?
- The key is in the narrative. How do we extract the message?
- How to engage the law?

Massachusetts Lawsuit against ExxonMobil



- In 2019, then-Attorney General and now Governor of Massachusetts, Maura Healey, sued Exxon for:
- Systematically and intentionally misled Massachusetts investors about **material** climate-driven risks
- Deceived Massachusetts consumers by marketing and selling its products as clean
- Committed **deceptive practices** against Massachusetts Investors
- Undertook “**greenwashing campaigns**” in an effort to portray itself as environmentally responsible.

Climate Change Disinformation Initiative



- Social Media Challenges and Opportunities (Research Area 1)
 - Twitter
 - Reddit
- Native Advertising and Media Responsibilities (Research Area 2)
 - Content Labeling
 - Accuracy of claims
- Understanding publics and their opinion (Research Area 3)
 - Misinformation-susceptible publics
 - Prebunking and debunking



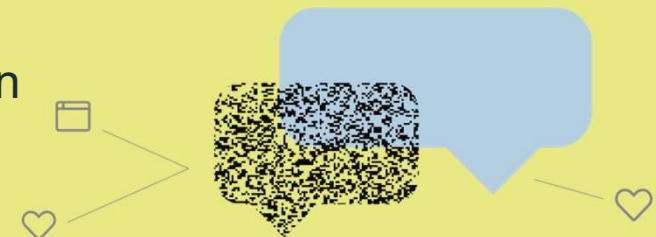
Focus Area 1: Misinformation on Twitter and Reddit

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Preliminary Research Results – Twitter



- ExxonMobil-funded organizations contribute to two main Twitter disinformation narratives: “Climate change is not threatening” and “Biden’s energy plan hurts economic growth.”
- A network of Twitter Users retweeting Climate Change Misinformation identify by “MAGA,” “conservative,” “freedom,” and “god.”
- Using Natural Language Processing and Semantic Similarity of Tweets to scale up fact-checking efforts.

Preliminary Research Results - Reddit

- Reddit “climate skepticism” travels bi-directionally between conspiracy communities and science subreddit groups.
- Skeptics use historical narratives such as “climate changed before” to minimize the anthropogenic causes of global warming and the devastating consequences of climate change.
- High accuracy methodology to distinguish between posts refuting or supporting climate change denial claims posed to aid with bringing the truth out.





Climate Change Narratives of Organizations Funded by ExxonMobil

EXXONMOBIL'S \$33 MILLION CAMPAIGN
TO SOW DOUBT AND DENIAL ABOUT GLOBAL WARMING

<https://www.desmog.com/exxonmobil-funding-climate-science-denial/>

Sources for mis- and disinformation claims

- Big oil and gas companies
- Several cases related to ExxonMobil



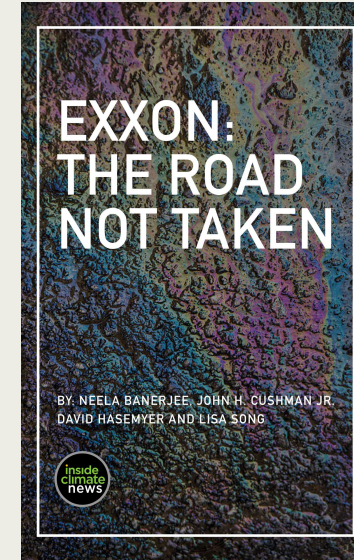
REVIEW

CLIMATE PROJECTION

Assessing ExxonMobil's global warming projections

G. Supran^{1*†}, S. Rahmstorf^{2,3}, N. Oreskes^{1,4}

Climate projections by the fossil fuel industry have never been assessed. On the basis of company records, we quantitatively evaluated all available global warming projections documented by—and in many cases modeled by—Exxon and ExxonMobil Corp scientists between 1977 and 2003. We find that most of their projections accurately forecast warming that is consistent with subsequent observations. Their projections were also consistent with, and at least as skillful as, those of independent academic and government models. Exxon and ExxonMobil Corp also correctly rejected the prospect of a coming ice age, accurately predicted when human-caused global warming would first be detected, and reasonably estimated the “carbon budget” for holding warming below 2°C. On each of these points, however, the company's public statements about climate science contradicted its own scientific data.



Organizations funded by ExxonMobil

- Union of Concerned Scientists, "ExxonMobil Foundation & Corporate Giving to Climate Change Denier & Obstructionist Organizations"
- 50 out of 69 organizations in the list have official Twitter accounts
- These 50 organizations created about 1.4 million tweets between November 2007 and December 2022
- Not all their tweets are about climate change



Climate change related keywords

Extract keywords across seven websites about climate change

- 750 or more words about climate change
- Key Terms You Need to Know to Understand Climate Change
- EPA-U.S. Environmental Protection Agency
- Climate Change Terms and Definitions
- Climate Change Glossary – BBC
- Glossary – GlobalChange.gov
- Climate Change: An A-Z glossary of the words you need to know in the fight against global warming
- Selected 32 keywords appearing at least three websites (e.g., "global warming", "carbon dioxide", "IPCC")



Tweets from 50 organizations

- We analyze 22,940 tweets from the ExxonMobil funded Organizations
- Detect clusters of tweets based on text embeddings
- Text-To-Text Transfer Transformer (T5)
 - Trained from a large training dataset (Colossal Clean Crawled Corpus)
 - Achieves great performance on translation, summarization, question-answering, and sentiment analysis
- Intra-cluster cosine similarities are higher than or equal to 0.85




Raffel, C., Shazeer, N., Roberts, A., Lee, K., Narang, S., Matena, M., Zhou, Y., Li, W., & Liu, P. J. (2020). Exploring the limits of transfer learning with a unified text-to-text transformer. *The Journal of Machine Learning Research*, 21(1), 5485-5551.

Reimers, N., & Gurevych, I. (2019). Sentence-BERT: Sentence embeddings using Siamese BERT-networks. *arXiv preprint arXiv:1908.10084*.

Example tweets in suspicious clusters

- Cluster “Climate change is not threatening” (112 Tweets)



 **The Heartland Institute**
@HeartlandInst

Sorry IPCC, Global Warming Not Causing Unusual Precipitation
bit.ly/1Jal5fE

7:58 PM · Dec 16, 2015

1 Retweet 1 Like

 **Competitive Enterprise Institute**
@ceidotorg

Climate alarmism is not the answer. Read more from [@InsightsIssues](#)

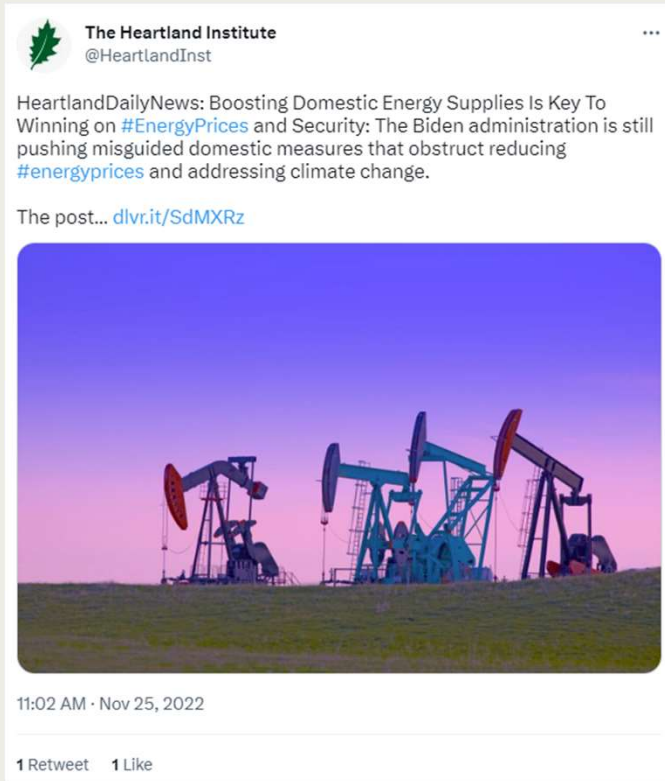
 issuesinsights.com
The One Person Who Shows Just How Unhinged Global W...
If the prevailing view on climate change is so unassailable, why is a teenage girl being exploited to emotionalize the ...

10:00 AM · Jul 27, 2019

2 Retweets 1 Like

Example tweets in suspicious clusters

- Cluster "Biden's energy plan hurts economic growth" (140 Tweets)



Climate change is not threatening

Donald Trump withdraws the U.S. from the Paris Climate Treaty



Cluster 3

Cluster 4

Advertising videos about climate change truth

Cluster 5

Thanks for retweeting and following for updates on global warming & other environmental issues

Cluster 6

Cluster 1

Advertising climate change conferences or debates

Biden's energy plan hurts economic growth

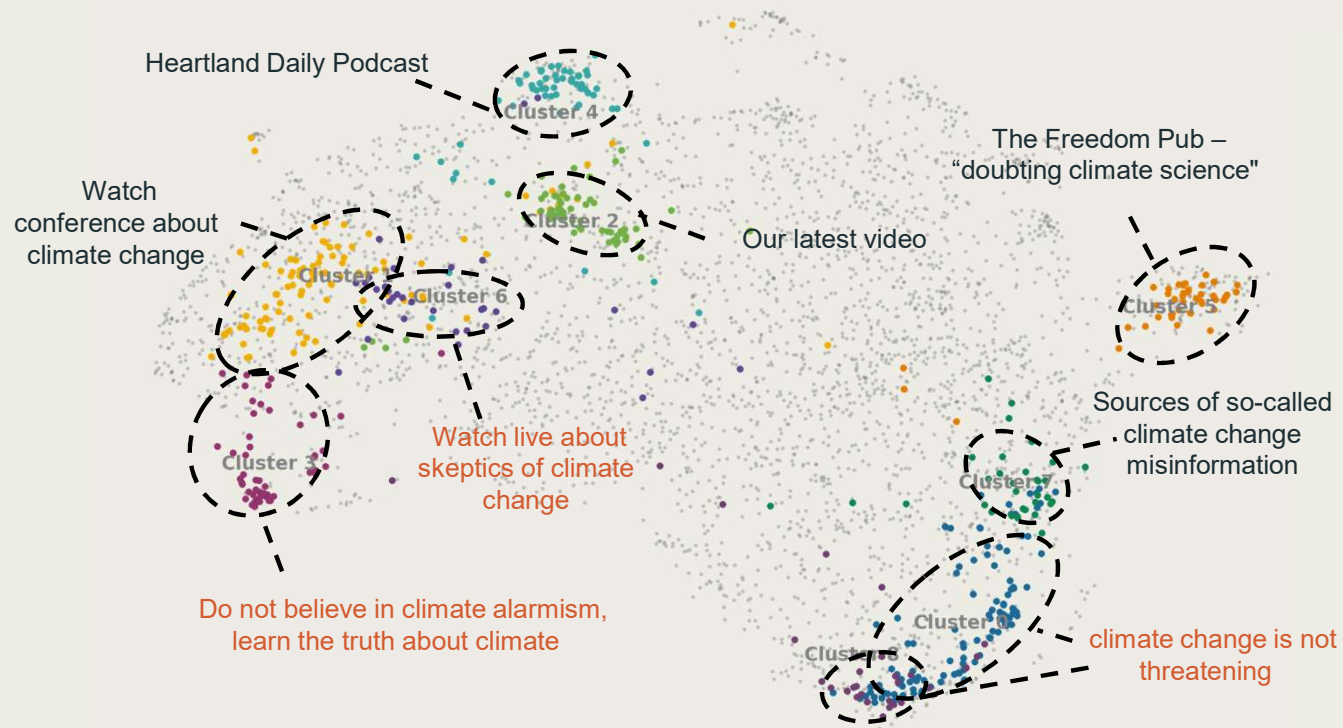
CO2 emission has been reduced significantly in the U.S.

Cluster 2

UMAP visualization (McInnes et al., 2018)
Inter-cluster cosine similarity > 0.85

The Heartland Institute

- From user profile – “National free-market public-policy think tank”
- 16.2K followers on May 4, 2023



Other organizations of interest

Biden's energy plan hurts economic growth

- Institute for Energy Research/American Energy Alliance
- FreedomWorks

Steering global warming debates arguing the scientific evidence

- Heritage Foundation
- Center for the Study of Carbon Dioxide and Global Change

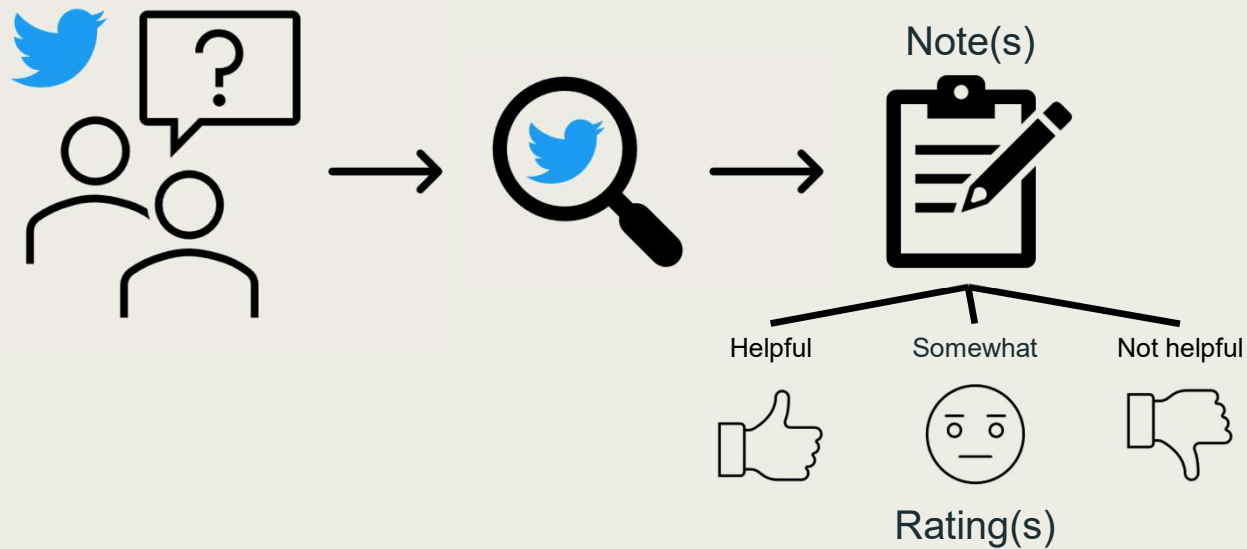




Misinformation tweets captured by Community Notes

Volunteer fact-checkers on Twitter

Community Notes
(formerly Birdwatch, <https://twitter.com/communitynotes>)



Data

- We used a dataset containing notes until October 23, 2022
: 18,303 notes → 15,398 unique tweets → 96 tweets about climate change
- Two trained research assistants manually validated them → 11 misinformation tweets
 - Predicting climate temperatures isn't science – it's science fiction.
 - If the oceans have been rising for the past several decades, as we are gravely and solemnly informed, why is it that Plymouth Rock and Sidney Harbor (not to mention various other landmarks around the world) are at exactly the same level they were a century ago?
<https://t.co/TZ0o1XhPJr>
 - August NASA satellite temps in. No warming in almost 8 years -- despite lots more CO2. August 2022 same temp as August 1998. Climate is a hoax. <https://t.co/y3I5bHOL1T>
<https://t.co/hMQBXRdVg8>



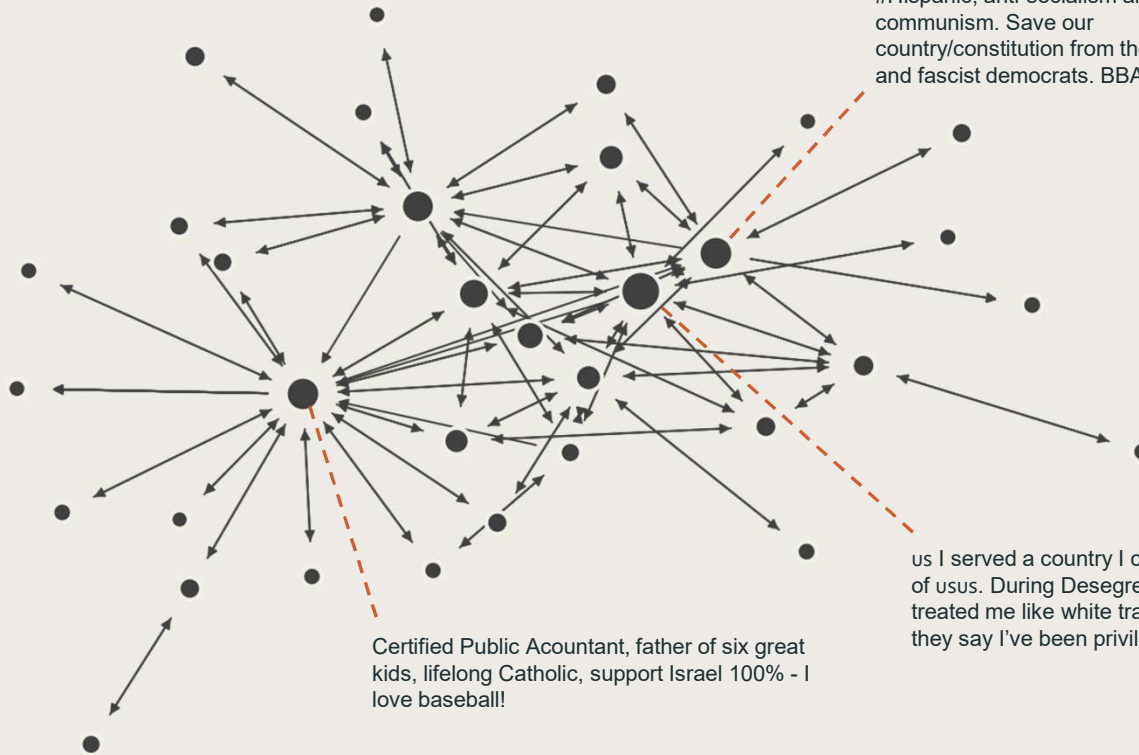
Thousands retweets on average

- Retweet distribution is
 - 18,251 users retweeted one misinformation tweet
 - 4,188 users retweeted two misinformation tweets
 - 566 users retweeted **three** misinformation tweets
 - 73 users retweeted **four** misinformation tweets
 - 9 users retweeted **five** misinformation tweets
 - 3 users retweeted **six** misinformation tweets
- We consider 651 users as **heavy (misinformation) consumers**
- Through the Twitter API, 442 heavy consumers' information was collected
- Connect heavy consumers based on followership → 179 heavy consumers are connected



Networks of heavy consumers

Community 1



Anti-globalist, registered independent, #Hispanic, anti-socialism and communism. Save our country/constitution from the commie and fascist democrats. BBA, MBA.

Certified Public Accountant, father of six great kids, lifelong Catholic, support Israel 100% - I love baseball!

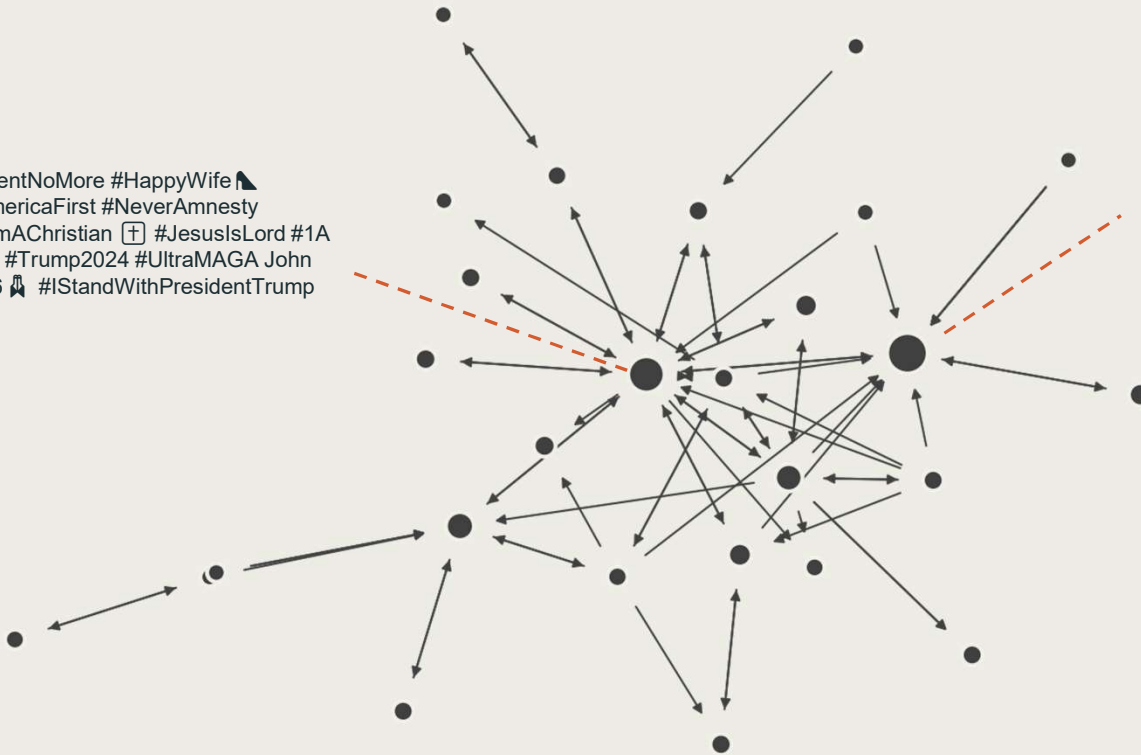
us I served a country I could be proud of usus. During Desegregation Dems treated me like white trash and now they say I've been privileged 🤖 ususus



Networks of heavy consumers

Community 2

#SilentNoMore #HappyWife
 #AmericaFirst #NeverAmnesty
 #IAmAChristian #JesusIsLord #1A
 #2A #Trump2024 #UltraMAGA John
 14:6 #IStandWithPresidentTrump

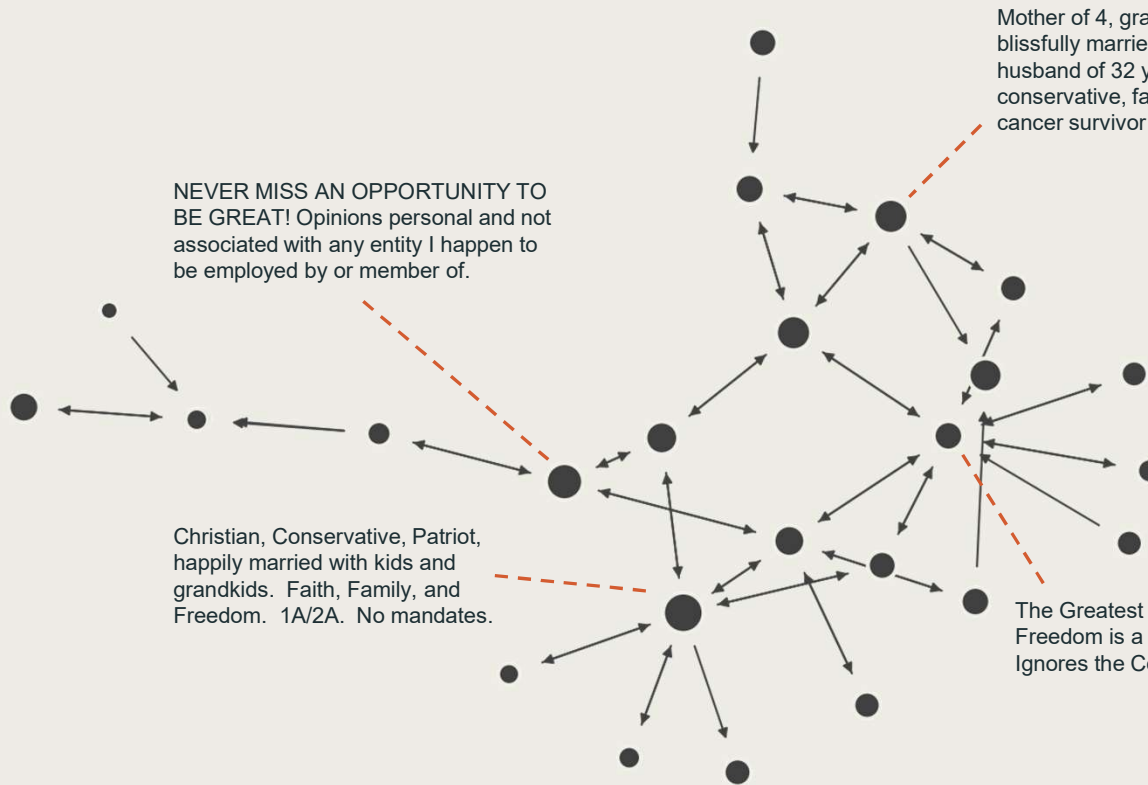


#MAGA #Trump. I believe in the American Dream. Protect our Freedom & Defend our Country. The decision we make today is what shapes our future. God Bless.



Networks of heavy consumers

Community 3

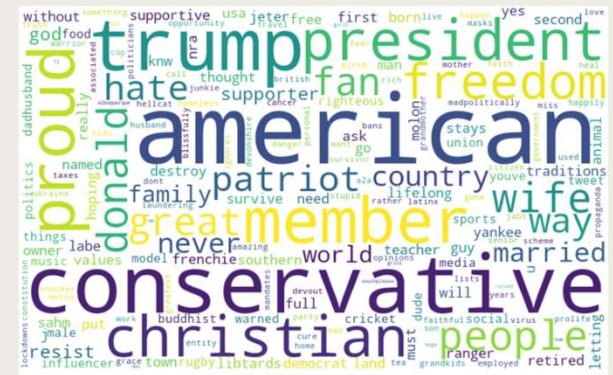


NEVER MISS AN OPPORTUNITY TO BE GREAT! Opinions personal and not associated with any entity I happen to be employed by or member of.

Christian, Conservative, Patriot, happily married with kids and grandkids. Faith, Family, and Freedom. 1A/2A. No mandates.

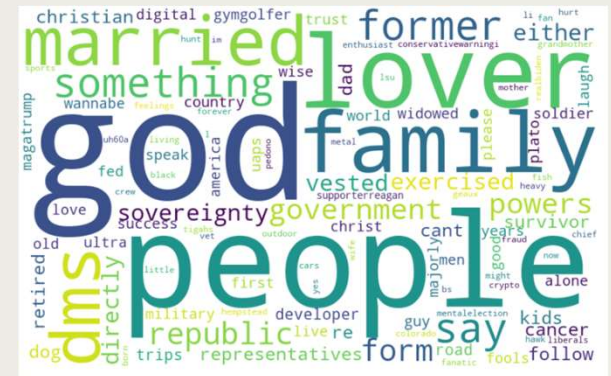
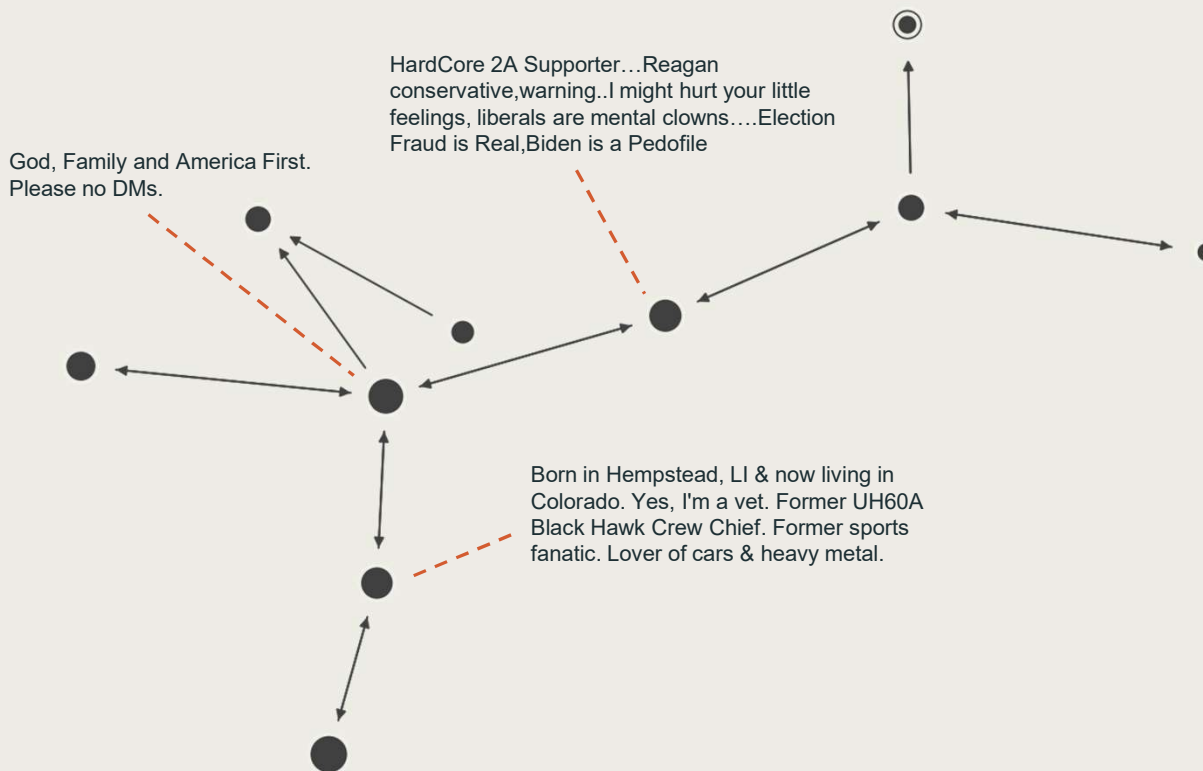
Mother of 4, grandmother of 6, blissfully married to my amazing husband of 32 years. Devout conservative, faithful Christian and cancer survivor #MAGA #1A #2A

The Greatest Danger to American Freedom is a Government that Ignores the Constitution.



Networks of heavy consumers

Community 4





Identifying tweets similar to contrarian claims about climate change

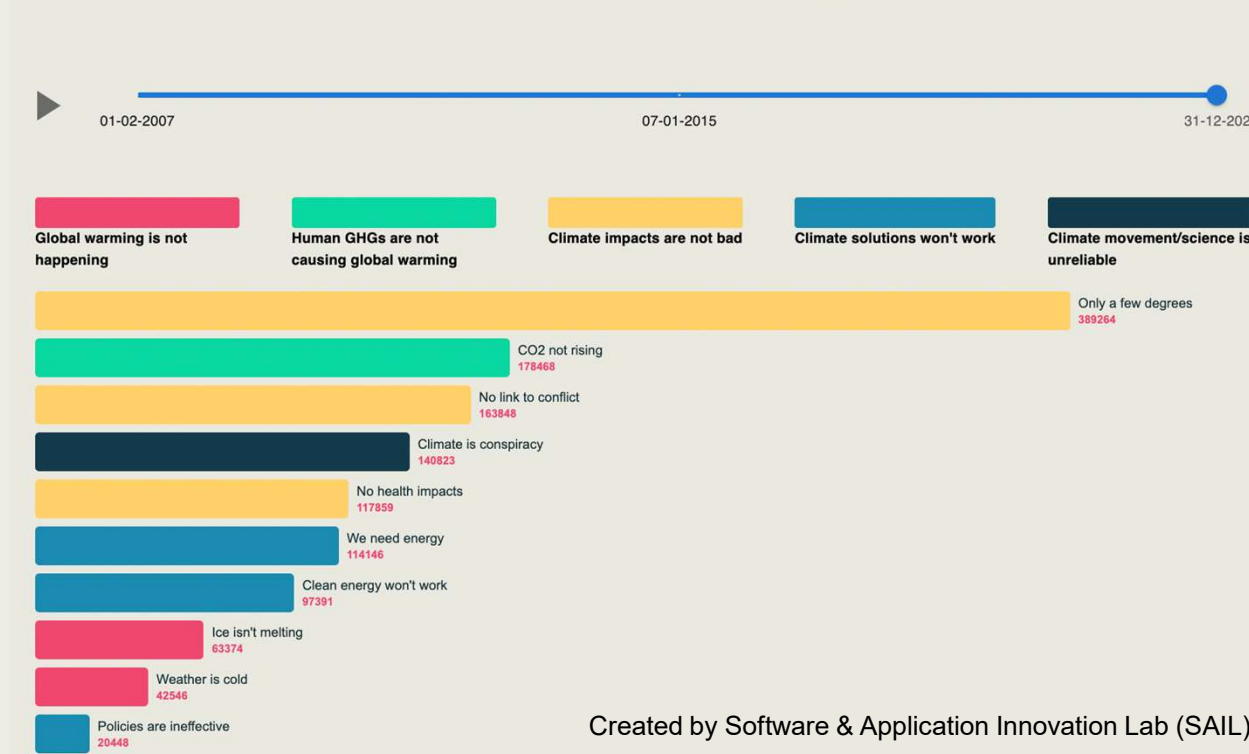
Leverage contrarian claims to search further

- Contrarian claims about climate change from thinktanks and blogs
Coan, T. G., Boussalis, C., Cook, J., & Nanko, M. O. (2021). Computer-assisted classification of contrarian claims about climate change. *Scientific Reports*, 11(1), 22320.
- Five super-claims and their sub-claims (Coan et al., 2021)
 - Global warming is not happening – Ice isn't melting, Heading into ice age, ... (8 sub-claims)
 - Human greenhouse gases are not causing global warming – It's natural cycles, ... (5 sub-claims)
 - Climate impacts are not bad – Sensitivity is low, No species impact, ... (6 sub-claims)
 - Climate solutions won't work – Policies are harmful, Policies are ineffective, ... (5 sub-claims)
 - Climate movement/science is unreliable – Science is unreliable, ... (3 sub-claims)
- Data: Tweets having keywords used in super- and/or sub-claims
- About 1.44 million tweets between 2007 and 2022 were collected



Tweets related to sub-claims

Number of tweets related to climate Lies December, 2022



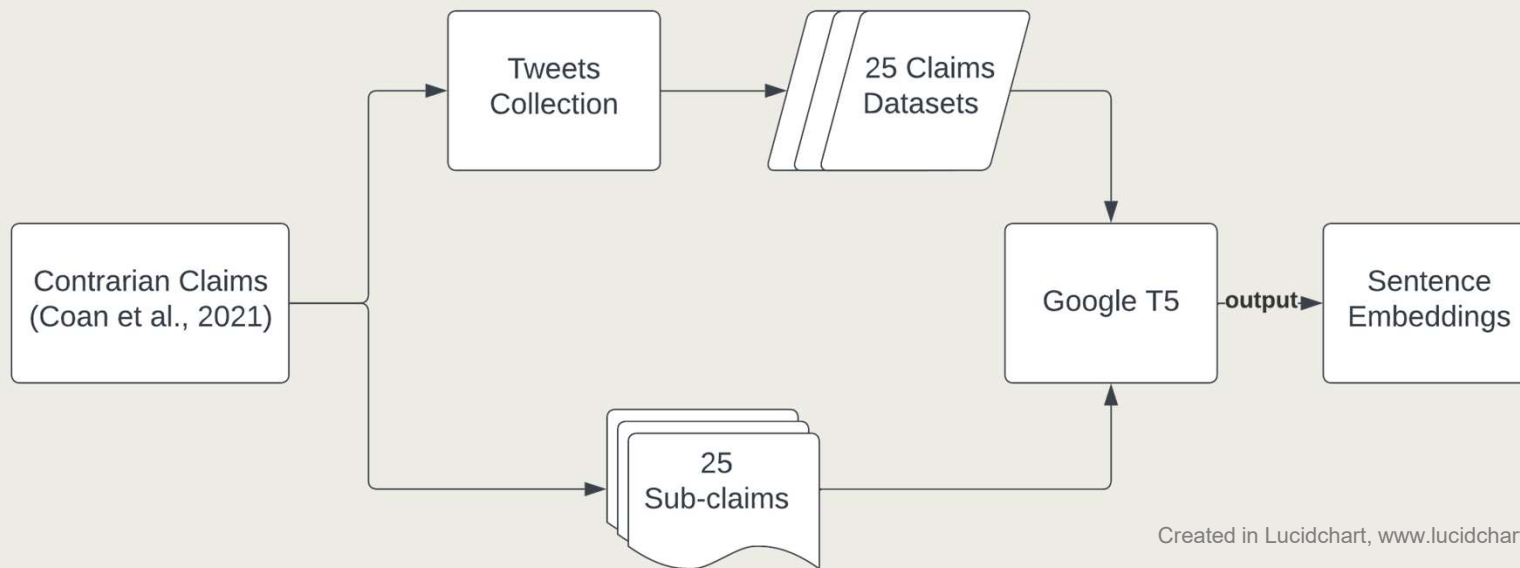
Tweets similar to sub-claims



Text-To-Text Transfer Transformer (T5)

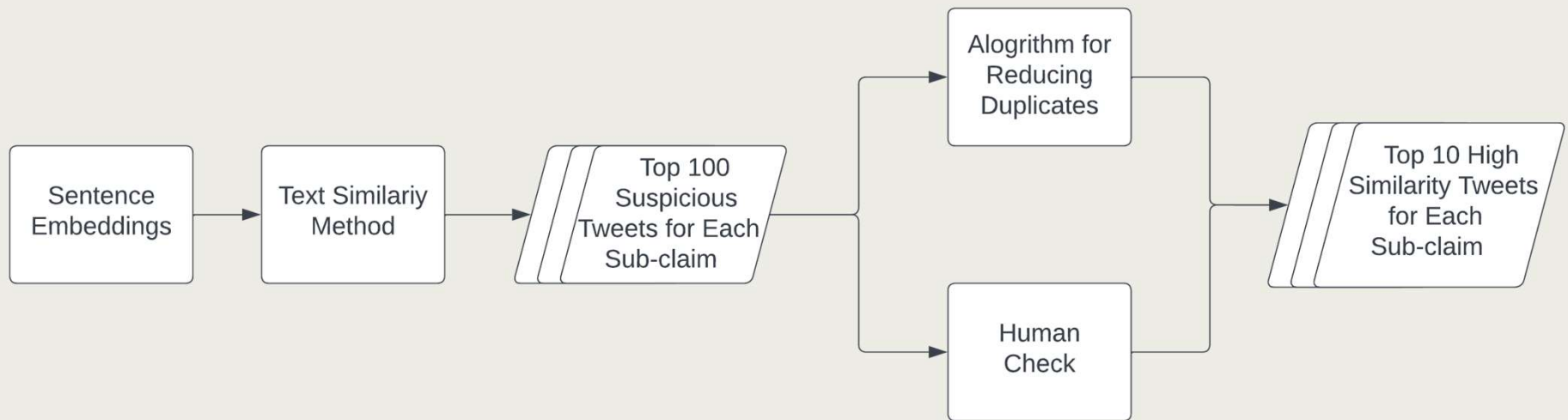
Raffel, C., Shazeer, N., Roberts, A., Lee, K., Narang, S., Matena, M., Zhou, Y., Li, W., & Liu, P. J. (2020).

Exploring the limits of transfer learning with a unified text-to-text transformer. *The Journal of Machine Learning Research*, 21(1), 5485-5551.



Created in Lucidchart, www.lucidchart.com

Tweets similar to sub-claims



Created in Lucidchart, www.lucidchart.com

Example tweets highly similar to sub-claims



- Global warming is not happening / Ice isn't melting
 - Antarctic ice shelf didn't get memo melt 'lowest EVER recorded, global warming is NOT eroding it' via @theregister
 - #enviroment: Global Warming is not Melting Polar Ice C...
 - Human greenhouse gases are not causing global warming / It's natural cycles
 - #GlobalWarming is part of earth's natural cycle
 - I'm sure it's just a natural cycle.
- Climate impacts are not bad / Sensitivity is low
 - Some evidence that +++ #Climate sensitivity is low+++
 - The NY Times looks at the possibility that #climate sensitivity is relatively low.

Example tweets highly similar to sub-claims



- Climate solutions won't work / Policies are harmful
 - COVID Policies....or #climate Policies #lockdowns causing 282 times the harm... #cdnpoli #ableg #abpoli
 - An example of DJT's harmful policies.
- Climate movement/science is unreliable – Science is unreliable
 - climate models are unreliable. It's not a settled science. Not all scientists agree.
 - Climate "science" isn't even that. It's a heap of unreliable suppositions

Tweet highly similar to sub-claims tend to contain misinformation about climate change

How many misinformation tweets?



- Survey design
 - Q1: Are you a student, a faculty member, or a staff member?
 - Q2: Do you think that the climate is really changing?
 - Definitely yes, Probably yes, Might or might not, Probably not, Definitely not
 - Q3~Q12: Two correct real/synthetic tweets + 8 tweets highly similar to sub-claims (sampled from 270 candidates)
- 75 responses (from two sections in the Applied Business Analytics program, BU MET)

	Two correct answers	One correct answer	No correct answer
Definitely yes	20	18	6
Probably yes	14	4	1
Might or might not	5	4	0
Probably not	1	2	0

How many misinformation tweets?

- 40 selected respondents labeled 96 suspicious tweets
- Number of responses to each suspicious varies
 - 3 responses for 1 tweet
 - 2 responses for 95 tweets
 - 1 response for 126 tweets



How many misinformation tweets?

- 3 responses for 1 tweet
 - "Antarctic ice is not melting due to global warming, but due it being an ancient defensive structure"
- 2 responses for 95 tweets – 35 tweets are in consensus (~37%)
 - Antarctic ice shelf didn't get memo melt 'lowest EVER recorded, global warming is NOT eroding it'
 - CO2 is not a pollutant. It is essential to all life on Earth. More CO2 is favorable for nature, greening our planet.
 - Climate "science" isn't even that. It's a heap of unreliable suppositions



Summary

- Tweets containing misinformation about climate change were identified from various sources
- From these tweets, we observed
 - Narratives of organizations funded by ExxonMobil
 - Heavy consumers of fact-checked misinformation and their common characteristics
 - Tweets similar to contrarian claims based on text embeddings

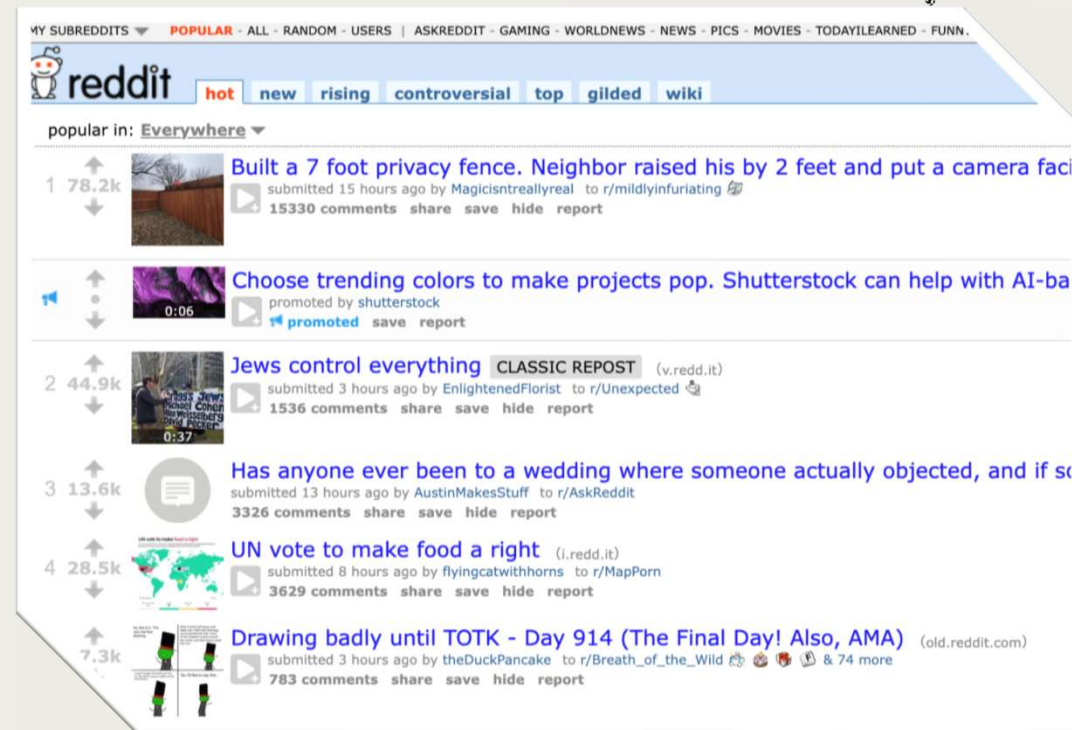




Characterizing Climate Change Discussion on Reddit

What is Reddit?

- Popular news aggregator
- So-called “front page of the Internet”
- A user can start a thread by creating a submission with a URL
- Thousands of user-created sub-communities (*subreddits*)
- We obtain our data from pushshift.io, which provides a full dump of all Reddit public data



Research objectives



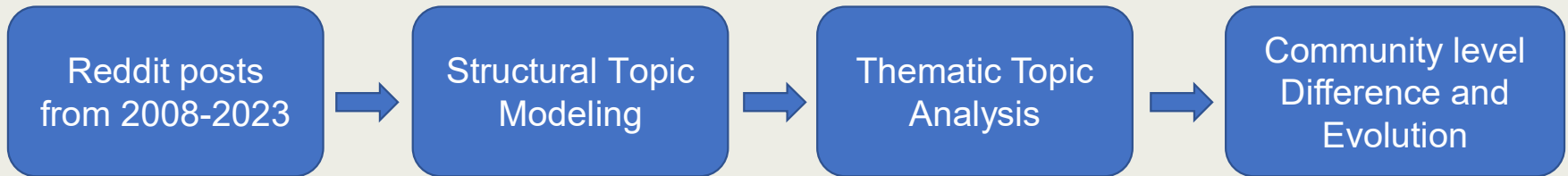
Part 1

- What are the different topics of discussion surrounding climate change on Reddit?
- How has the discussion of different climate change topics evolved over the years?

Part 2

- Develop techniques to identify climate skepticism on Reddit
- Measure the prevalence of discussions with skeptic tone containing climate denial statements

Our approach



Structural Topic Model

- Subreddits dedicated to climate change science and skepticism
 - */r/climate, /r/climatechange*
 - */r/climateskeptics*
- 150K+ posts, 3 subreddits, 2008-2023
- Structural Topic Modeling
 - Covariates: Community, Year

Experimentally validated number of topics: **48**

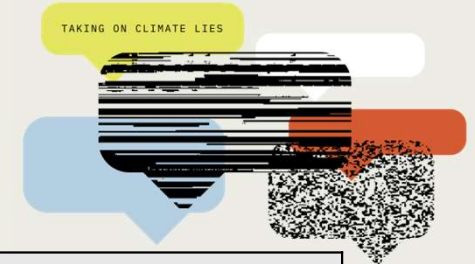


r/climate Rules

1. Science denial ^

Pointing to denialist content with the assumption that it's real is NOT ok here.

Themes of topics identified



Climate Change Consequences	Climate Science Discussion	Climate Action and Policy
Temperature Consequences	Climate Science Research	International Policy and Actions
Environmental Consequences	Climate models and measurements	International Environmental Projects
Habitat consequences	Politics of climate science	Climate bill, Paris agreement
Socio-economic consequences	Criticism of climate consensus	Climate protests and activism
Environmentalism	Climate Anxiety	US Climate Politics, Big Oil
Climate Urgency		

Difference in topic proportions between communities

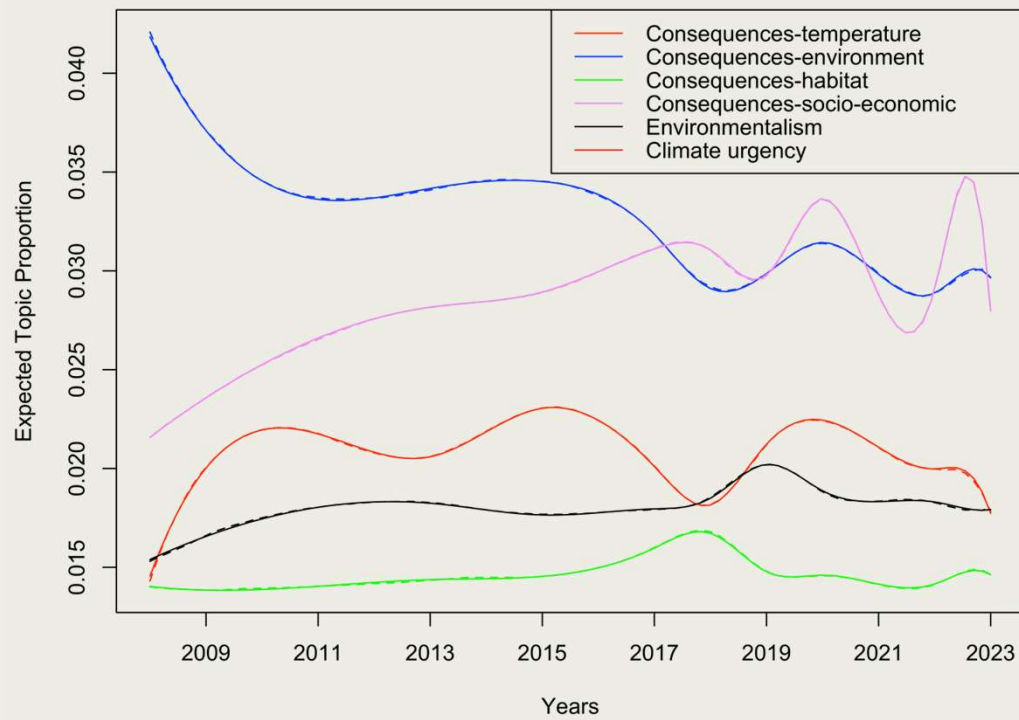


Topic composition of Science driven communities	Topic composition of Skeptic driven communities
Climate change consequences, environmentalism, extreme weather events, and climate urgency (+3.1%)	Climate science research controversy and scandals (e.g. Climategate) (+3.2%)
Alternative energy and Sustainable Sources (+4.8%)	Criticism of climate change, climate conspiracy, climate anxiety (+4%)

Climate consequences discussion over the years



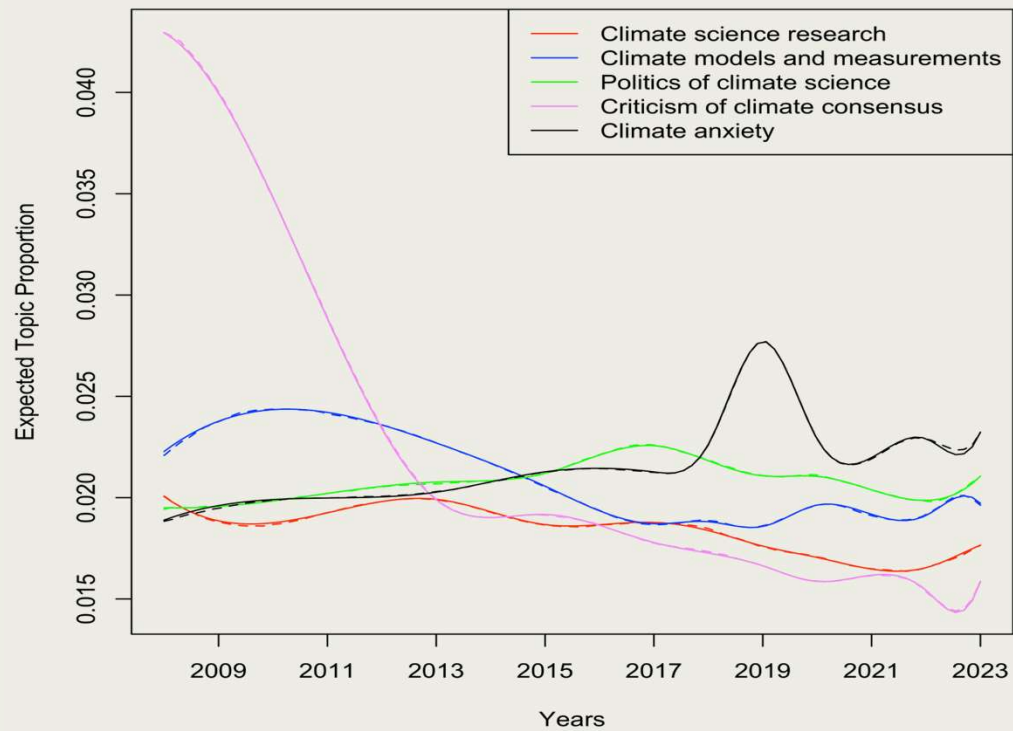
Evolution of climate consequences discussion on Reddit over the years



Climate science discussion over the years

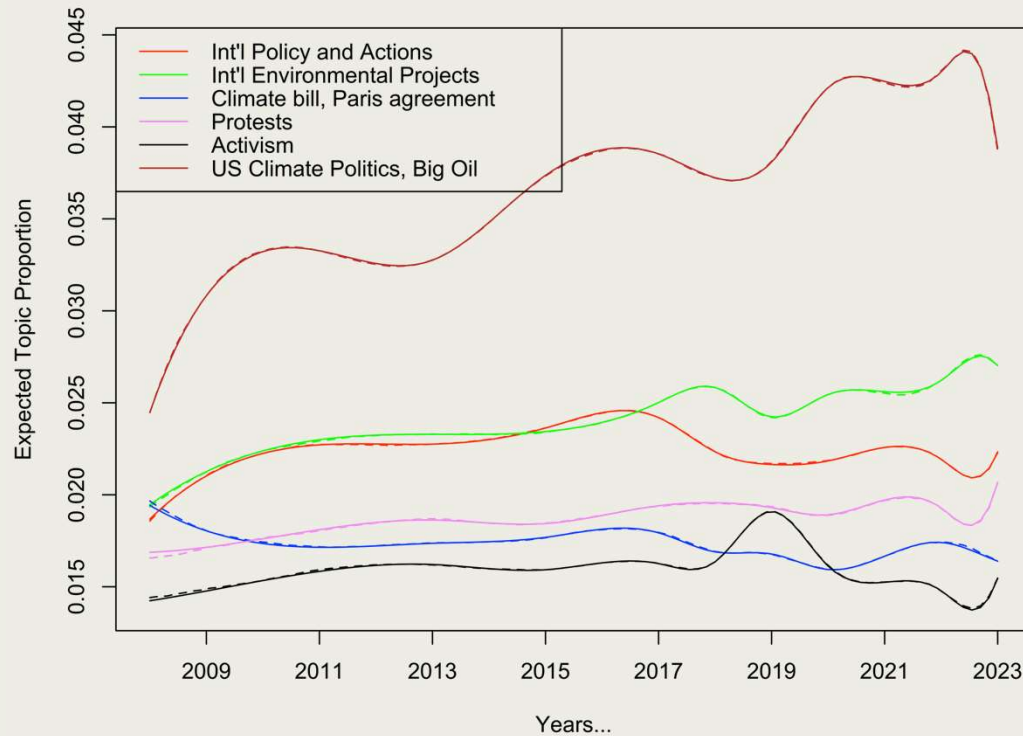


Evolution of climate science discussion on Reddit over the years



Climate policy discussion over the years

Evolution of Climate Action/Policy discussion on Reddit over the years





Identifying Climate Change Skepticism on Reddit

Climate Skepticism on Reddit

Challenges:

- Climate change discussions on Reddit are nuanced with details
- Communities are not homogeneous with respect to their theme (regardless of community rules)
- Data annotation is expensive and not scalable for every climate related claim

Solution:

- Unsupervised textual entailment to automatically identify climate skeptic discussions on Reddit
- Grounded entailment leveraging Large Language Models (LLMs) and expert annotations from Skeptical Science to identify climate skepticism with high accuracy



Textual Entailment for Skepticism detection

Framing the problem of identifying skepticism as a textual entailment problem

- Hypothesis
- Premise
- Does the premise entail the hypothesis ?
(Entailment / Contradiction / Neutral)

Advantages of using this approach

- Leverage expert domain knowledge from Skeptical Science in crafting hypothesis
 - Climate Myth
 - What the Science Says
- Replacing the training-validation pipeline with expert consensus



What is the link between hurricanes and global warming?

What the science says... [Link to this page](#)

Select a level... Basic Intermediate

There is increasing evidence that hurricanes are getting stronger due to global warming.

Climate Myth...

Hurricanes aren't linked to global warming

"According to the National Hurricane Center, storms are no more intense or frequent worldwide than they have been since 1850. [...] Constant 24-7 media coverage of every significant storm worldwide just makes it seem that way." (Paul Bedard)

Grounded Entailment with Large Language Models

Fine-tuned Language Models are Zero-Shot learners

- Google FLAN (Open-source)
- GPT-3.5 (Powers Chat GPT!)



Scientific Consensus

Scientific evidence shows that hurricanes are getting stronger and intense due to global warming, while the connection of global warming and hurricane frequency is unknown.



Science Example

There is an increasing evidence that hurricanes are getting stronger and intense due to global warming

Skeptic Example

Hurricanes are not linked to global warming or climate change

- ✓ • Support
- Refute



- Support
- ✓ • Refute

Classification Prompt



Initialization: You are an assistant that can classify if a statement presents support or skepticism to the scientific consensus that <Insert Claim specific consensus>.

--

Researcher: Classify the statement : <science example>

GPT-3.5: Supporting

Researcher: Absolutely correct. Using the same concept, classify the statement: <skeptic example>

GPT-3.5: Skepticism

Researcher: Absolutely correct. Using the same concept, classify the statement: <Post from Reddit we want to classify>

GPT-3.5: Output

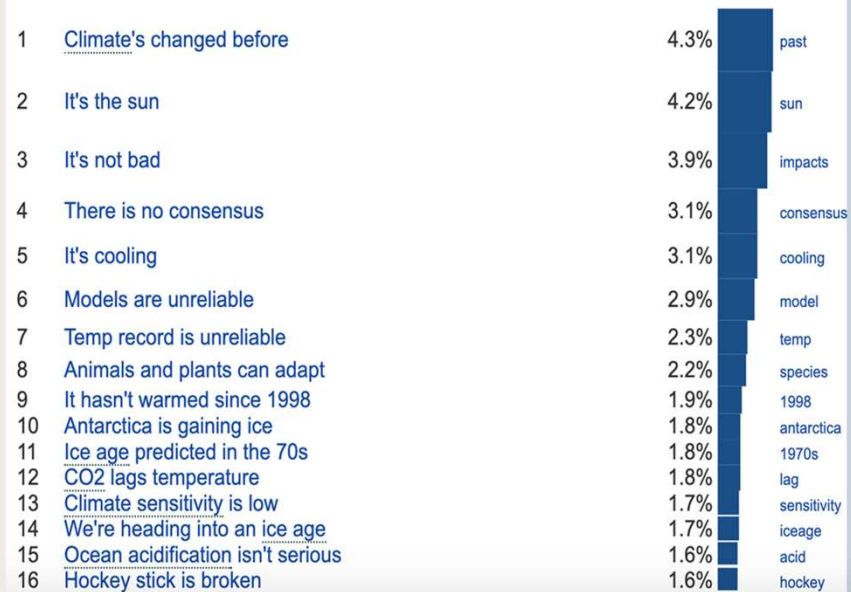
Data Source

- Top 15 most popular Skeptic Arguments from Skeptical Science
 - Pair of “What the science Says” and “Climate Myth” claims
- 39,288 posts and comments from entire Reddit related to the Skeptic Arguments
 - 3,327 subreddits



Skeptic Arguments

This is a list of every skeptical argument encountered online as well as how often each argument is used. How this is calculated...



Evaluation

Method	F1 Score
Climate BERT Fact-Checking	0.252
Vanilla GPT-3.5 (Without consensus grounding)	0.615
GPT-3.5 With Consensus grounding	0.785
FLAN-UL2 With Consensus grounding	0.773



- Types of Error
 - **Hallucination error**
 - Quoted text, nuanced context of usage
 - **Insufficient context about the claim**
 - Grounding model towards the required context
 - Different aspects of scientific claim

Future Improvements to the Model

- Current Consensus: *“We are not heading into an ice age. CO2 concentrations set to continue to rise, return to ice age conditions seems very unlikely.”*
- Evaluation text: *“Milankovitch cycles prove it is certain that the world will go into an ice age which will solve all issues”*
- Refined Consensus: *“The grand solar minimum and/or variations in Milankovitch cycles have been overwhelmed by the greenhouse effect; thus, global temperatures are rising, and we are not heading into an ice age.”*

Advantages of this approach

- More expert collaboration
- Resources can be directed towards crafting comprehensive scientific consensus statements



Characterizing Climate Skepticism on Reddit

Climate Skepticism in Reddit communities appears in both skeptic and scientific communities

- Science-driven communities have **51.90%** of the discussions with skepticism tone
- **33.78%** of the discussion on skeptic communities support the scientific consensus
- General purpose communities such as */r/politics*, and */r/worldnews* contain a mix of scientific support as well as skepticism



Skeptic post (%)	Scientific consensus post (%)
"Co2 is plant food" (84.1%)	Plants and animals can adapt to climate change (50.8%)
"It's the sun" (82.5%)	"Glaciers are retreating" (48.2%)

Themes of Climate Skepticism on Reddit

- Using history as an example: (e. g. We were supposed to be heading into ice age)
- Qualified Skepticism: (e. g. scientific criticisms of sources such as Mann's hockey stick, Al Gore's report, IPCC report etc.)
- Underscoring the intensity: (e. g. Sea levels are rising only in the extremes)
- Underscoring the effect: (e. g. Co2 emissions contributes less than cosmic rays, volcanoes etc.)



Summary

- Variety of themes on Reddit related to climate change such as the science of climate change, its consequences and policies / activism
- Science based communities focus more on policy level discussions and consequences of climate change
- Skeptic driven communities focus more on climate science politics, and climate conspiracies
- Develop an unsupervised model to identify discussion containing climate skepticism
- Expert-assisted scientific consensus utilizing crowdsourced knowledge base of Skeptical Science can be leveraged to identify climate skepticism on scale
- Climate Skepticism in Reddit communities appear mixed in both skeptic and science communities



Number of tweets related to climate Lies February, 2007



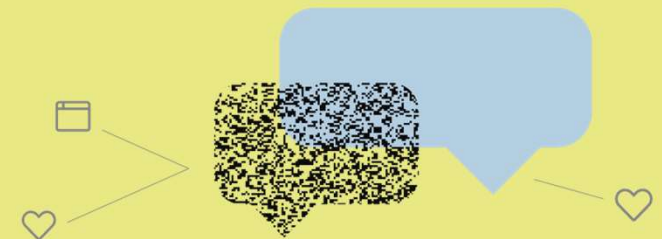


Focus Area 2: Native Advertising and Climate Disinformation

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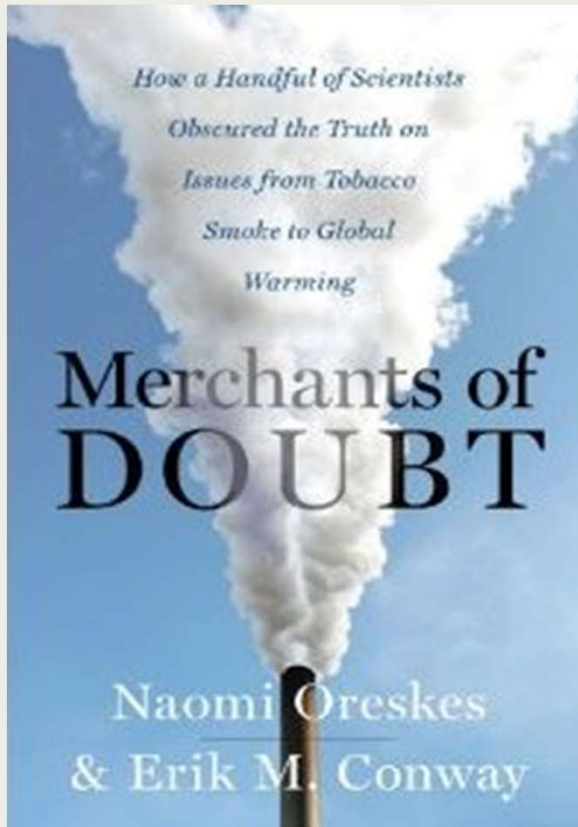
Beyond social media

Since 2016, disinformation studies have exploded, focused on social media and other digital sources

However: especially on the issue of climate, there are sources of disinformation closer to the core of our media system



History of Disinformation from Corporate Actors



ENVIRONMENTAL RESEARCH LETTERS

LETTER • OPEN ACCESS

Assessing ExxonMobil's climate change communications (1977–2014)

Geoffrey Supran² and Naomi Oreskes

Published 23 August 2017 • © 2017 The Author(s). Published by IOP Publishing Ltd

[Environmental Research Letters](#), Volume 12, Number 8

Citation Geoffrey Supran and Naomi Oreskes 2017 *Environ. Res. Lett.* 12 084019

 Article PDF



Institute for Global Sustainability
Rafik B. Hariri Institute for Computing and
Computational Science & Engineering

Disinformation, Greenwashing & Advertising



Advertising inherently raises ethical questions:

- What sorts of persuasion are ethical?
- What techniques are permissible?

What Supran and Oreskes document is another step further:

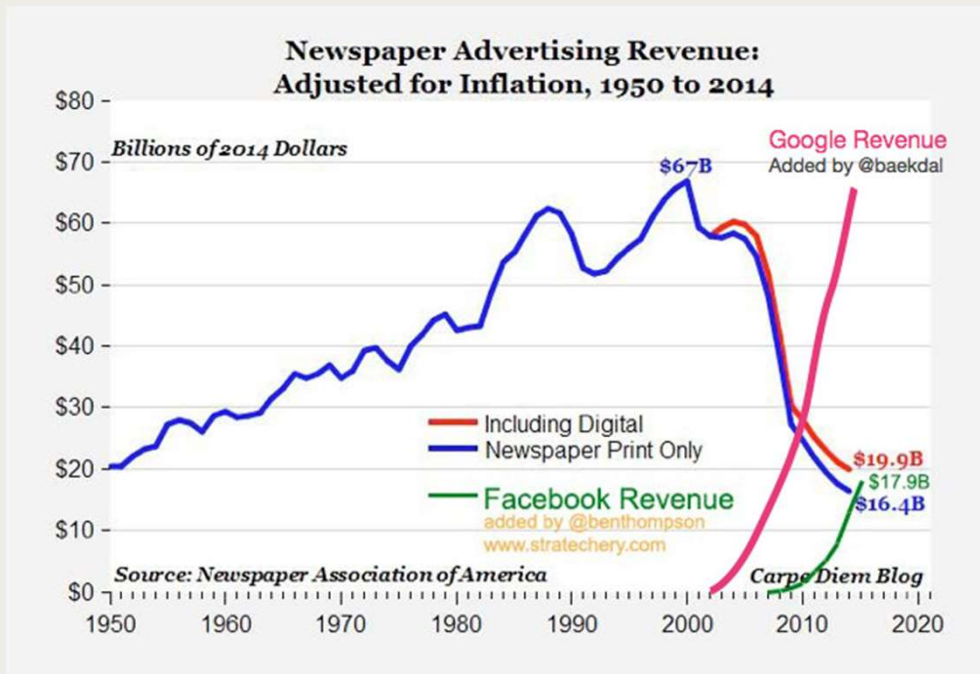
- These are efforts to influence citizens' opinions not about particular products, but about the choices a political society has to make.

Habermas, *Structural Transformation of the Public Sphere*, p. 193



“Private advertisements are always directed to other private people insofar as they are consumers; the addressee of public relations is ‘public opinion,’ or the private citizens as the public and not directly as consumers. The sender of the message hides his business intentions in the role of someone interested in the public welfare.”

US Journalism Context: Tsunami of Crises



1. Emergence of digital media
2. Loss of ad \$s in journalism
3. Emergence of ad blockers

What Is “Native Advertising”?

The use of “textual, pictorial, and/or audiovisual material that supports the aims of an advertiser (and is paid for by the advertiser) while it mimics the format and editorial style of the publisher that carries it” (Couldry and Turow 2014, 1716).



Samuel Hopkins Adams: The Great American Fraud (1907)

Can Cure Cancer
Home Without Pain, Plaster or Operation, and I Will Tell You How, Free.

RHEUMATISM CURED WITHOUT MEDICINE
WITHOUT PAIN
A DOLLAR PAID
FOR APPROVAL

CANCER IS CURABLE
A Quarter of a Century's Marvelous Success

EPILEPTIC FITS CURED
FREE—A FULL 16-OUNCE BOTTLE

CANCER CURED
How Mrs. Worley's life was saved

Fits Cured.
I wish everyone suffering with Fits, Epilepsy, or Falling Sickness, to send for one of my large sized 16 oz. bottles Free. My remedy has cured whom all others failed.

DEAFNESS CURED
By No Means Until "ACTINA" Was Discovered.

DROPSY

CONSUMPTION AND CATARRH CURED—FREE

EPILEPTIC FITS CURED

Heart

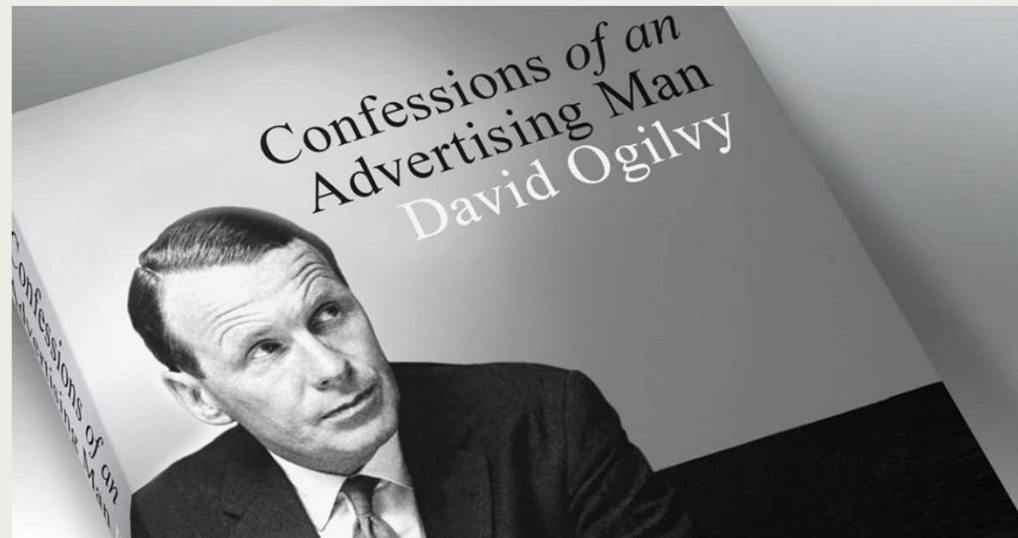
FITS

Shiloh's Consumption Cure

TAKING ON CLIMATE LIES



“There is no need for advertisements to look like advertisements. If you make them look like editorial pages, you will attract about 50 per cent more readers. You might think that the public would resent this trick, but there is no evidence to suggest that they do.”



BrandStudio Content from **Opteon™, a Brand of The Chemours Company**

Cooling the Planet

This is the first installment in a three-part reported series on the global effort to introduce more sustainable refrigerants. Click here to read [Part I: The Battle of the Warriors](#) and [Part III: The Future of Cool](#).

Ikegwuonu comes from a family of farmers. In the fertile lands of southeast Nigeria, he and his children raise poultry, breed cattle, and grow fruits and vegetables.

But despite productive farms and harvests, most people in the region scramble to feed their families.

"Farmers lose 50 percent of their harvest due to spoilage," says Ikegwuonu. "There's no reliable electricity to keep food cool in storage at local markets."

And while food is spoiling in the south, families are starving to death in the north. The UN has said that a potential famine in the region could prove to be the worst humanitarian crisis in 70 years, with more than eight million people at risk. The country's current infrastructure and technological capabilities aren't sufficient to link the two regions together.

The urgency of the issue pushed Ikegwuonu to look for a solution. In 2015, he launched Cold Hubs, which develops solar-powered refrigeration storage units. Today, there are 50 such units in southern Nigeria, and he hopes to have 100 by 2018, and 15,000 in the following decade.

The units have extended the shelf life of produce from two to 21 days,



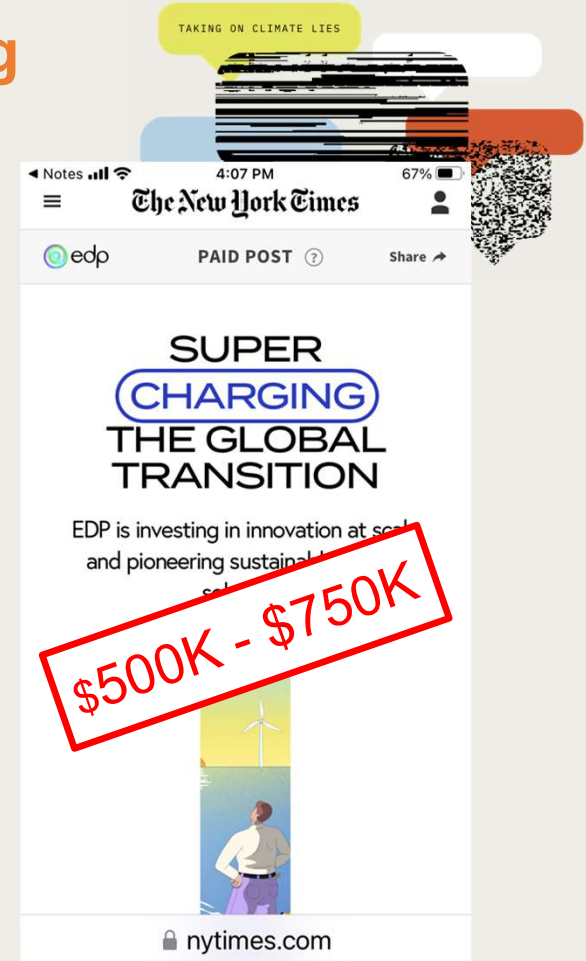


Brand Studio

Inspired by the dynamic journalism of The New York Times, T Brand Studio is a creative center of excellence within New York Times Advertising, creating compelling stories that resonate with a global audience.

[LEARN MORE](#)

Estimated Price Range of Native Advertising



ABOUT

PEOPLE

RESEARCH AREAS

PUBLICATIONS

NEWS

LECTURE SERIES

RESOURCES

CALENDAR

CAN YOU SPOT SPONSORED CONTENT? PROF. MICHELLE AMAZEEN'S STUDY REVEALS FEW OF US CAN




In today's ever-shifting online media landscape, "native advertising"—sponsored content that is integrated into a publication without being readily recognizable as promotional—has become increasingly commonplace across digital

news platforms. The question then arises: How do individuals perceive native advertisements and are they able to differentiate them from non-promotional editorial content?

Disappearing Disclosures



Michelle Amazeen
Just now · 👤



WASHINGTONPOST.COM

Cooling the planet

One contributor to climate change is also essential to modern so...

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Sharing Native Advertising on Twitter: Content Analyses Examining Disclosure Practices and Their Inoculating Influence

Michelle A. Amazeen & Chris J. Vargo

To cite this article: Michelle A. Amazeen & Chris J. Vargo (2021) Sharing Native Advertising on Twitter: Content Analyses Examining Disclosure Practices and Their Inoculating Influence, *Journalism Studies*, 22:7, 916-933, DOI: [10.1080/1461670X.2021.1906298](https://doi.org/10.1080/1461670X.2021.1906298)

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Published online: 30 Mar 2021.

Good Disclosure



Everyone ▾


PAID POST by ExxonMobil — The Future of Energy? It May Come From Where You Least Expect
<https://www.nytimes.com/paidpost/exxonmobil/the-future-of-energy-it-may-come-from-where-you-least-expect.html?smid=tw-share>




nytimes.com
PAID POST by ExxonMobil — The Future of Energy? It May Come F...
How scientists are tapping algae and plant waste to fuel a sustainable energy future.


Jeopardizing Editorial Independence







 **Michelle Amazeen** (She/Her)
Associate Professor of Mass Communication at Boston University
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Banking on cleantech...



 Investing in a cleaner future
washingtonpost.com

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International Journal of Communication 15(2021), 5186–5207

1932-8036/20210005

Agenda-Cutting Versus Agenda-Building: Does Sponsored Content Influence Corporate News Coverage in U.S. Media?

CHRISTOPHER JOSEPH VARGO¹
University of Colorado Boulder, USA

MICHELLE A. AMAZEEN
Boston University, USA

Sponsored content articles ($N = 2,711$) from 27 major U.S. corporations were analyzed across five years in *The New York Times*, *The Washington Post*, and *The Wall Street Journal*. The degree to which sponsored content predicted significant changes in corporate news coverage was investigated for elite media and U.S. online media. Corporate-sponsored content appeared to mildly suppress coverage of that corporation in online news. This effect, known as agenda cutting, happened both inside elite media and across the media landscape. Conversely, agenda building, or instances where sponsored content resulted in more media coverage, was very rare. We suggest that “content studios,” the departments of news media organizations that create sponsored content, may be exhibiting an agenda-setting effect more akin to traditional advertising departments, which have been known to suppress critical coverage of corporations that pay for ads.



Institute for Global Sustainability
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Computational Science & Engineering

Concerns with Native Advertising

1. Deceives audiences
2. Disappearing disclosures
3. Harms journalistic integrity
 - Tarnishing real journalism
 - Contradicting reporting
 - Suppressing future reporting
 - Creating competing “news” agenda



Research Opportunities

Studying native advertising can tell us how companies are trying to present themselves:

- Rich text to evaluate (compared to a TV commercial)
- Insert themselves into the conversation
- Shape perceptions of issues
- Mainstreaming denial language
 - Connects to evidence from Focus Area 1



Research Questions

1. Which corporations or organizations employ native advertising to communicate about sustainability and/or climate change and how extensive are these campaigns?
2. What are the topical themes of these campaigns?
3. To what extent are the claims in the campaigns accurate/inaccurate?



Sampling Frame



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AUGUST 22, 2022
AUDIENCE DATA DATA NEWS NORTH AMERICA
PUBLISHERS

Top 50 most popular news sites in the US: Growth at NYT, New York Post and Mail Online in July

By [Aisha Majid](#)

TWEET SHARE 0 REDDIT COMMENTS 12

The Mail Online was

Final Sample: 19 English-language Outlets

- ⑩ CNN
- ⑩ New York Times
- ⑩ Washington Post
- ⑩ New York Post
- ⑩ Daily Mail
- ⑩ CNBC
- ⑩ BBC
- ⑩ USA Today
- ⑩ Wall Street Journal
- ⑩ Forbes
- ⑩ Business Insider
- ⑩ Politico
- ⑩ US News & World Report
- ⑩ Associated Press
- ⑩ Bloomberg
- ⑩ Newsweek
- ⑩ Reuters
- ⑩ Atlantic
- ⑩ Verge



Initial Data-gathering Process

- Identified native advertising format of 19 news organizations
- Used URL format, html tags, page content (e.g. “sponsored by”)
- Ran google “dork” searches customized to each news organizations’ format, plus presence of at least 1 of 77 keywords related to the environment, energy, and/or climate change (e.g., “carbon,” “methane,” “fuel”)
- Customized python scrapers to gather page content and metadata
- Collected ~27,000 ads

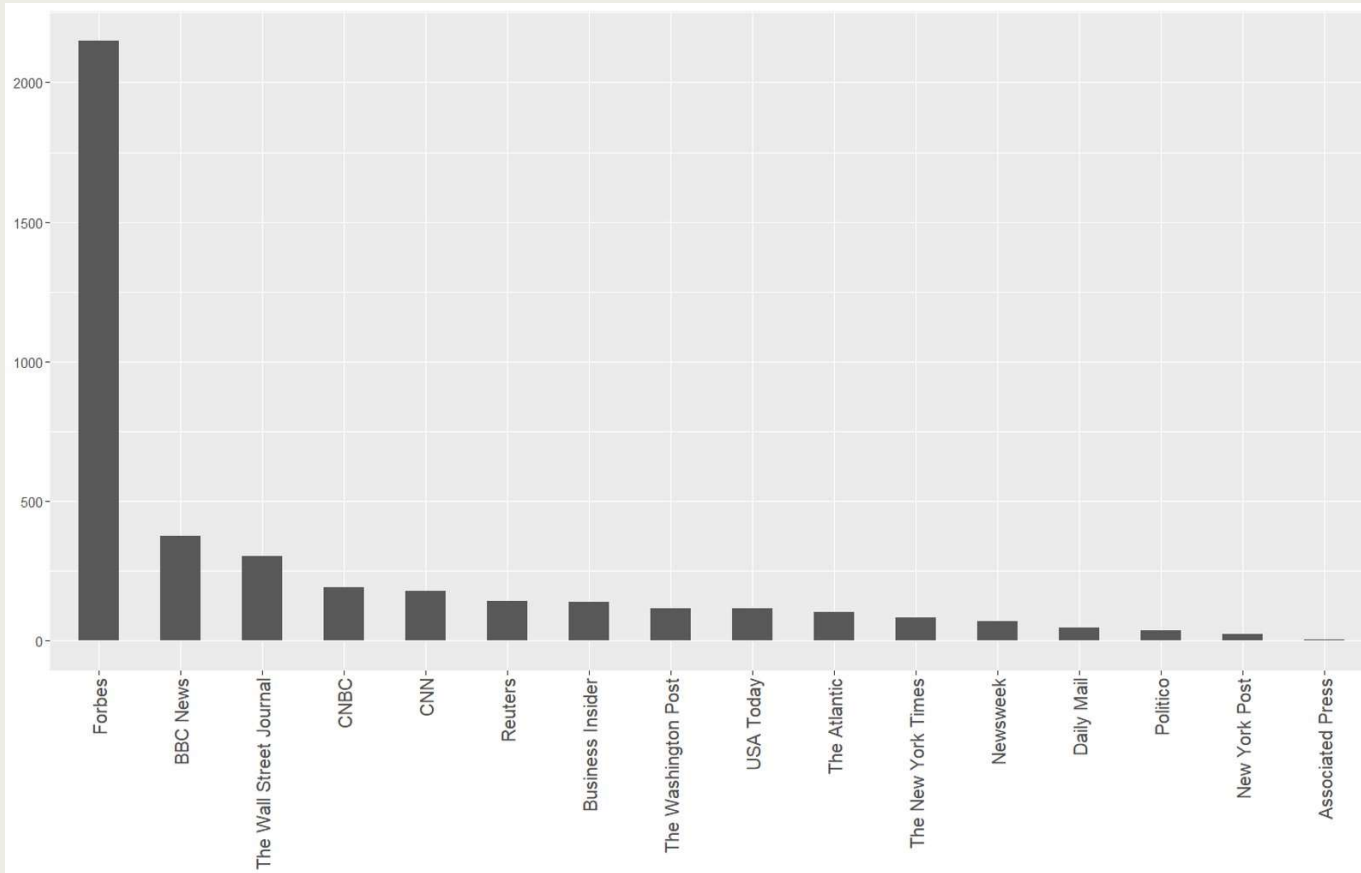


Refining the Sample

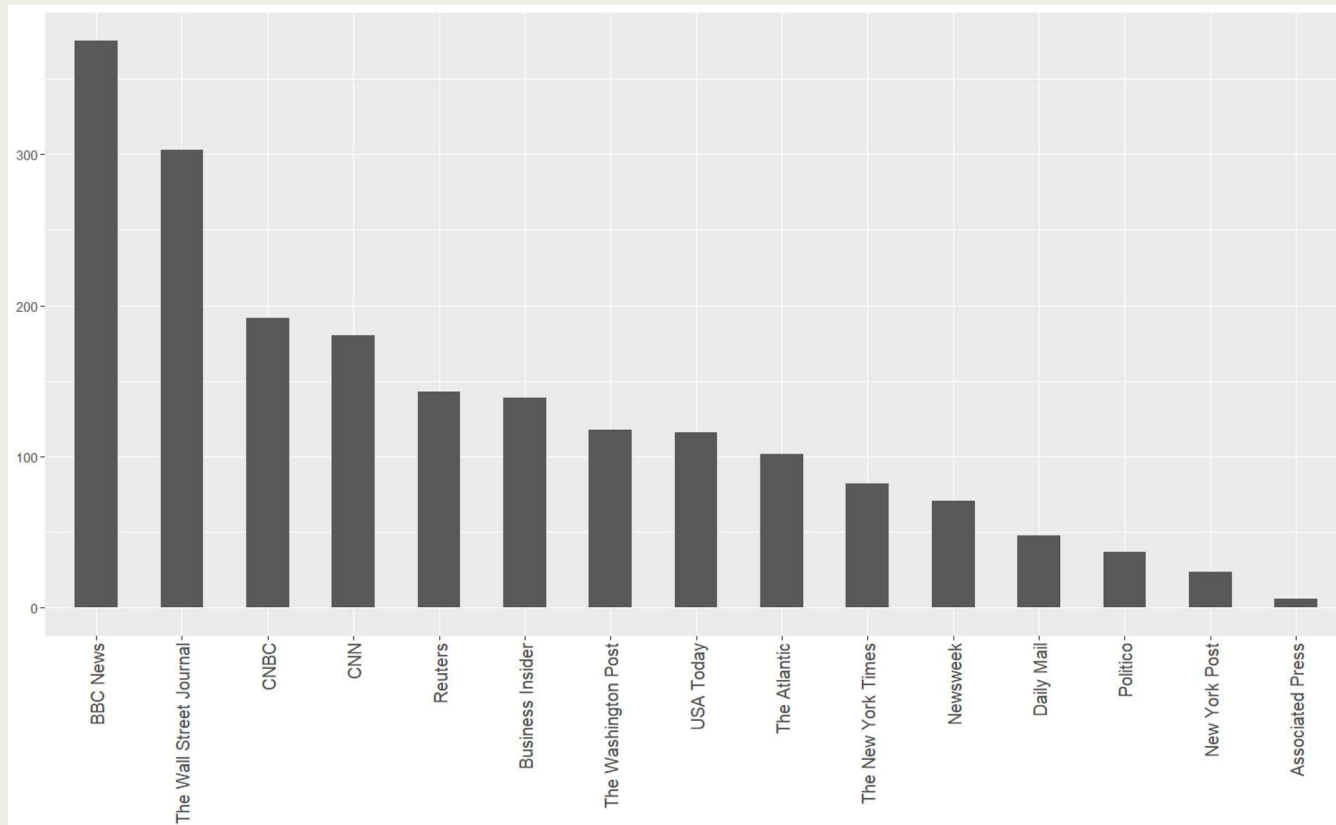
- Many ads in the original data only mentioned climate or environment in passing
- To focus on ads mainly about climate/environment, we refined the sample with a more sophisticated search string
- Current sample is ~4000 ads
- 16 outlets
- Hundreds of sponsors
- Ads range from 2013-2022



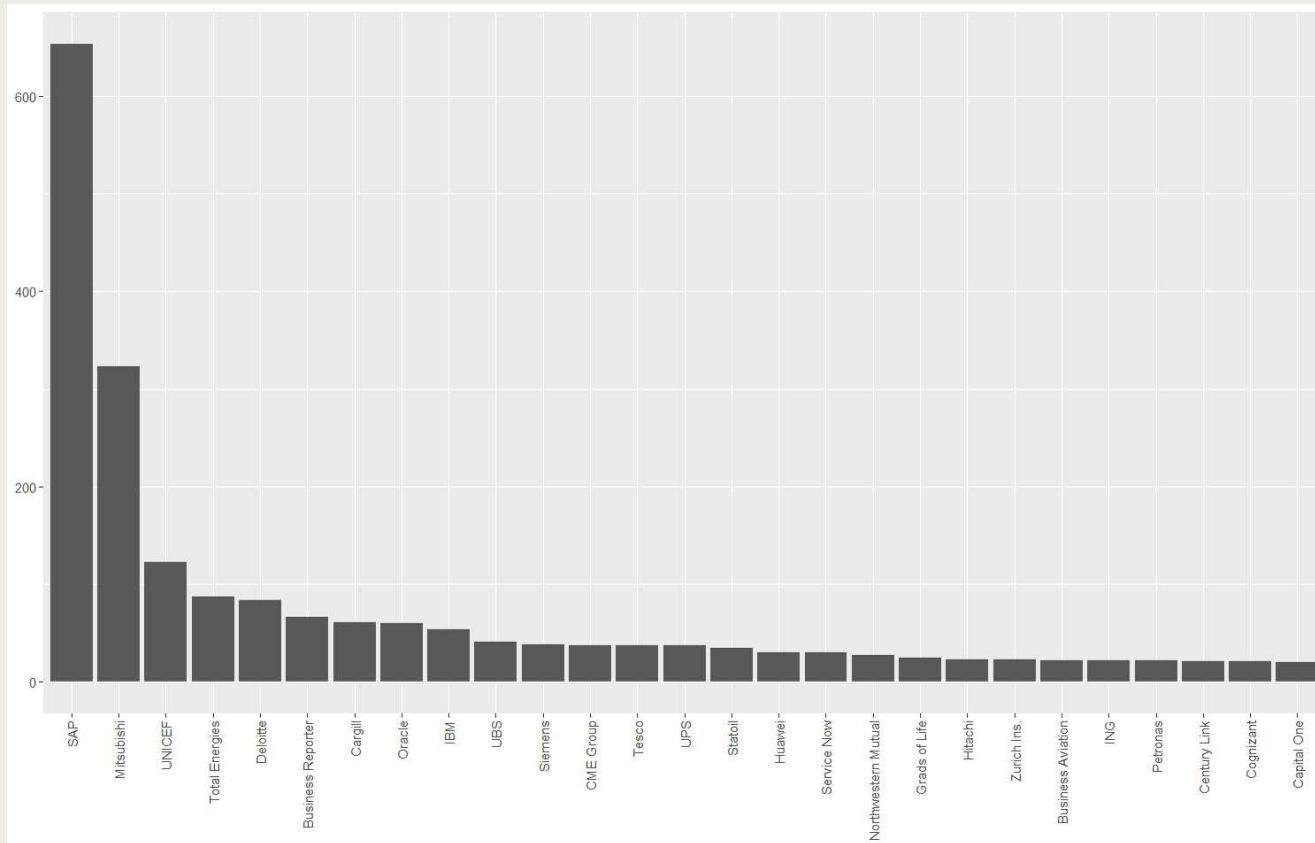
Number of Native Ads per Publisher



Number of Native Ads per Publisher (excluding *Forbes*)



Companies with More than 20 Native Advertisements in Dataset



Fossil Fuel Companies Using Native Ads

- American Fuel and Petrochemical Manufacturers
- American Petroleum Institute
- BP
- Chevron
- Eni
- ExxonMobil
- Fuel Merchants Association of New Jersey
- Marathon Petroleum Corporation
- Petronas
- Shell
- Statoil
- Total Energies



Thematic Framework (Lamb et al., 2020; Supran, 2022)

- Transitioning to a Green Economy
- We Need "Big Energy"
- Policy-Focused Discourses
- Redirecting Responsibility
- Misdirection
- Climate Silence
- Surrender/Doomism



Transitioning to a Green Economy



- American Fuel and Petrochemical Manufacturers
- American Petroleum Institute
- Chevron
- ExxonMobil
- Petronas

Transitioning to a Green Economy



DOJ ITICCO

CONGRESS MINUTES DDG E&E NEWS

SPONSOR

And the U.S. upstream oil industry is well positioned for IMO 2020 as well. Much of the increase in U.S. crude oil production is low in sulfur and ideal for making lower-sulfur fuels, and America is exporting more crude today than ever before.

In addition to restarting the coker at its Chalmette refinery to produce more **clean fuels**, PBF has agreed to supply shipping giant Maersk with low-sulfur marine fuel produced at PBF's recently acquired former asphalt refinery in New Jersey on the Delaware River south of Philadelphia. Like restarting the coker at Chalmette, the agreement with Maersk repurposes idled assets to supply **clean fuels**.



BP will produce IMO compliant fuels and sees the coming cap on sulfur fundamentally shifting global marine fuel use.



Manufacturers



OWN EXPORTS SOAR

U.S. refineries have made the investments needed to produce the cleanest shipping fuels in history, fuels that will power cleaner global trade.



INNOVATION

Committing To Sustainability: How Petronas Is Stepping Up Its Energy Initiatives



Nur Hidayah Mazlan Brand Contributor

ADVERTISEMENT



Towards a Greater Commitment to Sustainability

In the ongoing global push towards the transition to cleaner energy, PETRONAS has declared its aspiration to achieve **net zero carbon emissions by 2050**, capitalizing on the maturity of our **ESG** (Environmental, Social and Governance) practices while securing long-term value for the Company.

Net zero carbon emissions by 2050 will stretch PETRONAS'

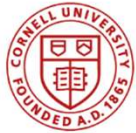
Malaysian institutions of higher learning and global network

Blue hydrogen is a low-carbon fuel produced from natural gas in combination with [carbon capture and storage](#) (CCS). This clean-burning fuel produces zero CO₂ when combusted, meaning it can play a vital role in a lower-emission future.



Hydrogen: Another Chapter in ExxonMobil's Lower-Emissions Ambitions

New world-scale blue hydrogen facility plans to fuel operations and reduce emissions.



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Touted as clean, ‘blue’ hydrogen may be worse than gas or coal

By [Blaine Friedlander](#)

August 12, 2021



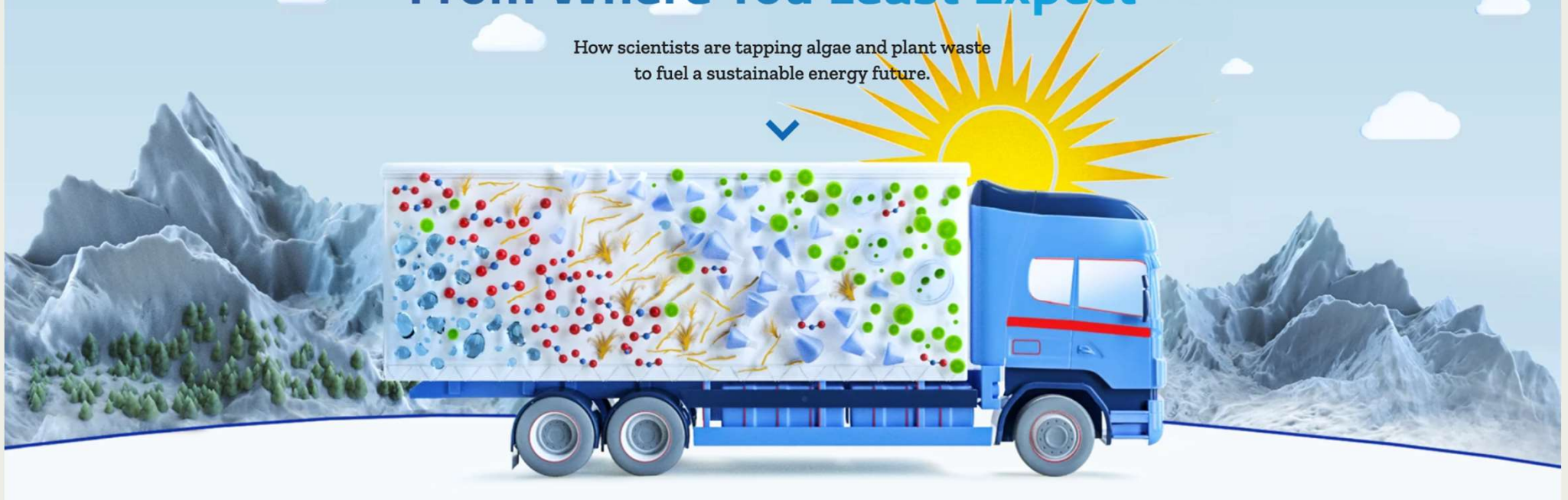
“Blue” hydrogen – an energy source that involves a process for making hydrogen by using methane in natural gas – is being lauded by many as a clean, green energy to help reduce global warming. But Cornell and Stanford University researchers believe it may harm the climate more than burning fossil fuel.

The carbon footprint to create blue hydrogen is more than 20% greater than using either natural gas or coal directly for heat, or about 60% greater than using diesel oil for heat, according to new research published Aug. 12 in Energy Science & Engineering.

“Most of the hydrogen in the U.S. and Europe comes from natural gas, using

The Future of Energy? It May Come From Where You Least Expect

How scientists are tapping algae and plant waste to fuel a sustainable energy future.



lousy days don't come often to Calipatria, Calif. This

small town in Southern California's Imperial



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OFFERED BY Office of Attorney General Maura Healey

Attorney General's Office Lawsuit Against ExxonMobil

[Read the Amended Complaint](#)

[Read the full press release here.](#)

On October 24, 2019, Massachusetts Attorney General Maura Healey sued Exxon Mobil Corporation (Exxon), the world's largest publicly traded oil and gas company, for deceptive advertising to Massachusetts consumers and for misleading Massachusetts investors about the risks to Exxon's business posed by fossil fuel-driven climate change—including systemic financial risk. The [amended complaint](#), filed in Suffolk Superior Court on June 5, 2020, alleges that Exxon has repeatedly violated the state's consumer and investor protection law and related regulations. Specifically, the amended complaint alleges that Exxon systematically and intentionally has misled Massachusetts investors about material climate-driven risks to its business and has deceived consumers about the central role its fossil fuel products play in causing climate change. The amended complaint alleges that Exxon's violations have taken the form of both significant factual misstatements and the failure to make disclosures to investors and consumers that would have been material to decisions by Massachusetts investors to purchase, sell, retain, and price ExxonMobil securities and by Massachusetts consumers to

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Biofuels

Amy Westervelt

@amywestervelt

Fri 17 Mar 2023 13:32 EDT



Big oil firms touted algae as climate solution. Now all have pulled funding

Insiders aren't surprised as ExxonMobil, the last remaining proponent of green algae biofuel, ends research



Some strains of algae produce large amount of lipids which can be turned into fuel relatively easily. Photograph: Michael Macor/AP

By one, big oil firms have touted their investments in algae biofuels as the future of low-carbon transportation - and one by

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We Need "Big Energy"



- American Petroleum Institute
- BP
- Chevron
- ExxonMobil

ADVERTISEMENT: Content supplied by API

Real climate solutions won't happen without natural gas and oil

By Mike Sommers, President and CEO, American Petroleum Institute

DECEMBER 14, 2020



CONTENT FROM



"Our industry makes up a portion of global emissions and we are committed to taking action and innovating to reduce our environmental footprint. It's what we've been doing and will continue to do. This ongoing work — aided by smart, pro-growth policies — will make it possible to reduce emissions, strengthen the economy and provide the energy America and the world need."

With a pandemic that has tested Americans in ways few others have, it is once again time to focus on problem solving and progress, not partisanship. As President-elect Joe Biden, Vice President-elect Kamala Harris and new members of the House and Senate have indicated in preparing to take office, their first task will be supporting distribution of a historic vaccine.



Why Pipelines and Production are pathways to progress

“Renewable technologies aren’t ready for prime time. Until then we still need traditional fossil fuel power sources.”

Wayne Winegarden, *senior fellow in business and economics at the Pacific Research Institute*

SCROLL



Why natural gas will thrive in the age of renewables

The goal of generating 100 percent renewable energy may not be achievable. But in the coming decades natural gas can help meet the growing global demand for sustainable energy.

SCROLL



We Need Big Energy



Sponsor Content:
What's this?

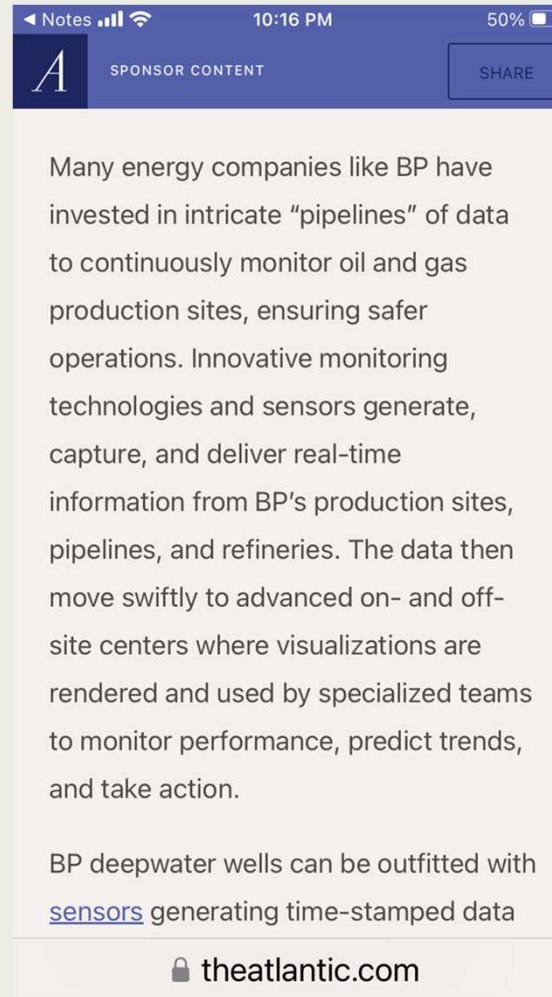
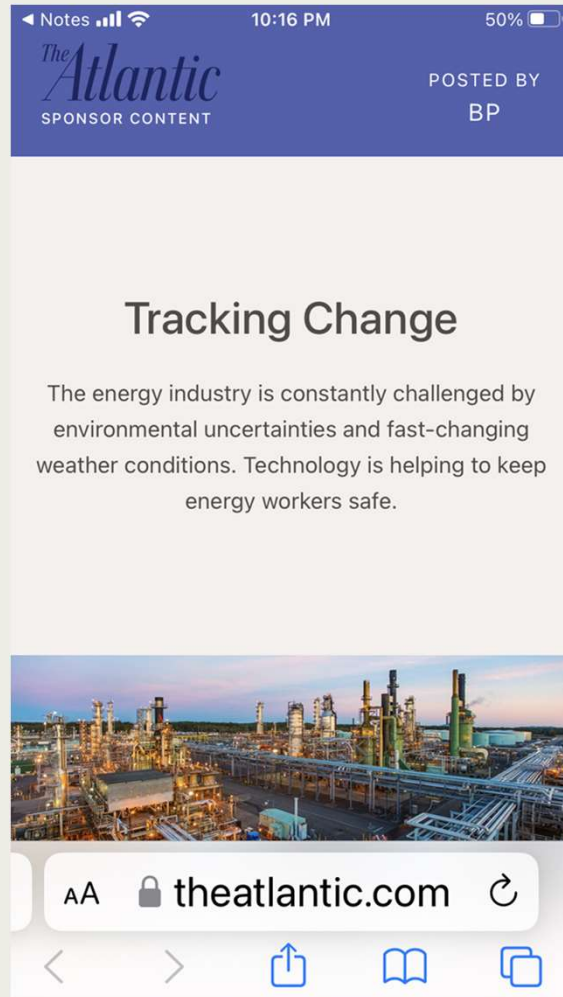


Now, as in other parts of Appalachian coal country, Connellsville is experiencing a resurgence as the energy industry moves back into the region to tap the vast supply of The Benedum Foundation works alongside educators, parents and private-sector stakeholders like Chevron in the rural heart of the new energy economy that sits above the Marcellus shale formation. The foundation, which is based in Pittsburgh, collaborates with area schools, universities and employers to boost STEM's role in the curriculum and students' technical skills.

U.S. Census Bureau.

Since Tuffy Shallenberger took over the family business in 1991, he's seen a struggling region ride its natural gas to a new prosperity.

We Need Big Energy

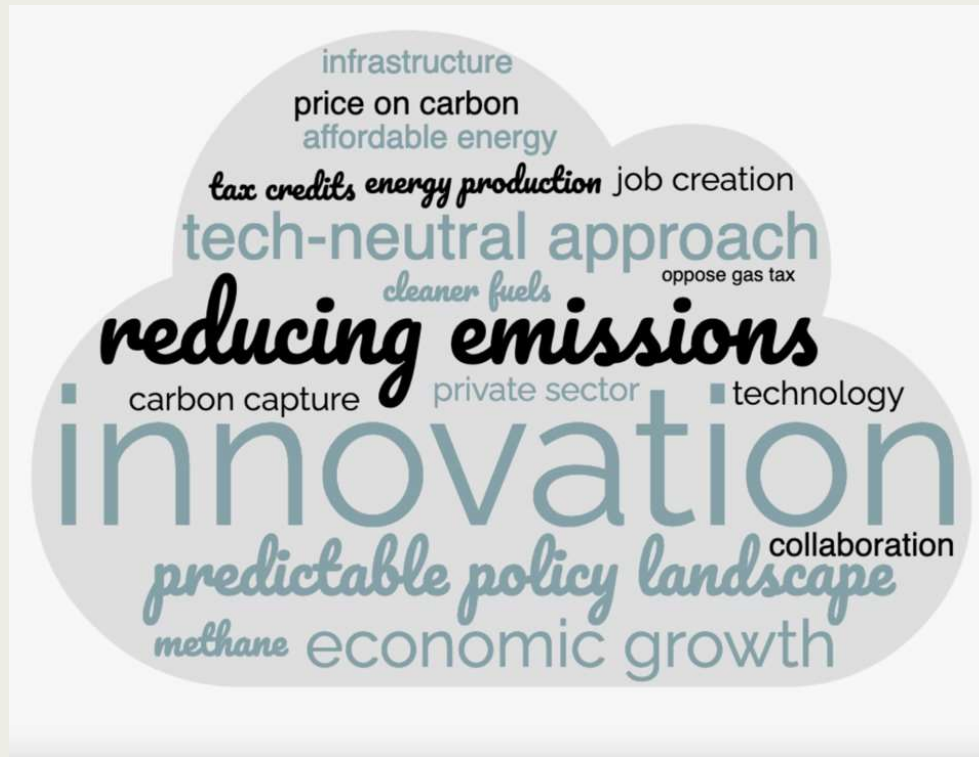


Natural gas coupled with CCS could be an energy combination of choice in a lower-carbon future. That's because natural gas can keep up with changing energy demand, and it burns cleaner than other fossil fuels, like coal. For energy-intensive industries, those factors are especially important for reaching lower-emission goals.

In addition, retrofitting existing facilities with CCS is **more cost-effective than a full switch to renewables** because the natural gas infrastructure that powers facilities is already in place.

When it comes to technology that's essential to reducing industrial CO₂ emissions, all eyes are on carbon capture and storage, or CCS.

Policy-Focused Discourses



- American Petroleum Institute
- ExxonMobil



1. An economy-wide price on carbon

Establishing a coordinated, transparent, economy-wide market price on carbon dioxide is an important element of building the business case for capturing it. A stable and transparent price on carbon can help provide the economic clarity and stability required

2. A technology-neutral approach

emissions.

No single technology will enable society to meet the climate ambitions outlined in the Paris Agreement. That's why it's so important that government policies acknowledge the need for a technology-neutral approach that gives all technologies each to have the opportunity to contribute to emission-reduction targets.

3. A predictable policy landscape

Investors are drawn to certainty, and innovative minds to opportunity. Predictable, stable, cost-effective policies to incentivize CCS are needed to promote the broad deployment and scalability of this technology. The climate change challenge is long term, and any policy response needs to have the same perspective. One long-term policy incentive could be a tax credit to promote the allocation of capital to CCS. In fact, 84% of U.S. adults support providing a business tax credit for CCS technology, according to the Pew Research Center.

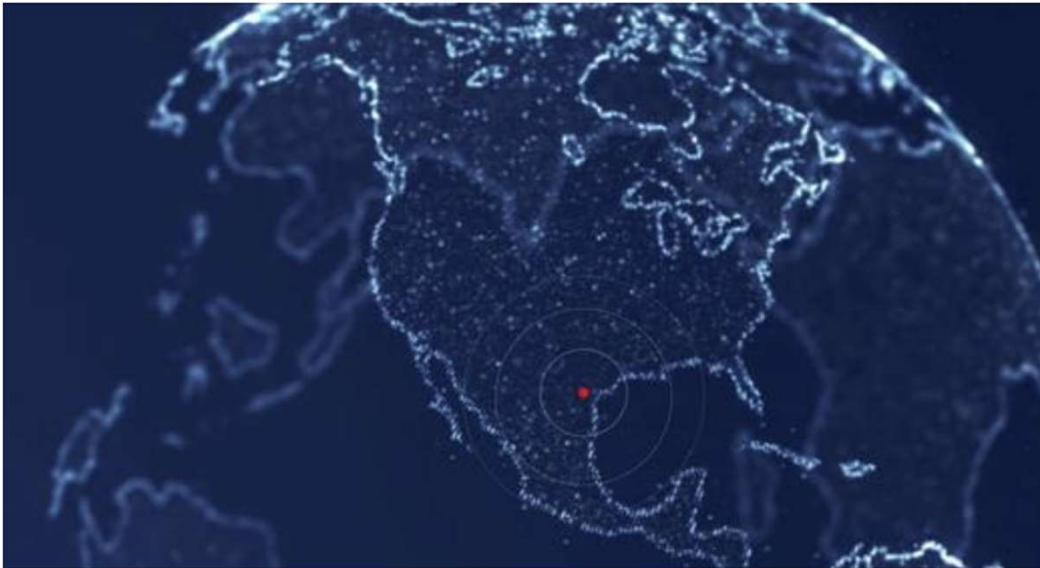
duce

Policy-Focused Discourses



Michelle Amazeen

In a wide-ranging Q&A, Joe Blommaert, the head of ExxonMobil Low Carbon Solutions, explains how his team is working to commercialize and deploy technologies to help cut global emissions and address the impact of climate change.]



WASHINGTONPOST.COM

Helping decarbonize industry with Carbon Capture and Storage

The Washington Post
Democracy Dies in Darkness

EM: Finally, on the policy front, what is needed to incentivize investments in CCS and other emission-reduction technologies?

JB: The CCS opportunities that ExxonMobil is evaluating have the potential to move forward with current technologies for large-scale, game-changing emissions reductions. When it comes to effective policy, for us it starts with the need to understand the value of carbon by establishing a market price for it. This would provide the clarity and stability required to drive investments. We recognize that no single technology can enable society to achieve its lower-carbon ambitions. So all technologies need to be supported to allow for continued global growth and improved standards of living while also addressing climate change. Stable, supportive policies and regulatory frameworks are critical to enable new technology and infrastructure development at the pace and scale needed to help meet the goals of the Paris Agreement. These include durable incentives that can be provided through a variety of mechanisms, such as grants, tax credits—including opportunities to expand the 45Q tax credit in the United States—or low-interest loans. Additionally, sustained, long-term government support for research and development will also be critical. Providing initial policy support for CCS could ultimately facilitate the development of an effective marketplace that can drive down costs and spur additional investment in new carbon capture technologies, low-emission hydrogen production, direct air capture and other solutions.



ADVERTISEMENT: Content supplied by API

Why Pipelines and Production are pathways to progress

Our recent sprint backward on pipelines and resource development should alarm Americans everywhere. Let's do the right thing and make affordable energy available to all. Let's build pipelines, modernize our nation's infrastructure and lift our communities.

With a historic pandemic and high unemployment, there are obvious reasons for stretched family budgets across the country.

Lesser-noticed reasons include the most basic necessities. Health care expenditures have jumped 75 percent, education expenditures spiked 38 percent and food expenditures surged 27 percent in America between 2008 and 2019.

But there is a pleasant surprise in that sobering [federal data](#). As staying healthy, educating children and putting food on the table grew more expensive, household energy expenditures dropped 15 percent.

This has been a key benefit of America's energy renaissance, itself born of technological advances including hydraulic fracturing, horizontal drilling and state-of-the-art infrastructure - much of it built by working men

MORE FROM API



Real climate solutions won't happen without natural gas and oil

Policy-Focused Discourses



Sections

The Washington Post
Democracy Dies in Darkness

mamazeen

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With the American Petroleum Institute's [Climate Action Framework](#), we are prepared to deliver workable solutions. This new policy framework outlines the industry and government actions required to tackle climate change, while meeting the world's long-term energy needs. Our member companies are committed to putting carbon capture technology to work. We are also endorsing economy-wide carbon pricing legislation and a variety of other policies to encourage innovation.

We must look to policy solutions that reduce emissions while supporting energy production, job creation and economic growth. API's [Climate Action Framework](#) is a blueprint for this path, including accelerating technology and innovation, further mitigating emissions from operations, advancing a carbon price policy, developing cleaner fuels and driving climate reporting. As a nation, we must concentrate our efforts in these ways instead of limiting the affordable, reliable energy America has, which will continue to drive American economic growth, security and progress.



The new administration's first 100 days in office were marked by aggressive action on two fronts—the coronavirus pandemic and climate change. Addressing the latter, the president rejoined the Paris Agreement, resumed global

Progress

Redirecting Responsibility



- American Petroleum Institute
- Chevron
- ExxonMobil



But when it comes to sources of air pollution, India's dependency on coal is a large-scale issue. The Economic Survey of India 2018-19 states that coal is the main component in thermal power, which forms nearly 60 per cent of India's installed capacity. Cleaner-burning natural gas has environmental benefits compared to coal, and offers greater grid stability. In terms of efficiency, natural gas is particularly effective as it can match the demand curve better than other power sources.

They say it's hard to stop an idea whose time has come. Sadly, most ideas find their limelight during times of crisis. In India, a looming environmental crisis has led to a galvanised private sector – and a concerned government.

According to a 2018 World Health Organisation study, of the world's 15 cities with the highest air pollution, 14 are in India.

The private sector is jumping into the fray to provide solutions. Since 2014, more than 40 environmental startups have been set up in India with a singular goal – to combat the country's air pollution crisis. These companies and initiatives are trying to solve two problems that can plague the public sector: difficulty in large-scale coordination and a lack of tech solutions.



Abundant Energy Is Fueling Growth

Increasing supplies of natural gas –
reducing emissions in the process.

Scroll >



The United States is in the midst of unprecedented transformation. A sudden abundance of energy resources – particularly natural gas, as well as oil and renewables – has fundamentally changed our outlook for growth, jobs and the environment.

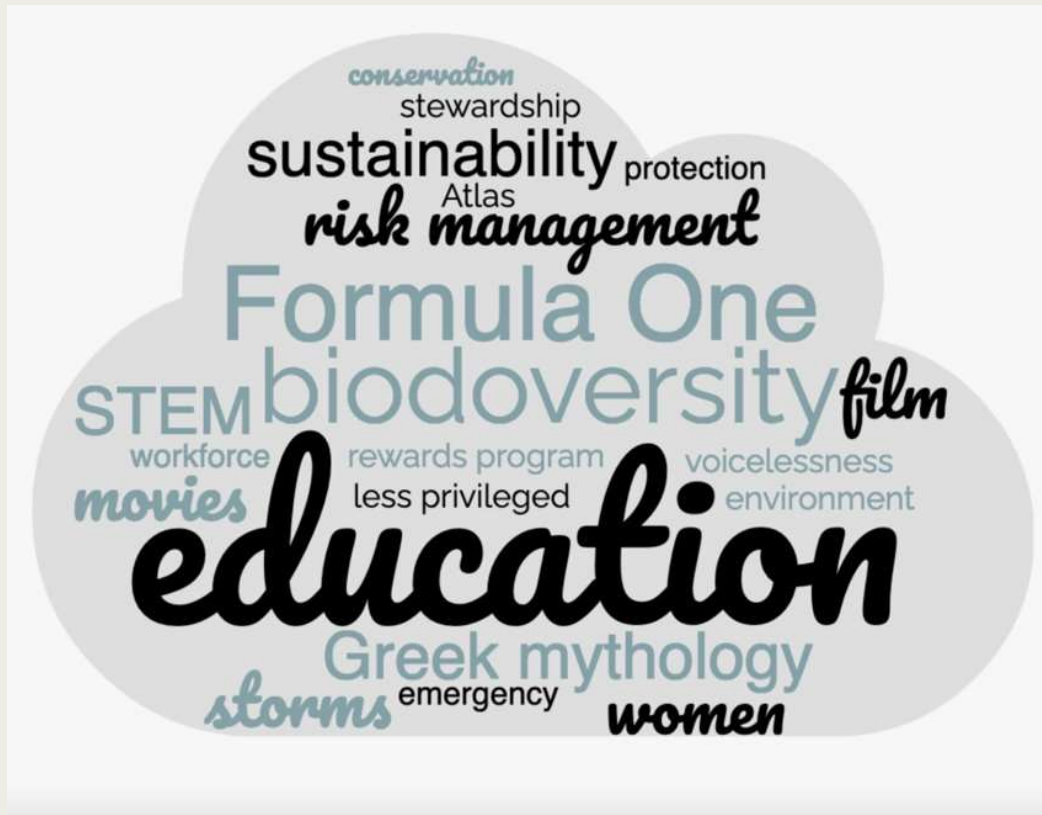
Natural gas sits at the center of this revolution. Surging supplies translate into lower prices for the many goods and services of which natural gas is a part, including fuel, fertilizer, electricity, raw materials and more.

This affordability, in turn, has both stimulated economic growth and helped achieve unprecedented reductions in U.S. energy-related carbon emissions. Natural gas has been the main cause for a 14% reduction in our emissions since 2005¹ – more than any other country in the world.² As a result, U.S. emissions have fallen to the lowest level in a quarter century.³

Finding ways to sustain growth while lowering emissions is a growing imperative. By 2040, we'll have to feed, house and fuel another 1.6 billion people. In emerging regions from Asia to Africa and from the Mideast to South America, development is turbocharging urbanization.⁴

All told, over the next two decades, worldwide energy demand will grow by nearly a third – comparable to adding another China and India to today's energy markets.⁵ No single source of energy will be able to satisfy all that additional need. Still, the influx of natural gas will play a critical role by helping to meet increasing demand and, indirectly, by enabling the growing use of renewables.

Misdirection



- American Fuel and Petrochemical Manufacturers
- Chevron
- ExxonMobil
- Petronas

Protecting **Barrow's Biodiversity**

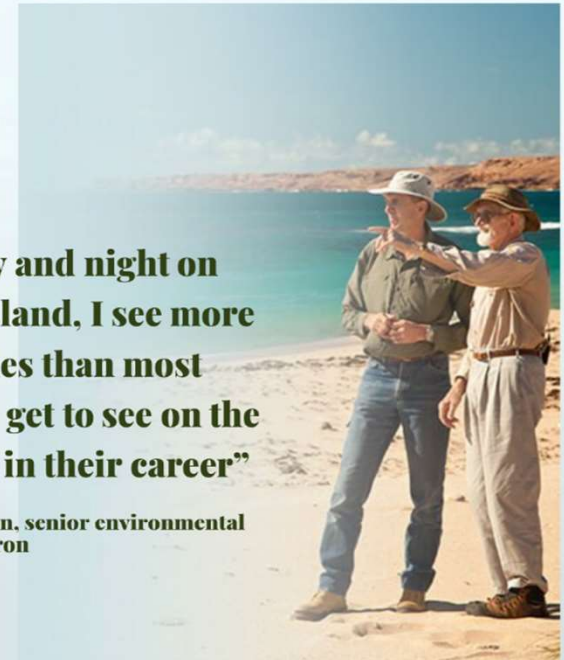
The system is stringent for a reason. Home to thousands of different types of plants and animals, Barrow is a remarkable showcase of biodiversity. Indeed, 24 of the island's terrestrial species⁶ and subspecies don't exist anywhere else.

The protections in place have managed to successfully maintain biological balance. Some of the species on Barrow Island are exclusive to the island or among Australia's 1,800 native threatened species,⁷ including the golden bandicoot,⁸ the burrowing bettong,⁹ or "boodie" and the spectacled hare-wallaby.¹⁰

"In one day and night on Barrow Island, I see more rare species than most biologists get to see on the mainland in their career," said Lagdon.

“In one day and night on Barrow Island, I see more rare species than most biologists get to see on the mainland in their career”

- Russell Lagdon, senior environmental manager, Chevron



Russell Lagdon and Dr Harry Butler



Future First
The quiet revolution

[Home](#) [The Winning Team](#) [Quiet Revolution](#) [Track to Road](#)



In the space of one season, the Mercedes AMG Petronas Formula One team not only reinvented the modern F1 car but beat the might of Ferrari and Red Bull to dominate the fastest sport on earth. This is the story of how they did it.

INNOVATION

A Love Affair To Savor



A'ishah Kamaludin Brand Contributor
PETRONAS BRANDVOICE | Paid Program

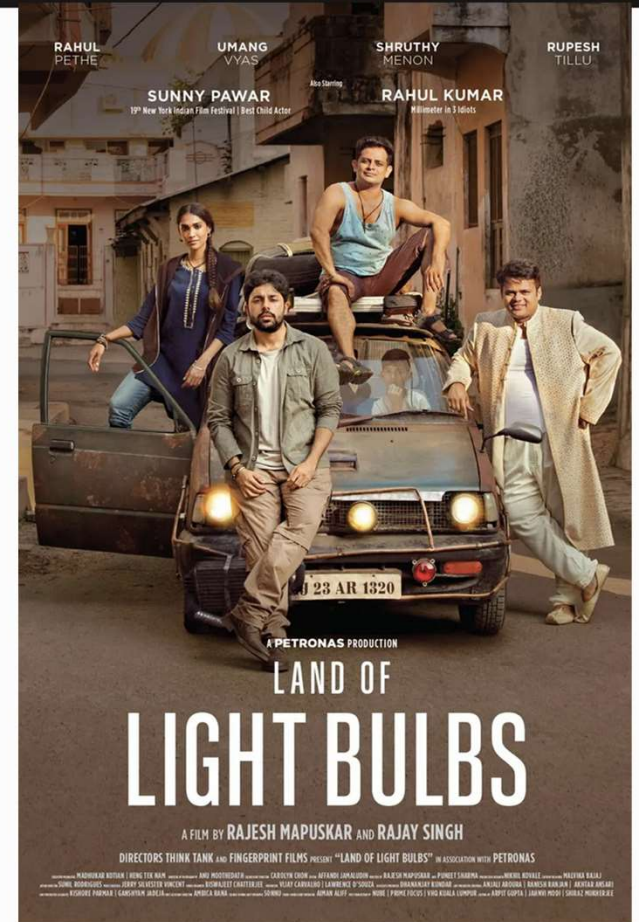
Oct 25, 2021, 11:15am EDT

f India.

🐦 A nation of myriad colours, smells, tastes. A rich heritage that is shaped by its warm people. A country with eyes set on the future while embracing its charming cultural past. A land that never gives up and is as vibrant as its world-famous movie industry—Bollywood.

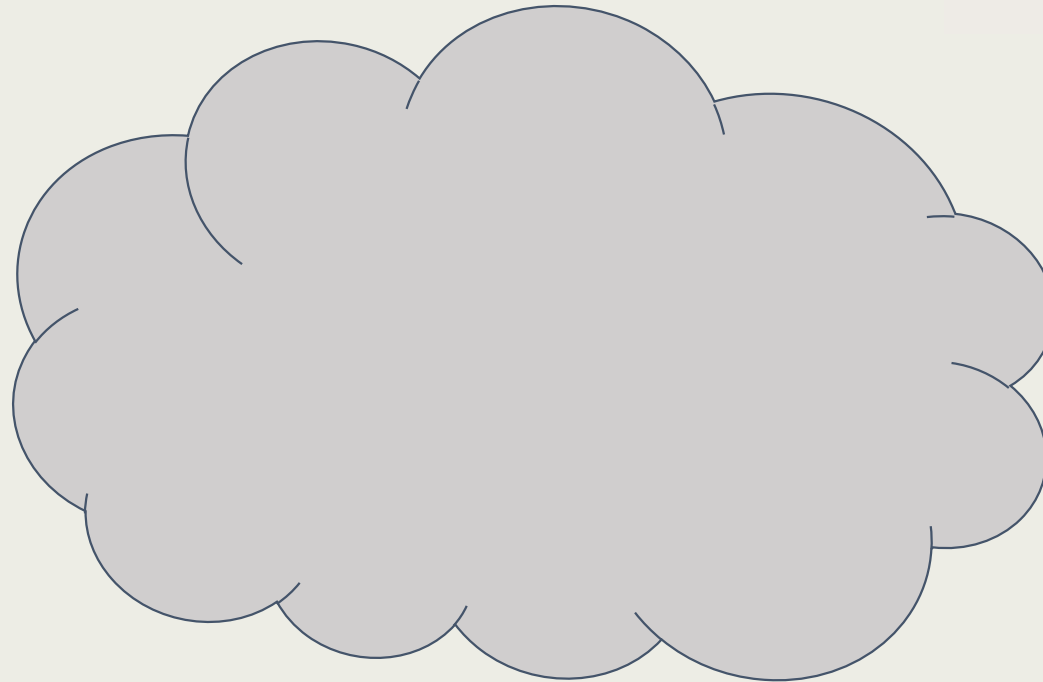
in

Tapping into India's long-standing love affair with movies, PETRONAS produced an energy-themed trilogy called "*Land of Light Bulbs*". Both a reflection of PETRONAS' more than two decades of strong partnership with India and a celebration of India's indigenous ingenuity, the web film, which debuted on YouTube in November 2019, continues to capture the attention of millions of viewers.



Climate Silence

- American Petroleum Institute
- Chevron




INSIDER

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Here's how the natural gas and oil industry is changing communities across the US

Created by Insider Studios with Power Past Impossible Nov 15, 2019, 1:00 PM EST



Jim Bailey, Managing Director at Red Wing Shoe Company American Petroleum Institute

- The natural gas and oil industry in the US supports 10.3 million jobs and accounts for nearly 8% of the gross domestic product.
- From providing good-paying jobs to assisting public education, the natural gas and oil industry benefits residents in both producing and non-producing states.
- Visit powerpastimpossible.org to learn more about the positive economic impacts of natural gas and oil.

How will you explore?
Tell us what's on your travel wishlist for 2023 and beyond
Take the Survey

Insider Studios





The Gorgon Project is helping to support global energy demand and drive economic growth, while limiting the impact to the environment.

“Protecting the environment is one of Chevron’s core values—our workforce lives and breathes it,” said Lagdon. “Barrow Island operations are an example of how good environmental stewardship enables business success.”



Sponsor Content:
What's this?



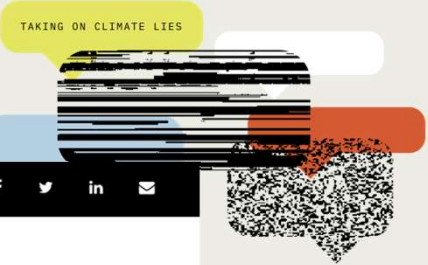
The New Land of Opportunity

Shallenberger Construction does the developmental work necessary for energy companies to tap natural gas: preparing the land, paving roads, constructing pipelines, and building, as well as reclaiming, fresh water storage sites known as impoundments —fenced-in football field-size water storage areas that satisfy the water-intensive needs of the hydraulic fracturing process. They also reclaim these impoundments, a process that returns the land to a state resembling the landscape before they were installed.

Coal Capital of the World

Since Tuffy Shallenberger took over the family business in 1991, he's seen a struggling region ride its natural gas to a new prosperity.

Doomism



Sections The Washington Post

CREATIVE GROUP ⓘ Content from **American Petroleum Institute**

Why natural gas will thrive in the age of renewables

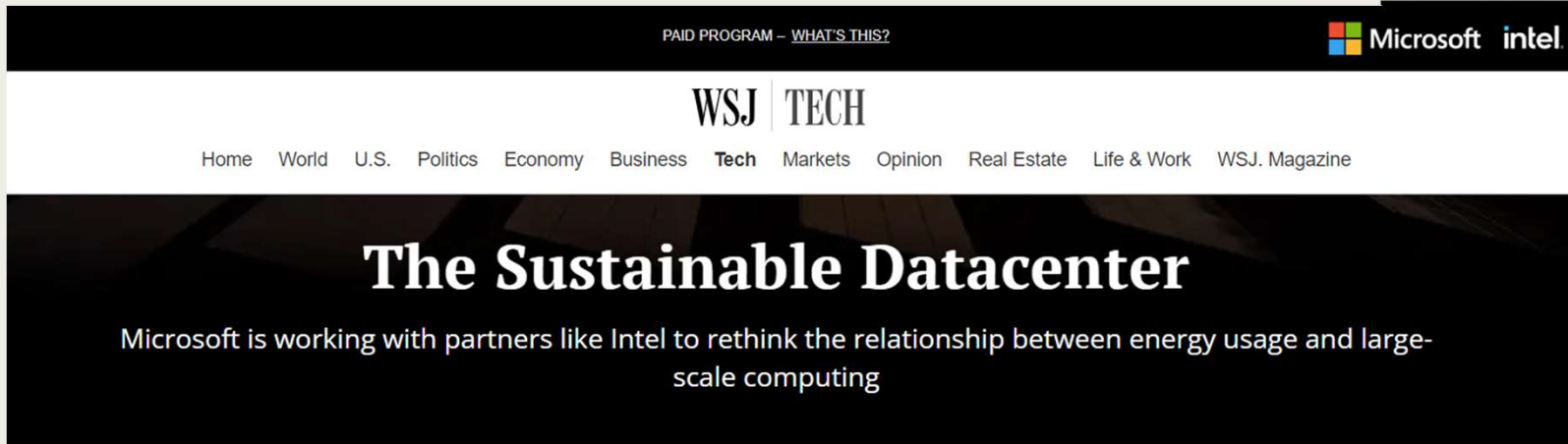
The goal of generating 100 percent renewable energy may not be achievable. But in the coming decades natural gas can help meet the growing global demand for sustainable energy.

SCROLL



Institute for Global Sustainability
Rafik B. Hariri Institute for Computing and
Computational Science & Engineering

Technology Companies



The screenshot shows a WSJ Tech article. At the top right, there is a yellow speech bubble with the text "TAKING ON CLIMATE LIES". Below it, there are logos for Microsoft and Intel. The article title is "The Sustainable Datacenter" and the sub-headline is "Microsoft is working with partners like Intel to rethink the relationship between energy usage and large-scale computing".

Microsoft, which operates a global network of datacenters for its cloud services, has a long-term vision that by 2030, 100% of its electricity consumption, 100% of the time, will be generated from zero-carbon sources. This “100/100/0” commitment recognizes not only the critical obligations Microsoft has as a major consumer of electricity, but also the opportunities that come with it, says Brian Janous, general manager of energy and renewables at Microsoft.

Technology Companies

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Companies prioritizing sustainability need to manage data on their progress. Here's how the cloud can help.

accenture Created by Insider Studios with Accenture Aug 6, 2021, 5:35 AM EDT

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- More organizations are prioritizing environmental, social, and governance values.
- They need to report on their progress to maintain transparency.
- The cloud can effectively and efficiently manage their data.

HSBC And Bangladesh Steel Re-Rolling Mills Ltd (BSRM): Driving Climate Change Agenda

HSBC Bangladesh has recently structured the country's second Sustainability Linked Loan for BSRM.



Implications

- ▶ Distinguish news from advertising and shun hybrids that blur the lines between the two. Prominently label sponsored content.

Society of Professional Journalists

CODE of ETHICS

PREAMBLE

Members of the Society of Professional Journalists believe that public enlightenment is the forerunner of justice and the foundation of democracy. Ethical journalism strives to ensure the free exchange of information that is accurate, fair and thorough. An ethical journalist acts with integrity. The Society declares these four principles as the foundation of ethical journalism and encourages their use in its practice by all people in all media.

- ▶ Consider sources' motives before promising anonymity. Reserve anonymity for sources who may face danger, retribution or other harm, and have information that cannot be obtained elsewhere. Explain why anonymity was granted.
- ▶ Diligently seek subjects of news coverage to allow them to respond to criticism or allegations of wrongdoing.
- ▶ Avoid undercover or other surreptitious methods of gathering information unless traditional, open methods will not yield information vital to the public.
- ▶ Be vigilant and courageous about holding those with power accountable. Give voice to the voiceless.
- ▶ Support the open and civil exchange of views, even views they find repugnant.
- ▶ Recognize a special obligation to serve as watchdogs over public affairs and government. Seek to ensure that the public's business is conducted in the open, and that public records are open to all.
- ▶ Provide access to source material when it is relevant and appropriate.
- ▶ Boldly tell the story of the diversity and magnitude of the human experience. Seek sources whose voices we seldom hear.
- ▶ Avoid stereotyping. Journalists should examine the ways their values and experiences may shape their reporting.
- ▶ Label advocacy and commentary.
- ▶ Never deliberately distort facts or context, including visual information. Clearly label illustrations and re-enactments.
- ▶ Never plagiarize. Always attribute.

MINIMIZE HARM

Ethical journalism treats sources, subjects, colleagues and members of the public as humans beings deserving of respect.

- ▶ Journalists should:
 - ▶ Balance the public's need for information against potential harm or discomfort. Pursuit of the news is not a license for arrogance or undue intrusiveness.

ACT INDEPENDENTLY

The highest and primary obligation of ethical journalism is to serve the public.

Journalists should:

- ▶ Avoid conflicts of interest, real or perceived. Disclose unavoidable conflicts.
- ▶ Refuse gifts, favors, fees, free travel and special treatment, and avoid political and other outside activities that may compromise integrity or impartiality, or may damage credibility.
- ▶ Be wary of sources offering information for favors or money; do not pay for access to news. Identify content provided by outside sources, whether paid or not.
- ▶ Deny favored treatment to advertisers, donors or any other special interests, and resist internal and external pressure to influence coverage.
- ▶ Distinguish news from advertising and shun hybrids that blur the lines between the two. Prominently label sponsored content.

BE ACCOUNTABLE AND TRANSPARENT

Ethical journalism means taking responsibility for one's work and explaining one's decisions to the public.

Journalists should:

- ▶ Explain ethical choices and processes to audiences. Encourage a civil dialogue with the public about journalistic practices, coverage and news content.
- ▶ Respond quickly to questions about accuracy, clarity and fairness.
- ▶ Acknowledge mistakes and correct them promptly and prominently. Explain corrections and clarifications carefully and clearly.
- ▶ Expose unethical conduct in journalism, including within their organizations.
- ▶ Abide by the same high standards they expect of others.

The SPJ Code of Ethics is a statement of abiding principles supported by additional explanations and position papers (spj.org) that address changing journalistic practices. It is not a set of rules, rather a guide that encourages all who engage in journalism to take responsibility for the information they provide, regardless of medium. The code should be read as a whole; individual principles should not be taken out of context. It is not, nor can it be under the First Amendment, legally enforceable.



TAKING ON CLIMATE LIES



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Daily Telegraph

● This article is more than **8 years old**

Telegraph's Peter Osborne resigns, saying HSBC coverage a 'fraud on readers'

Ex-chief political commentator launches blistering attack on paper, saying it put bank's interests before readers to save ad contract

● [Read Peter Osborne's blog in full](#)

John Plunkett and Ben Quinn

Wed 18 Feb 2015 02:54 EST



Peter Osborne launched a scathing attack on the Telegraph, saying the distinction between advertising and editorial had collapsed. Photograph: Sean Smith

The Daily Telegraph's chief political commentator has resigned and launched a blistering attack on the paper's management and owners over its lack of coverage of the HSBC tax story, which he described as a "fraud on its readers".

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Principle 1:

Advertising, public relations, marketing communications, news, and editorial all share a common objective of truth and high ethical standards in serving the public.

Principle 2:

Advertising public relations, and all marketing communications professionals have an obligation to exercise the highest personal ethics in the creation and dissemination of commercial information to consumers.

Principle 3:

Advertisers should clearly distinguish advertising, public relations and corporate communications from news and editorial content and entertainment, both online and offline.

Principle 4:

Advertisers should clearly disclose all material conditions, such as payment or receipt of a free product, affecting endorsements in social and traditional channels, as well as the identity of endorsers, all in the interest of full disclosure and transparency.

Principle 5:

NEWS RELEASE
FEDERAL TRADE COMMISSION

Washington, D.C. 20580

OFFICE OF INFORMATION 393-6800 Ext. 197

For RELEASE: IMMEDIATE, Tuesday, November 28, 1967

Statement in Regard to Advertisements
That Appear in Feature Article Format

The Commission has recently considered the publication by various print

“The Commission believes that it is in the public interest that publishers and advertisers avoid any possible deception by not placing advertisements whose format simulates that of a news or feature article.”

The Commission believes that it is in the public interest that publishers and advertisers avoid any possible deception by not placing advertisements whose format simulates that of a news or feature article. Inclusion in such an advertisement of a by-line, particularly when accompanied by the writer's title (such as "feature writer" or "editor"), may also mislead readers as to its nature. Accordingly, the Commission cautions advertisers to avoid use of such devices in their advertisements, when they may tend to mislead readers.

Where an advertisement may have a general resemblance to the format of a news or feature article, advertisers and publishers should print, in clear type of sufficiently large size to be readily noticed, the word "ADVERTISEMENT" in close proximity to the advertisement. Also, to avoid deception when an advertisement or an advertising section of this nature extends for more than one page, the word "ADVERTISEMENT" should be repeated on each page.

--000--



| HOME

The secrets of 'Black Ops' advertising. Who is paying for our news?

"I think the public would resent knowing they are being tricked. So best not to always tell them."



[James Cusick](#)

[Crina Boros](#)

8 February 2018

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Sponsorship of Climate Journalism

GIZMODO



Big Oil Uses Newsletter Ads to Spread Misinformation Ahead of Big Oil Misinformation Hearing

Fossil fuel companies are sponsoring some of the Beltway's most-read newsletters in an attempt to win influence in Washington, DC.

By **Molly Taft and Emily Atkin** Published October 27, 2021 | Comments (11) | Alerts



Institute for Global Sustainability
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Computational Science & Engineering



TAKING ON CLIMATE LIES

In the month leading up to the hearing from October 1 to October 22, Still, Politico and Axios each defended the practice of running the ads, despite concerns they may be misinforming millions about the climate crisis.

“It is not up to us to decide what is factually accurate or what is not factually accurate,” Politico executive vice president Cally Stolbach Baute told HEATED. “We frankly respect our readers enough to be fully transparent with them on our advertising and encourage them to evaluate our journalism on its merit and its accuracy.”

fuel interests.

SPONSORED CONTENT

Clean Energy Home Upgrades: Make dependable environmental improvements



Posted Monday, November 28, 2022 12:00 am

(Family Features) When you're considering upgrades for your home, earth-friendly enhancements that impact your energy usage are smart investments. Energy-saving home upgrades can offer long- and short-term advantages for the earth, your wallet and even your safety.

Many homeowners evaluate their energy needs as they plan home improvements. There are several low-carbon, resilient energy options available that can help safeguard your family. Consider these environmentally friendly upgrades to diversify your home's energy sources, reduce energy consumption and ensure your home is well-prepared to withstand interruptions to power service if the electrical grid fails.

Diversify Energy Sources

The growing conversation to "electrify everything" will require an overhaul on the aging electric grid just to manage the increase in demand. Accomplishing this will take decades and cost billions, according to the Department of Energy. In fact, according to a study conducted by Acupoll Precision Research on behalf of the Propane Education & Research Council (PERC), 54% of respondents believe electricity for everything will be too expensive for taxpayers while 70% strongly agree Americans should have a choice when it comes to their energy source. Propane is a clean, affordable and abundant energy option that reduces carbon emissions right now. Using propane appliances like furnaces, water heaters, fireplaces and kitchen appliances alongside other energy sources reduces the strain on the fragile electrical grid. Unlike electric appliances, propane appliances can work even during power outages.

Seal In Energy

Outdated doors and windows often lack energy benefits. Newer models have stronger, thicker panes that reduce the transfer of heat from inside to outdoors (and vice versa in the warmer months). Updating doors and windows allows you to easily repair any cracks or faulty seals that make it easy for energy to escape. When your home is well-insulated, your heating or cooling

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OUR TOP STORIES

City Council to weigh in on Old Fort Tuesday

FORT MADISON – Fort Madison city officials will take a closer look at options for the Old Fort at a special meeting Tuesday night in Fort Madison. City officials announced just over a week ...

County mulls \$3 increase in mill levy

LEE COUNTY – What was planned as a brief budget update Monday turned into a debate about what the county's budget director called, "the budget from hell": The Lee County ...

OPF "Caught in the Act" goes on stage next month

The smash hit "Drinking Habits" by Tom Smith was such a success for Old Fort Players' Community Theater in 2020 that they are bringing the lovable zany characters back to the stage for the ...

Superintendents react to school choice law

Michelle Amazeen

Say something about this...

PENCITYCURRENT.COM

Clean Energy Home Upgrades: Make dependable environmental improvements



Ongoing Steps

Creation of a “native advertising observatory”

- We have hundreds of native campaigns, by dozens of companies, in our data

Preparation of peer-reviewed papers

- Computational topic/thematic analyses and spread on social media
- Accuracy of claims
- Agenda setting examination of news organizations’ journalistic coverage of the companies that bought native advertising.





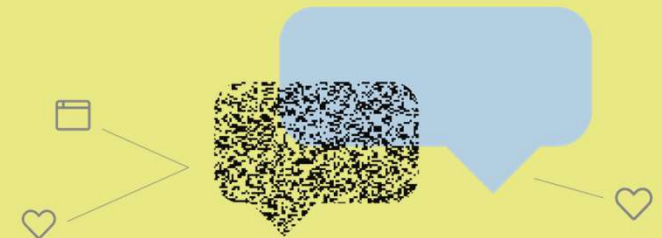
Focus Area 3: Misinformation-Susceptible Publics

Arunima Krishna, PhD
Associate Professor
College of Communication

Chris F. Wells, PhD
Associate Professor
College of Communication

Michelle A. Amazeen, PhD
Associate Professor
College of Communication

Irena Vodenska, PhD
Professor
Metropolitan College



Research Questions



- How are climate change *disinformation-immune, -vulnerable, -receptive, and -amplifying* publics distributed across the US population? What are their major covariates? How do they relate to the categories of the cultural cognition and Six Americas frameworks?
- How do climate change disinformation-immune, -vulnerable, -receptive, and –amplifying publics receive and respond to prebunking and debunking interventions?
- Which prebunking and debunking strategies are effective among disinformation-immune, -vulnerable, -receptive, and –amplifying publics?
- How do interventions impact disinformation-immune, -vulnerable, -receptive, and –amplifying publics’ behavioral intentions and support for climate action and policy?

The Typology of Disinformation-Susceptible Publics



Journal of Public Relations Research

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/hpr20>

Lacuna publics: advancing a typology of disinformation-susceptible publics using the motivation-attitude-knowledge framework

Arunima Krishna

To cite this article: Arunima Krishna (2021): Lacuna publics: advancing a typology of disinformation-susceptible publics using the motivation-attitude-knowledge framework, Journal of Public Relations Research, DOI: [10.1080/1062726X.2021.1944155](https://doi.org/10.1080/1062726X.2021.1944155)

To link to this article: <https://doi.org/10.1080/1062726X.2021.1944155>



Issue-Specific Misinformation-Susceptible Publics

- Broader population consists of four groups or publics
 - Misinformation-immune
 - Misinformation-vulnerable
 - Misinformation-receptive
 - Misinformation-amplifying
- Issue-specific motivation, attitudes, and knowledge taken together can help us identify who falls into which group



Misinformation-Susceptible Publics vs. Six Americas of Global Warming

- “Fundamentally, audience segmentation creates a typology of motivationally coherent groups of people within a larger, more diverse population” (Leiserowitz et al., 2021, p. 97)
- “A well-constructed typology can advance other aims of science including prediction, explanation, and understanding, and can offer practitioners insight into how to craft more effective public communication” (Leiserowitz et al., 2021, p. 97)
- Theoretically driven vs. empirically emergent



Misinformation Interventions



Misinformation Correction: Prebunking & Debunking

- Prebunking: preemptive intervention or inoculation message that forewarns about/preemptively refuses an impending misinformation message
- Debunking: intervention that attempts to correct or reduce misperceptions after a misinformation event has occurred
- “Truth sandwich” (Clark, 2020) has found some success (e.g., Amazeen et al., 2022)
- Different types of prebunking (Amazeen et al., 2022) and debunking (Krishna & Amazeen, 2022) have been used successfully



TAKING ON CLIMATE LIES

Research Design



Pre-Stimulus Questions

- Demographics
- Motivation
- Attitudes
- Knowledge
- SASSY scale
- Other psychographic batteries

Stimulus

- Participants randomly assigned to one of 49 conditions

Post-Stimulus Questions

- Misinformation acceptance
- Perceptions of corrective message
- Behavioral intentions
- Other outcomes

Research Design Continued

Online experiment: 3x2x2x3

- Factor 1: Prebunk: generic vs. specific vs. none (3)
- Factor 2: Misinformation format: NA disclosure vs. no NA disclosure (2)
- Factor 3: Misinformation message: Exxon renewables investment vs. natural gas (2)
- Factor 4: Debunk: native ad callout only vs. +legal vs. +fact check (3)



Generic Prebunk



Antonio Guterres UNSG 



As Secretary-General of the United Nations, I have drawn on my commitment to the UN Charter to address the climate emergency – an urgent threat that requires a global response. As you encounter information about climate change, remember to be wary of online misinformation efforts. While there’s an honest debate over how to effectively transition global energy usage to renewables, it’s being warped by multi-million dollar ad campaigns by self-interested actors who are engaging in misdirection and cherry picking.

Make sure the information you rely on comes from credible sources who have relevant expertise and who aren't motivated to greenwash their activities or cherry pick data to deny useful solutions.

[#MediaLiteracy](#) [#Misinformation](#).

 Like

 Comment

ExxonMobil Greenwashing + Paid Post Disclosure



1m · 🔒

ICYMI: ExxonMobil is actually becoming an environmentally friendly company! It's working to decrease its overall carbon footprint, and is an innovator in the development of alternative fossil fuels such as fuel from algae and farm waste.



NYTIMES.COM
PAID POST by ExxonMobil – The Future of Energy? It May Come from Where You Least Expect it

👍 Like 💬 Comment

Write a comment...

🗨️ 😊 📷 GIF 🎨

Natural Gas + No Disclosure + Debunk

8m · 🔒

ICYMI: Natural gas is a clean, affordable and abundant energy option that reduces carbon emissions just like wind and solar. Using gas appliances like stoves, furnaces, water heaters, fireplaces and other appliances alongside other energy sources reduces the strain on the fragile electrical grid. Unlike electric appliances, natural gas appliances can work even during power outages.



NYTIMES.COM

Can Natural Gas be the Key to Lowering Emissions?

1 comment

👍 Like 💬 Comment

8m · 🔒

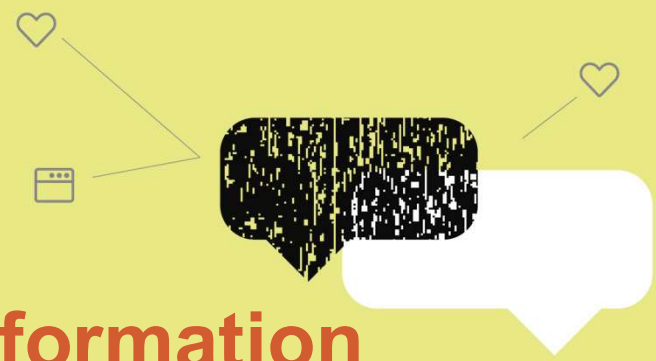
Hmm, are you sure this is a real news story? It sounds like an ad. In fact, [FactCheck.org](https://www.factcheck.org) flagged this article for misleading content because Exxon is advertising natural gas as a "clean" source of energy when it is in fact a fossil fuel and does contribute to emissions.

Like Reply 1m



Next Steps: Focus Area 3





Next Steps – Expand the "E" disinformation research into the "S" and the "G."

ESG Sustainability and Responsibility



NSF I-CORPS Grant Application to build AI-powered ESG Investing Solutions



Using Natural Language Processing (NLP), Knowledge Graphs, and Sentiment Analysis to Identify GREENWASHING

- Identify discrepancies between company ESG reports and Media - **Greenwashing**
- Develop ESG Knowledge Meta Model consisting of ESG Taxonomy and Ontology
- Construct ESG Named Entity Recognition (NER) and Relation Extraction Model (REM)
- Create an ESG Knowledge Graph (KG) Construction pipeline to transform ESG-related text into knowledge graphs.

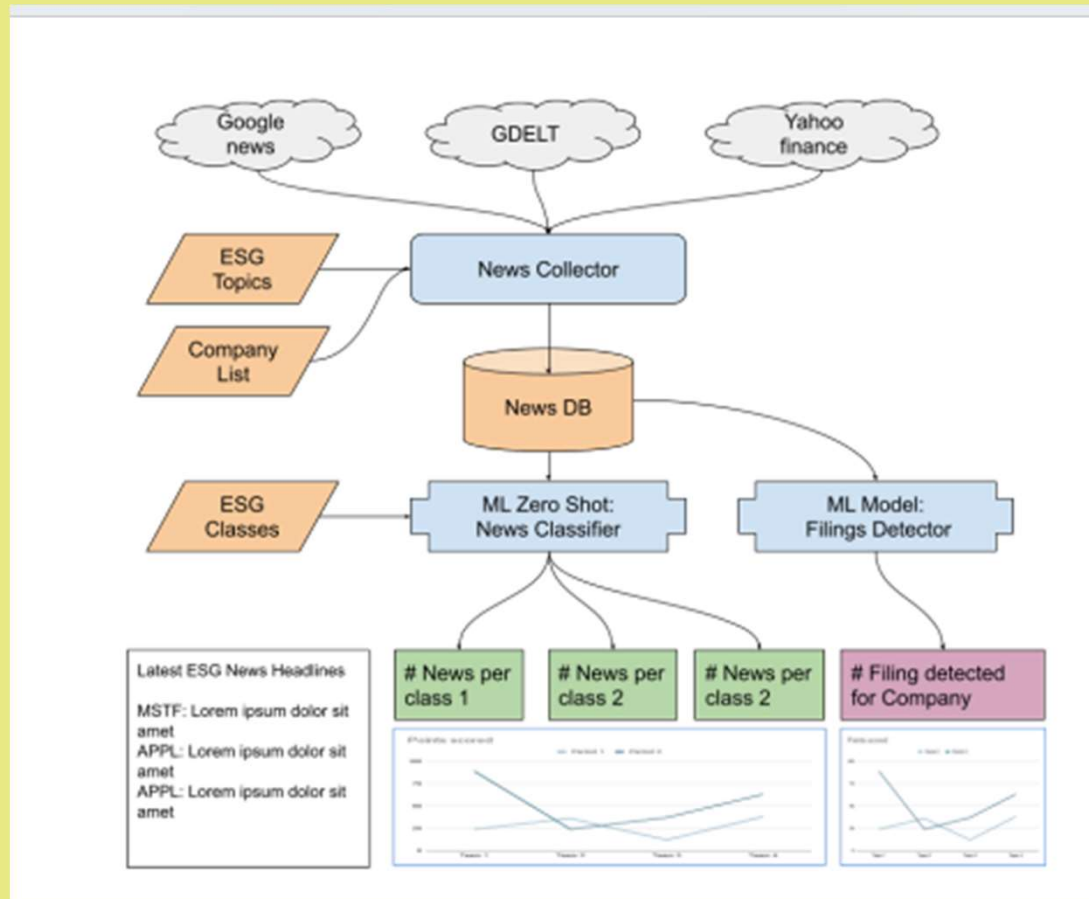
The ESG KG pipeline will be used in real-time to convert documents from companies and the media into Knowledge Graphs to inform Investment Managers' decisions.

Mapping the SDGs across ESG categories



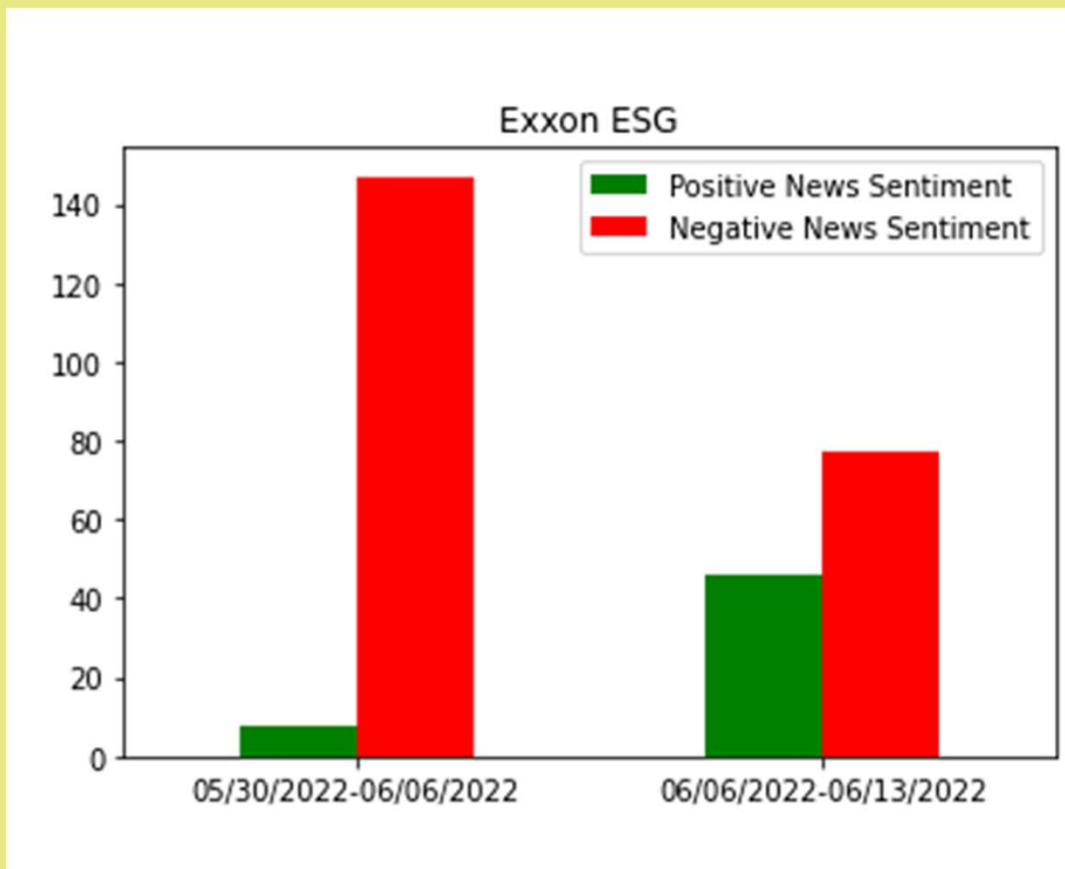
**SDG –
Sustainable
Development
Goals** – defined
in 2015 at the
70th Anniversary
of the foundation
of the United
Nations

Methodology

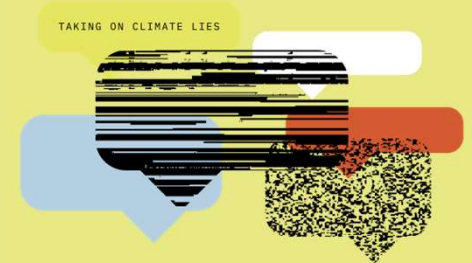
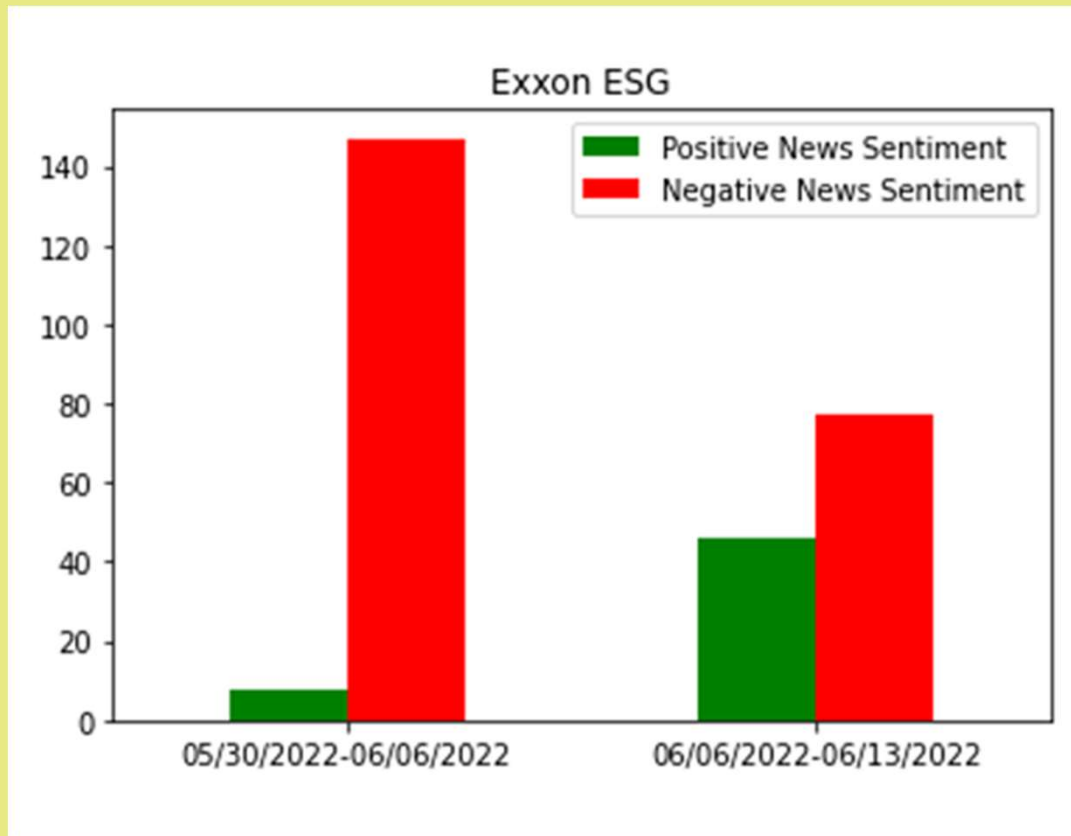


Sentiment for ExxonMobil and ESG in the Media

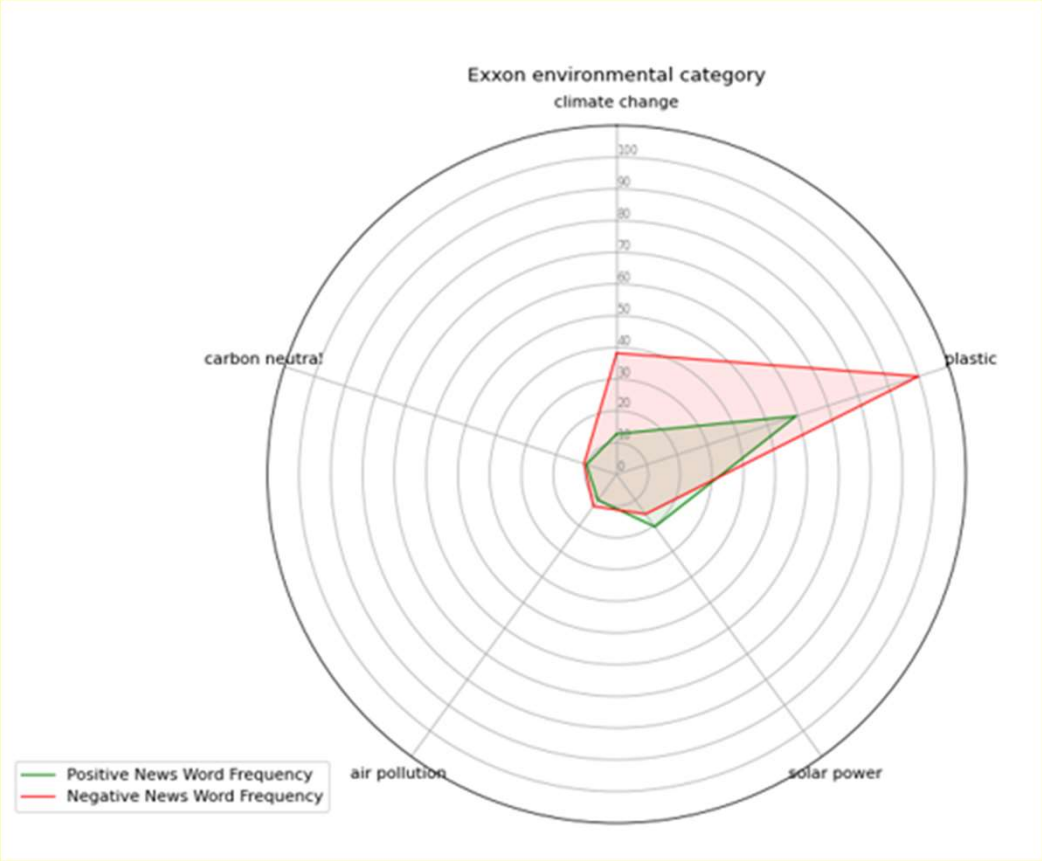
TAKING ON CLIMATE LIES



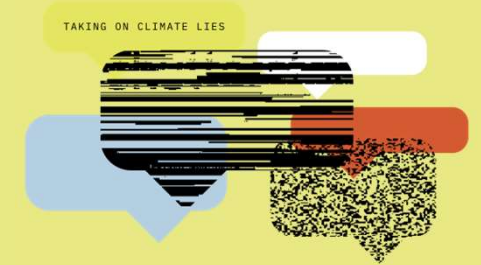
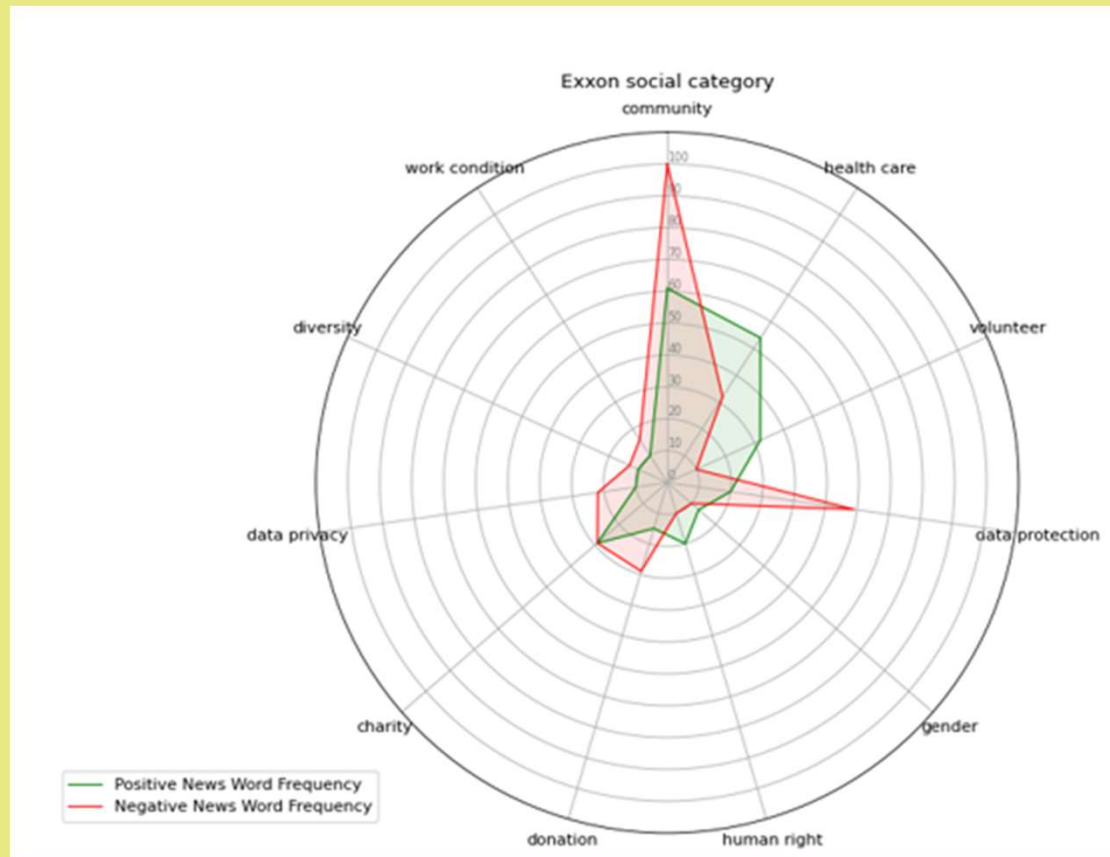
Sentiment for ExxonMobil and Greenwashing



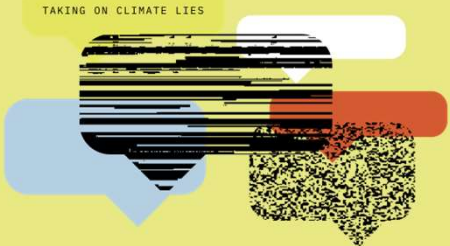
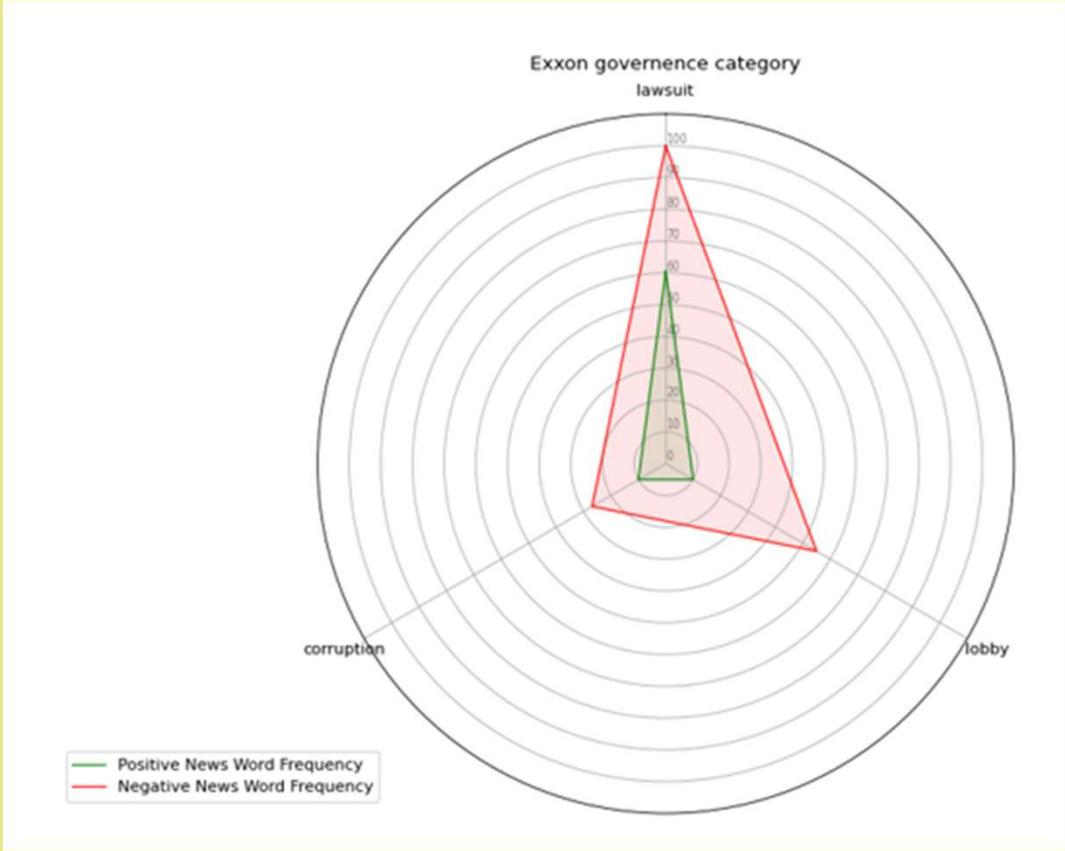
Environmental Sentiment for ExxonMobil



Social Sentiment for ExxonMobil

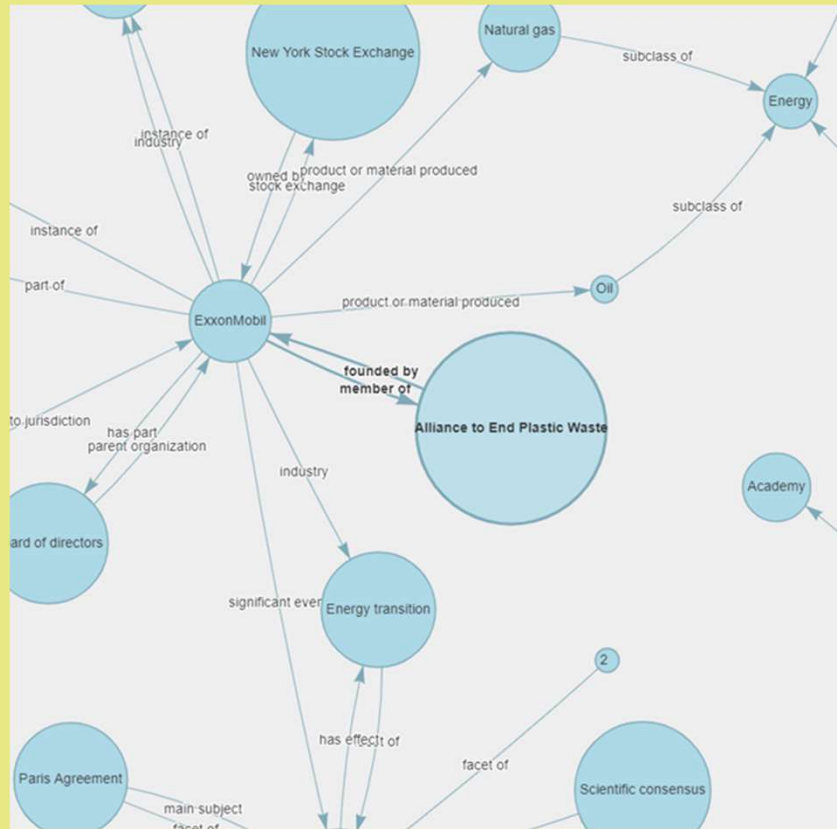


Governance Sentiment for ExxonMobil

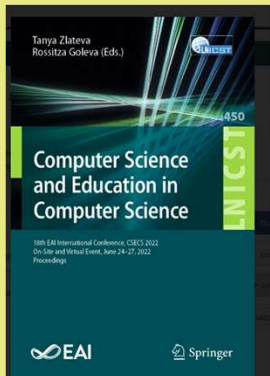


Knowledge Graph related to Plastic Pollution

Generated by the text in ExxonMobil Proxy Statement (Def 14A)



ExxonMobil specifies that they are founders of an Organization called: Alliance to End Plastic Waste



Challenges and Opportunities in ESG Investments

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Abstract. Environmental, Social, and Governance (ESG) criteria gain increasing attention by governments and corporations to assess how advanced countries and companies are with sustainability. The adoption of the ESG investment approach addresses risk management issues and sets goals toward more responsible behavior. Sustainable development goals adopted by the United Nations in 2015 include a call for action to end poverty, save the planet, and ensure peace and prosperity for all by 2030. This paper studies advanced machine learning methodologies to assess, analyze, and suggest improvements in corporate behavior to comply with global sustainable development goals.

Keywords: ESG (Environmental · Social · And Governance) Investments · Machine learning · AI-based systems · Sustainable development · Financial and economic stability

Environmental, Social, and Governance (ESG) responsibilities matter



Hariri Institute for Computing, Boston University
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Background

Environmental, Social, and Governance (ESG) criteria have gained increasing attention from governments and corporations to assess how countries and companies approach sustainability. The adoption of the ESG investment approach addresses risk management issues and sets goals toward more responsible behavior. Sustainable development goals adopted by the United Nations in 2015 include a call for action to end poverty, save the planet, and ensure peace and prosperity for all by 2030.

Boston University Deans' Panel



Gloria S. Waters

Vice President and
Associate Provost for Research



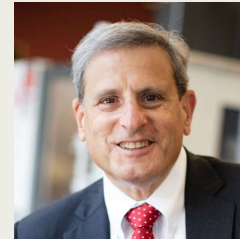
Mariette DiChristina

Dean of the College of
Communication



Tanya Zlateva

Dean of the Metropolitan College &
Extended Education



Kenneth R. Lutchen

Dean of the College of Engineering

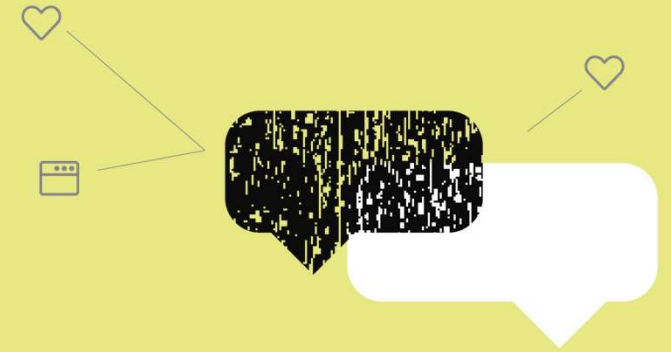


Ioannis Paschalidis

Director of the Rafik B. Hariri Institute
for Computing and Computational
Science and Engineering

Moderator – **Sarah Finnie Robinson**
Senior Fellow, Institute for Global Sustainability

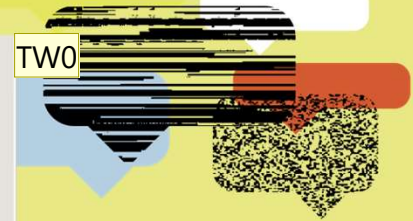
Thank you!



Questions?



Number of tweets related to climate Lies February, 2007



Slide 166

TWO [@Vodenska, Irena] The more granular video playback controls are available in ppt itself. I am able to loop the video continually if I use the downloaded version as opposed to sharepoint

Tomlinson, William, 2023-05-15T20:37:00.425