Investigating the Supply and Demand of Climate Disinformation: The Role of Propaganda, Ecosystem Amplification, and Social Media in Russia and the U.S.

Master of Arts in Law and Diplomacy Capstone Project

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May 01, 2023.

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Research Objectives:

Mapping strategies utilized by climate disinformation seekers to delay climate action.

Climate disinformation concerns reducing the impact of climate science in addressing extreme weather events through adaptation and mitigation measures by reducing implicit trust in climate science, scientists, and political and global institutions. This further erodes public support to achieve the climate goals as outlined in the Paris Climate Agreement to keep global temperatures below 1.5 degrees[1].

The strategy used by climate disinformation demanders (CDD) is multifold. It has interlinkages with alternate facts, political propaganda, and solidification of biases, creating distrust in technology-led innovation to reduce and capture emissions and diversify energy sources to include green hydrogen and other emerging solutions. Climate mis-, mal-, and disinformation have entered the global lexicon with IPCC[2] reports demarking how "rhetoric on misinformation on climate change and the deliberate undermining of science have contributed to misperceptions of the scientific consensus, uncertainty, disregarded risk and urgency, and dissent[3]".

Therefore, this capstone will outline specific examples contained within each strategy utilized by CDDs, define stakeholders, and the models they construct to achieve their goals by using existing disinformation tools and techniques including social media, information ecosystems

[1] "Paris Temperature Goal." Accessed December 22, 2022. https://climateactiontracker.org/methodology/paris-temperature-goal/.
[2] Hendrix, Justin. "Latest IPCC Reports Underscore Threat of Climate Disinformation." Tech Policy Press, April 4, 2022. https://techpolicy.press/latest-ipcc-reports-underscore-threat-of-climate-disinformation/.
[3] Ibid

including news networks, and posturing political rhetoric in the United States. The second paper of this research will evaluate the Russian political rhetoric, and its impact on the thriving disinformation ecosystem thriving in Russia. Overall, this research will evaluate the U.S. as a disinformation-seeking market and Russia as a disinformation provider, ably supported by the Russian Federation through official and unofficial state backing.

INTRODUCTION:

Climate disinformation and inertia have impacted many U.S. presidents for 25 years, including President Joe Biden who faced opposition from West Virginia Sen. Joe Manchin on the White House's keystone legislative plan to address climate disruption, which was eventually canceled despite facing political turmoil[4]. While the U.S. is one of the biggest contributors to global greenhouse gas emissions[5] (GHGs) historically, domestic politics, polarization, and the misuse of PR strategies and technology have created an interwoven fabric of deceit, deflection, and denial concerning climate action. For example, the U.S. Senate adopted a resolution opposing the international treaty to reduce GHG emissions in 1997[6]. Another bill never mustered sufficient support to reduce emissions in 2009. Adding to the climate inertia was former U.S. President Donald Trump's withdrawal from the 2015 Paris Climate Accord[7].

The oil industry played a bigger role in sponsoring delays and inertia for over four decades.

[4] Turner, Daniel. "Joe Manchin Is Standing Up to Joe Biden – We're Standing With Him | RealClearEnergy," June 7, 2022. https://www.realclearenergy.org/articles/2022/06/07/joe_manchin_is_standing_up_to_joe_biden__were_standing_with_him_836006.html.

[5] US EPA, OAR. "Inventory of U.S. Greenhouse Gas Emissions and Sinks." Reports and Assessments, February 8, 2017. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks.

[6] Meyer, Robinson. "History's Greatest Obstacle to Climate Progress Has Finally Fallen." The Atlantic, August 7, 2022. https://www.theatlantic.com/science/archive/2022/08/senate-climate-inflation-reduction-bill-passed/671073/.

[7] BBC News. "Climate Change: US Formally Withdraws from Paris Agreement," November 4, 2020, sec. Science & Environment. https://www.bbc.com/news/science-environment-54797743.

In October 2021, House Democrats interviewed CEOs of major oil giants including ExxonMobil, Shell Oil, BP America, and Chevron, and initiated subpoenas to retrieve documents about funds spent on misleading the public on energy transition, oil and gas emissions, and the impact of climate change[8]. Meanwhile, In his book '*Why we hate the oil companies: Straight talk from an energy insider'*, John Hofmeister[9] highlights how "energy companies have let their reputations fall into despair by consistently failing to tell their stories to the public." This highlighted how the oil industry believed it was the victim of an information war, thereby resulting in a PR exercise to counter climate change science and narratives.

While the political and global institutional spotlight on climate disinformation is crucial and time-sensitive, it is extremely urgent to map disinformation ecosystems before Artificial Intelligence (AI), social media disinformation networks, and political propaganda find a widespread audience on platforms like Twitter[10], Truth Social, and Facebook[11].

Therefore, it is crucial to map how climate disinformation networks operate by utilizing existing narratives and tools to reduce trust in climate science, thereby protracting the climate crisis and delaying climate action.

BACKGROUND

Disinformation refers to fabricated and misleading information utilized to achieve political and economic leverage and social media ecosystems have exacerbated these trends further. In

[8] House Committee on Oversight and Reform. "Fueling the Climate Crisis: Exposing Big Oil's Disinformation Campaign to Prevent Climate Action," October 28, 2021. https://oversight.house.gov/legislation/hearings/fueling-the-climate-crisis-exposing-big-oil-s-disinformation-campaign-to.

[9] Hofmeister, John. Why We Hate the Oil Companies : Straight Talk from an Energy Insider. 1st ed. New York: Palgrave Macmillan, 2010.

[10] Henson, Bob. "Elon Musk's Twitter Gives Climate Misinformation a New Lease on Life." Texas Climate News. Accessed December 22, 2022. https://texasclimatenews.org/2022/12/12/elon-musks-twitter-gives-climate-misinformation-a-new-lease-on-life/.

[11] Action for the Climate Emergency. "Climate Misinformation on Social Media 101," May 13, 2022. https://acespace.org/2022/05/13/climate-misinformation-101/.

Propaganda and Persuasion[12], Garth S. Jowett and Victoria O'Donnell outline how "Messages have greater impact when they are in line with existing opinions, beliefs, and dispositions." They further highlight how various techniques including elevation of opinion leaders, creation of group norms, visual symbols of power, and arousal of emotions are used to garner and consolidate traction. These are tenets used within the climate disinformation ecosystem to discredit climate science and benefit major fossil fuel companies that generate billions of dollars by extracting and distributing oil and gas products and emitting carbon dioxide (CO2) and methane (CH4). Reports highlight the role played by oil companies in delaying climate action[13].

Additionally, 73 percent of Americans believe disinformation increases extreme political views and therefore fosters solidification of perceptions around climate, gender, and politics, according to an AP-NORC survey[14]. Another report highlighted how mis-, and disinformation are spread by specific low-conscientiousness conservatives within the political right rather than the entire conservative ecosystem[15]. A majority of CDDs can be traced back to LCCs but additional quantitative research is needed.

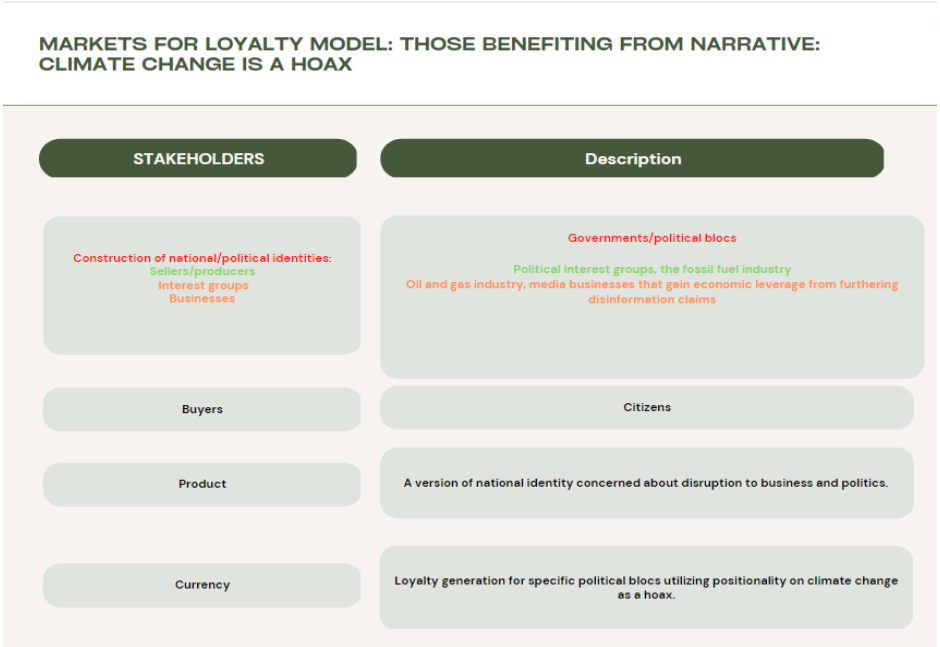
METHODOLOGY:

For research, this capstone utilized the *Markets for Loyalty* (MFL) model to establish critical stakeholders in the climate disinformation ecosystem. This framework allows for identity construction by the power structures including CDDs, political leaders, and social media users,

[12] Jowett, Garth, and Victoria O'Donnell. Propaganda and Persuasion. Newbury Park, Calif: Sage, 1986.
[13] Writer, Alvin Powell Harvard Staff. "Oil Companies Discourage Climate Action, Study Says." Harvard Gazette (blog), September 28, 2021. https://news.harvard.edu/gazette/story/2021/09/oil-companies-discourage-climate-action-study-says/.
[14] The AP-NORC Center for Public Affairs Research. (October, 2022). "Many believe misinformation is increasing extreme political views and behaviors" [https://apnorc.org/projects/many-believe-misinformation-is-increasing-extreme-political-views-and-behaviors]
[15] Lawson, M. A., & Kakkar, H. (2022). Of pandemics, politics, and personality: The role of conscientiousness and political ideology in the sharing of fake news. Journal of Experimental Psychology: General, 151(5), 1154–1177. https://doi.org/10.1037/xge0001120

and the ways they are maintained and further entrenched. The model exists when there exists no competition in the market which inherently explains the lack of any specific monopoly, therefore identities can shift based on the products. Other methodologies included an academic overview of existing literature on climate disinformation, propaganda, climate change, climate science, and IPCC reports. The method establishes IPCC reports as a benchmark for climate science and further explains the CDD's utilization of strategies to propagate climate disinformation. The report further analyzes U.S. governmental reports, news reports, social media group activities, and sentiment analysis on Twitter to establish causal links between existing disinformation structures and their intended outcomes.

ANALYTICAL FRAMEWORK UTILIZED:



MARKETS FOR LOYALTY MODEL: THOSE HARMED FROM NARRATIVES: BELIEVE CLIMATE CHANGE AND SCIENCE IS REAL

Rationale: This MFL model highlights existing competition within the market which prevents the consolidation of power and thereby reflects changing allegiances and narratives. Therefore, research can establish how different actors utilize existing technologies to consolidate and solidify existing networks of climate disinformation and how different audience groups are demanding climate disinformation as a way to develop certain national, political, or in-group identities[16].

Limited research exists on how political polarization and solidification of in-groups result in demand for disinformation that adheres to existing political views, and climate beliefs. Therefore, through MFL, the paper establishes the demand for climate disinformation from different stakeholder groups and how currencies are redesigned to establish in-groups and out-groups, thereby resulting in the solidification of political positions on climate policies and its broader linkage to disinformation ecosystems. Additionally, the usage of AI and Machine

[16] Bernstein, Leandra. "The 2020 Election Could Solidify a New Standard of Political Incivility." KECI, October 24, 2019. https://nbcmontana.com/news/nation-world/the-2020-election-could-solidify-a-new-standard-of-political-incivility.

Learning (ML) ensures these campaigns might potentially be scaled-up during crucial political events and climate summits, entrenching existing biases through the 'Trash In, Trash Out' concept[17] concerning data.

THE MISLEAD ECOSYSTEM:

In 2020, The World Economic Forum announced an economic recovery plan in its response to the global Covid-19 pandemic. Through videos by Prince Charles of Wales[18], the program announced its goals to "facilitate rebuilding from the global Covid-19 crisis in a way which prioritizes sustainable development".

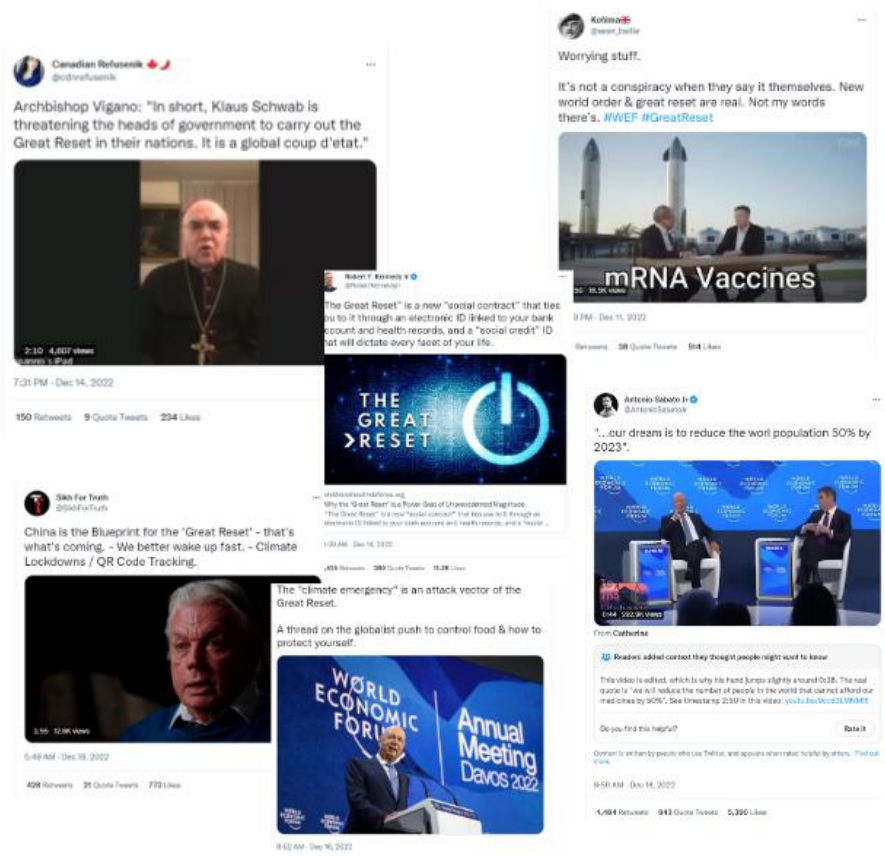
But, this was used as a rallying cry[19] against Covid-19 lockdowns and subsequently climate action by conservative activists. This narrative was spread widely on social media platforms including Twitter, and Facebook, and sprung many Facebook groups spreading climate, and Covid-19 disinformation in the U.S. and Europe. The narrative built was that the Great Reset was a global plan to utilize climate policy and limit individual freedom, thereby furthering the 'climate change is a conspiracy' proposition through the usage of political rhetoric. This combined the two narratives leading to the following outcome:

[17] Team, Programme. "Climate Misinformation, AI and Bad Actors in the Energy Transition." The Conduit (blog), May 6, 2022. https://www.theconduit.com/past-events/climate-misinformation-ai-and-bad-actors-in-the-energy-transition/.
[18] World Economic Forum. "Great Reset | HRH Prince of Wales | We Have No Alternative." Accessed December 22, 2022. https://www.weforum.org/videos/great-reset-hrh-prince-of-wales-we-have-no-alternative/.
[19] Waldman, Scott. "Climate Foes Push Great Reset Conspiracy Theory." E&E News, December 6, 2022. https://www.eenews.net/articles/climate-foes-push-great-reset-conspiracy-theory/.

Climate policy limits freedom + climate change is a hoax = supporting existing beliefs and spreading propaganda about existing global institutions and their goals to create in-group ecosystems.

In the United States, cable news networks like Fox News and Republicans like Paul Gosar of Arizona and Marjorie Taylor Greene of Georgia have publicly utilized the Great Reset theory to mislead audiences on climate change science while questioning President Biden's energy policies. These ecosystems, as outlined below are amplified through the usage of WEF videos, demonizing key political leaders, and combining Covid-19 led lockdowns with climate lockdowns for emission reduction.

MISLEAD THROUGH NARRATIVES



Multiple Facebook groups in the U.S. and Europe are responsible for peddling anti-climate narratives. Here are a few active groups.

Name	Audience
Agenda2021: The Great Reset	1.6K
The Great Reset	565 members
Anti great reset and world economic forum	141
Book: The Great Reset Exposed (Promoted on all groups)	Global, available on Amazon

Additionally, another factor that muddies the disinformation demand concerning *The Great reset* is the role played by technology giants like Google in sponsoring advocacy groups that delegitimize climate science. News reports suggest Google[20] has backed over 12 firms including Competitive Enterprise Institute[21] (CEI) that campaigned against climate legislation including influencing Trump's decision to quit the Paris Agreement. Great Reset as an ecosystem is

[20] Kirchgaessner, Stephanie. "Revealed: Google Made Large Contributions to Climate Change Deniers." The Guardian, October 11, 2019, sec. Environment. https://www.theguardian.com/environment/2019/oct/11/google-contributions-climate-change-deniers.
[21] Competitive Enterprise Institute. "Mr. President: Stop the Paris Climate Treaty." Accessed December 22, 2022. https://cei.org/mr-president-stop-the-paris-climate-treaty/.

being utilized by right-wing media figures including Tucker Carlson[22] and Ben Shapiro[23] to spread disinformation on climate and the role of capitalism.

In the Netherlands, Facebook groups like *Nee Tegen de Corona Maatregelen spread disinformation on climate,* utilizing the platform and lens offered by Great Reset-led propaganda. Meanwhile, right-wing populist leaders like Thierry Baudet and Marjorie Greene Taylor have become the face of disinformation ecosystems rejecting climate action[24].

Meanwhile, institutions targeted included World Economic Forum, U.S. President Joe Biden, The British Royalty, and Klaus Schwab, who was compared to Adolf Hitler in a Facebook post.

[22] Carlson, Tucker. "Tucker Carlson: The Elites Want COVID-19 Lockdowns to Usher in a 'Great Reset' and That Should Terrify You." Text.Article. Fox News, November 16, 2020. https://www.foxnews.com/opinion/tucker-carlson-coronavirus-pandemic-lockdowns-great-reset.
[23] The Great Reset | Ep. 1141. Accessed December 22, 2022. https://www.youtube.com/watch?v=uQjJP8cs_II.
[24] "E&E News: Climate Foes Push Great Reset Conspiracy Theory." Accessed December 22, 2022. https://subscriber.politicopro.com/article/eenews/2022/12/06/climate-foes-push-great-reset-conspiracy-theory-00072440.

Note: The currency used by this group is a version of identity (linked to the nation, state, or specific in-groups) and the audience is specific political groups and citizens with existing beliefs in broader disinformation peddled by the far-right ecosystem. The sellers include a combination of non-state actors, state actors, and loosely tied international coalitions that aim to deceive the broader audience of existing evidence-linked climate science.

THE DELAY ECOSYSTEM:

One of the key discourses that emerged during my research was the delay mechanism. Under the MFL model, the delay ecosystem is used by CDDs as a way to convince the wider audience to accept climate change as a natural phenomenon without anthropogenic causal linkages. This is done to prevent financial or political action, galvanize support for the existing fossil fuel industry and political structures or reduce the spotlight on climate justice, and inequities. Social media analysis further showcased how CDDs engage in highlighting the negative impacts of climate policies and questioning the integrity of adaptation and mitigation efforts or utilizing narratives to blame certain countries for preventing domestic responsibilities in increasing global stocktake and revising Nationally Determined Contributions annually.

Meanwhile, a report by ISD[25] highlighted how *delayism* "sits in contrast with other forms of climate opposition" including denial or skepticism, since it seeks to question innovation, technological solutions, and proposed agreements, and thereby create

[25] Friends of the Earth. "Deny, Deceive, Delay: Documenting and Responding to Climate Disinformation at COP26 and Beyond." Accessed December 22, 2022. https://foe.org/news/deny-deceive-delay/.

climate inertia on modeling, forecasting, mitigation, and adaptation strategies, thereby delaying global emissions reduction goals.

Under the MFL model, *delay tactics* utilize the currency of fiscal pragmatism, economic inefficiencies, and individual liberties to consolidate their in-group affiliations and further entrench their narratives.

Another sub-section of *delay tactic* is the NIMBY (not-in-my-backyard) group. While multiple levels of evidence linking anthropogenic activities and their impact on GHG emissions exist, resulting in over 40 percent[26] rise in the atmospheric concentration of CO2, NIMBY groups facilitate delays by preventing project execution, and innovations through legal and logistical impediments. While technologies associated with renewable energy including wind and solar are easily accessible and cheap, NIMBY activism has ensured their deployment is under risk.

Similar threats are being faced by offshore wind projects, thereby preventing climate action while NIMBY[27] sub-groups contribute to the *delay* tactics in the long run. In his book 'Why we hate the oil companies: Straight talk from an energy insider', Hofmeister further highlights how NIMBYism operates.

"Litigants[28] are looking out for their individual interests at the expense of the wider community interests…They often cite fear-involving claims of security issues, terrorist threats, or threats to clean air and water."

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[26] GlobalChange.gov. "What's Happening & Why." Accessed December 22, 2022. https://www.globalchange.gov/climate-change/whats-happening-why.

[27] Author, This. "The NIMBY Threat to Renewable Energy." Accessed December 22, 2022. https://www.sierraclub.org/sierra/2021-4-fall/feature/nimby-threat-renewable-energy.

[28] Hofmeister, John. Why We Hate the Oil Companies : Straight Talk from an Energy Insider. 1st ed. New York: Palgrave Macmillan, 2010.

THE DELAY TACTIC CASE STUDY:

Multiple examples of how *delayism* tactics raise questions about existing technologies and their reliabilities exist, especially concerning renewable energy. For example, posts on Facebook questioning the viability of renewable energy in reducing emissions or windmills in Germany catching fire are an integral part of the mis-, and disinformation ecosystem, reducing or delaying the execution of newer projects amid falling public trust.

Similar trends were noticed in videos posted by the Texas Public Policy Foundation. The video released by TPPF referenced an offshore wind project in Massachusetts and claimed there were no environmental impact assessments[29] with the caveat that offshore wind projects have been a failure globally. These claims were false and spread to delay the implementation of these projects, raising questions about the efficacy and veracity of climate science[30].

Another tactic used by fringe groups within the far-right includes diverting climate conversations from policies to fiduciary or logistical concerns. During COP 26 in Glasgow, United Kingdom, Marjorie Greene Taylor tweeted, " 400+ private jets and 13,000 tons of carbon!!! That's what the elites at the Climate Cult Conference did

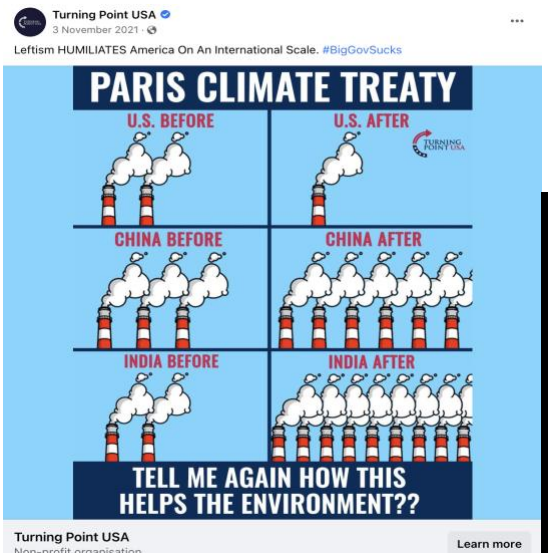
[29] A Heavy Wind (Trailer): The Fight to Save an American Heritage. Accessed December 22, 2022. https://www.youtube.com/watch?v=vlFwRIWRwf0.

[30] Simon, Julia. "Misinformation Is Derailing Renewable Energy Projects across the United States." NPR, March 28, 2022, sec. Climate. https://www.npr.org/2022/03/28/1086790531/renewable-energy-projects-wind-energy-solar-energy-climate-change-misinformation.

breaking their own rules.” She further blamed the Biden administration, insinuating it was in partnership with the Chinese Communist Party, a common thread used across all three climate disinformation models.

A common catchphrase utilized by the fringe groups includes, “Stop the Green lies!”, as a way to galvanize and consolidate their audience base. During COP 26, Harry Wilkinson from Net Zero Watch raised concerns about the purported diesel generators used at the summit, debunked by the official COP 26 handle. These conversations prevent the actual spotlight on crucial climate policy issues and divert audience attention from immediate climate threats.

Another component of the delay tactic is absolutism, as outlined by ISD. This condemns domestic and global policymaking by claiming the efforts as “futile, economically expensive or ceding power to geopolitical foes”, by switching from fossil fuel to renewable energy and incurring high CAPEX.



Delayism and absolutism tactics used by CDDs.

Additional examples of diversionary tactics utilized in furtherance of delayism.

1. ISD's Climate Disinformation Tracker mapped 199,676 [31]mentions targeting COP26 through the absolutism lens on Twitter and had additional 4,377 Facebook posts shared between October and November 2022.
2. Conspiracy theorist Glenn Beck posted a Facebook video titled "How Biden's Climate Agenda will ENRICH the Elite & BANKRUPT you" (51K views). This video focused on different aspects of ESG metrics utilized by three major giants and spread disinformation, claiming ESG metrics will result in carbon rationing for citizens. This delay tactic will impact how public perceptions around ESG are shaped, thereby creating inertia in implementing these concepts for small-scale and medium-scale firms.
3. During COP 26, Congressman Dan Crenshaw attacked renewables by using the *delayism* and absolutism narrative by claiming China was benefiting from global climate agreements and burning fossil fuels while COP and other processes were futile as China was not on the table.
4. Additional examples include political consultancies utilizing the *delayism* narrative to peddle inefficacies of reducing emissions. For example, XStrategies LLC published a video from U.S. Congressional hearings. In this video Congressman, Bryon Donalds claimed the U.S. would not be able to beat China by reducing emissions.

[31] Twitter. "https://Twitter.Com/Isdglobal/Status/1534882902357512193." Accessed December 22, 2022. https://twitter.com/isdglobal/status/1534882902357512193.

THE ROLE OF FOSSIL FUEL GIANTS IN DELAYISM:

In 1998, the American Petroleum Institute[32] along with fossil fuel companies strategized to sow doubt into the wider public debate about emissions reductions in line with the Kyoto Protocols. The memo outlined how "victory will be achieved when average citizens understand uncertainties in climate science..unless climate change becomes a non-issue..there may be no moment when we can declare victory."

Companies like Exxon, Chevron, Environmental Issues Council, and Competitive Enterprise Institute were involved in concocting the plan to play up both sides and muddy the discourse on climate science for journalists and the public alike, thereby delaying action.

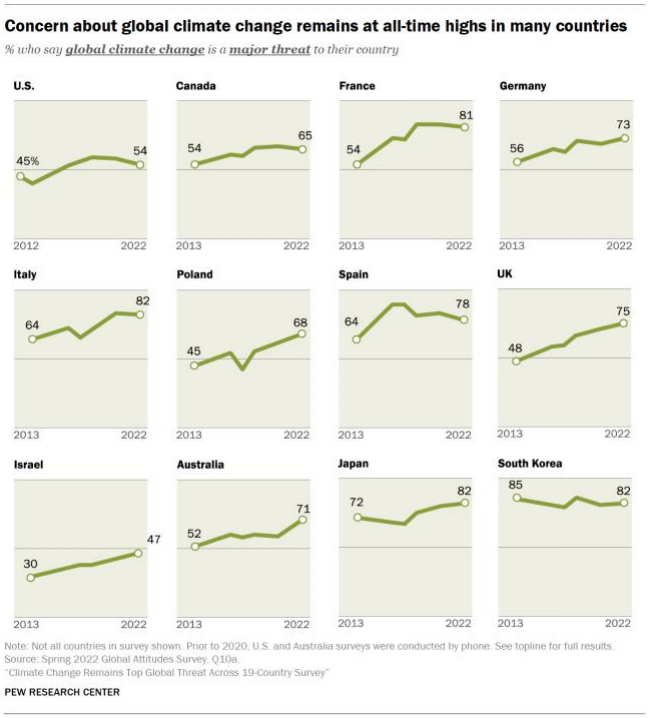
Note: The currency used by this group is a version of identity linked to the nation and with ties to fiscal health, finances, and local economic resilience. The audience is local and national groups that can delay specific projects and global audiences that can create similar ecosystems to prevent climate action in different geographies.

[32] admin. "1998 American Petroleum Institute Global Climate Science Communications Team Action Plan." Climate Files (blog), April 3, 1998. https://www.climatefiles.com/trade-group/american-petroleum-institute/1998-global-climate-science-communications-team-action-plan/.

THE DENIERS:

There are two components to the denial framework: climate denial and climate skepticism. Denial refers to the complete rejection of climate change as a phenomenon, causal relationships, and its global impact. On social media and CDD ecosystems, climate change and climate science are termed hoaxes. During my research, I found denial framework in use on social media often over rising temperatures and extreme weather patterns.

These beliefs were in direct contravention to existing IPCC reports, and climate science literature, and oftentimes easier to debunk by fact-checking platforms. Meanwhile, reports by PEW Research Center (outlined below) were crucial, in addition to IPCC reports, in debunking fake news and addressing climate change concerns in major economies.



Source: PEW Research Center

But, CDD groups utilized strategies of flooding the social media and news ecosystem with false narratives to create a sense of normalcy and denying the rising temperatures and extreme weather events as impacts of climate change. This oftentimes leads to delinking the impact of anthropogenic activities with climate change.

Example: A casual weather report by the British Broadcasting Corporation[33] In July 2022 extreme temperatures in the United Kingdom received widespread trolling, leading to the network reporting the abuse. The strategy involved populating social media platforms with discourses normalizing climate change while questioning climate science and using sarcasm, and mockery to delegitimize existing empirical evidence. Examples can be seen below with illustrations.

Additionally, climate skeptics are intertwined with denialism but the former focus on sowing doubt and uncertainty around climate science, emissions, and international policies or treaties. The goal of climate skeptics is to discredit existing climate science and fulfill political agenda[34] and reduce common public consensus on climate issues, thereby leading to the prevention of both mitigation or adaptation efforts to prevent climate disasters.

[33] BBC News. "UK Heatwave: Weather Forecasters Report Unprecedented Trolling," July 29, 2022, sec. UK. https://www.bbc.com/news/uk-62323048.

[34] Pearce, Fred. "Victory for Openness as IPCC Climate Scientist Opens up Lab Doors." The Guardian, February 9, 2010, sec. Environment. https://www.theguardian.com/environment/2010/feb/09/ipcc-report-author-data-openness.

Twitter as the hotbed of climate denialism: Previously banned Twitter users like Marc Morano, Steve Milloy, Tony Heller, and Patrick Moore who spread climate denialism and disinformation have been welcomed back to the social media platform after Elon Musk's takeover. Additionally, as verification and fact-checking operations within the platform collapse, Twitter has seen a rise in climate disinformation with the hashtag #ClimateScam trending recently in December 2022[35].

Note: The currency used by this group is a version of identity linked to in-group narratives and thereby creating an alternate national identity. The buyers are citizens

[35] Waldman, Scott. "Climate Misinformation Spreads on Musk's Twitter." E&E News, December 23, 2022. https://www.eenews.net/articles/climate-misinformation-spreads-on-musks-twitter/.

who deny climate science and term it a hoax and often find overlaps between other political narratives from the far-right that coexist with climate denialism.

KEY NARRATIVES DERIVED FROM THREE CDD FRAMEWORKS:

1. Climate Change is a hoax. (Deny)
2. Climate science is a hoax. (Deny)
3. The temperature is normal and consistent and not rising due to human anthropogenic activities. (Delay)
4. The government is wasting taxpayers' money on renewable energy. (Delay+deny)
5. Climate science has been cherry picking data to create consensus on climate change. (Deny and delay)
6. Climate change concerns are led by elites to influence the wider masses into coercion. (Mislead)
7. Climate change is a subset of the global agenda of the Great Reset to halve the population and control public access to resources. (Mislead)
8. Climate change will be used for initiating climate lockdowns. (Mislead)
9. ESG norms will lead to the development of carbon credits and rationing for individuals, thereby impacting their personal freedoms and liberties. (Mislead)
10. Climate change, IPCC, and the Conference of Parties (COP) are all part of the climate scam meant to goad the public into restricting their personal freedoms. (Mislead)
11. Rich people offer lip service on climate and are not really concerned about climate change and want to use it to control the masses. (Mislead)

FINDINGS:

1. Over the last six decades, the atmospheric concentration of CO_2 and CH_4 has

increased resulting in an increased natural greenhouse effect. These are linked to anthropogenic activities that are driving temperatures further up while reducing the environmental capacity to act as carbon sinks. Climate disinformation in multiple forms is delaying climate action by utilizing a combination of political narratives to discredit climate science. Without a global consensus, it is difficult to decarbonize economies, switch to renewable sources of energy, and create an energy-efficient future.

2. Twitter's role as an enabler of climate disinformation narratives will continue to rise as multiple climate deniers have received a fresh opportunity on the platform and the current algorithms favoring paid blue subscriptions will offer them avenues to drive conversations, as noted in a recent study by The Times Newspaper. It noted 850,000 climate denial tweets and retweets through 2022. A spike from 650,000 tweets in 2021 and 220,000 in 2020[36].
3. Information wars are consequential in the climate space and Big Technology giants have been proven to play a big role in facilitating the creation of ecosystems that spread climate dis-, and misinformation. This was emphasized in a[37] IPCC report, further highlighting how technology and AI can potentially impact global efforts to prevent rising temperatures and reduction in emissions due to multiple existing discourses.
4. Climate Change is an intersectional issue impacting women, communities of color, and marginalized communities disproportionately. Therefore, similar patterns of attacks are used by CDDs targeting these groups. Climate Skeptic Bjørn Lomborg attacks climate activist Greta Thunberg repeatedly over her age, terming her "naive" for her activism. Similarly, women faced slurs and attacks over their gender, and expertise in online

[36] Editor, Adam Vaughan, Environment. "Climate-Sceptic Tweets Surge after Musk's Twitter Takeover," sec. news. Accessed December 23, 2022. https://www.thetimes.co.uk/article/climate-sceptic-tweets-surge-after-musks-twitter-takeover-5mtvnwqzb.
[37] The Independent. "IPCC Report Calls out Misinformation as Barrier to Tackling Climate Crisis in the US," February 28, 2022. https://www.independent.co.uk/climate-change/news/ipcc-report-climate-misinformation-joe-rogan-b2024579.html.

conversations over climate change, thereby exacerbating these issues[38].

5. Climate modeling, data analysis, and empirical studies are being scrutinized by climate disinformation ecosystems that demand narratives that accelerate the spread of data in line with their belief systems. This has prevented consensus development to initiate climate actions globally including utilizing technology, green industrialization, and carbon capture technologies to reduce emissions levels rapidly.

CLIMATE CHANGE DISINFORMATION GOES GLOBAL:

As seen through the analysis, climate change disinformation ecosystems have utilized the MFL frameworks and changed the currency used to buy citizens' loyalty globally by utilizing existing social media, news media, and political systems. As noted by IPCC reports and warnings from the Union of Concerned Scientists[39], the next frontier of climate disinformation concerns greenwashing, Environmental, Social, and Governance norms, and innovative technologies and platforms involving offshore wind, offshore solar, and Carbon Capture and Storage Technologies and raising questions about their efficacy to prevent their implementation and capacity building measures. On the political front, far-right beliefs are intertwined with climate disinformation. They can impact how these alternate narratives can be addressed in a manner that separates political narratives from climate narratives in order to foster global climate action.

FINDINGS:

In the near term, algorithms can either be weaponized to spread climate disinformation or map

[38] Gelin, Martin. "The Misogyny of Climate Deniers." The New Republic, August 28, 2019. https://newrepublic.com/article/154879/misogyny-climate-deniers.

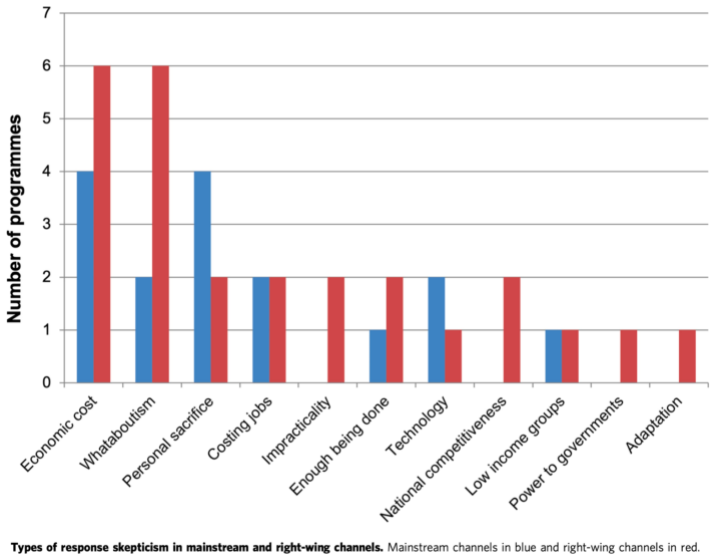
[39] "Disinformation | Union of Concerned Scientists." Accessed December 23, 2022. https://www.ucsusa.org/climate/disinformation.

solutions and governance frameworks that can address them through empirical evidence and science-backed solutions. For these to be proven effective, it is crucial to map Climate Disinformation Demanders within the broader disinformation ecosystems and analyze platforms, narratives, and technologies they utilize to receive and spread disinformation campaigns. Quantifying their goals - financial and political - is the first step in identifying actors creating a market for disinformation and mapping supply ecosystems within and outside the U.S. Climate scientists have been flagging concerns about climate change for five decades but without much impact as oil and gas industries targeted and engineered narratives. This paper has illustrated three CDDs creating an information gap and demanding climate disinformation and eventually spreading it through different multimedia channels. The currencies they use, the geographical in-groups they create through digital ecosystems, and the broader political associations they identify with have been noted in depth. The world is heating up and climate science needs a unified consensus for the deployment of adaptation and mitigation measures to prevent damage to our coastal, food, urban, and biodiversity systems, failing which the world will face catastrophic damages. The Paris Agreement and IPCC have warned us about the need for urgent action without delay, therefore, we must understand the demand and supply aspects of the disinformation ecosystem rather than merely focusing on the role of the fossil fuel industry in manufacturing propaganda.

To that end, technology platforms, governments, private actors, and civil society need to partner collaboratively to tackle global dis- and misinformation narratives at the intersection of climate and politics.

EMERGING DISRUPTIVE TRENDS:

According to the latest Nieman Lab study, scientific skepticism is less common in mainstream media coverage of the IPCC's report than in previous years, even in countries known for science denial.



Types of response skepticism in mainstream and right-wing channels. Mainstream channels in blue and right-wing channels in red.

However, right-wing channels tend to have more non-specific response skepticism, and in some countries, skeptics combine evidence and response skepticism. The study also found that arguments against climate action centered on the high cost and "whataboutism" tactics[40]. This highlights how political groups utilize diversionary tactics when confronted with climate science to delay action. This has been witnessed in the ESG and sustainability space as well.

KEY ACTORS IN COMBATING CLIMATE DISINFORMATION:

In the climate disinformation research space, The Institute for Strategic Dialogue (ISD) has been leading conversations at multiple COPs, including the recently concluded COP 27 in Egypt. Jennie King, who is in charge of managing climate disinformation at ISD, held a press conference at the UN's Bonn Climate Change Conference. During the conference, she introduced the report *'Documenting and Responding to Climate Disinformation at COP26 and Beyond'*, which included research results from the COP26 'War Room'. She emphasized the

[40] Nieman Lab. "On TV, Skepticism about the Science of Climate Change Is Dying out — but Whataboutism Is Filling the Void." Accessed April 24, 2023. https://www.niemanlab.org/2023/04/on-tv-skepticism-about-the-science-of-climate-change-is-dying-out-but-whataboutism-is-filling-the-void/.

urgent need to tackle the issue of climate mis- and disinformation online, which has the potential to weaken public support for climate change mitigation efforts.

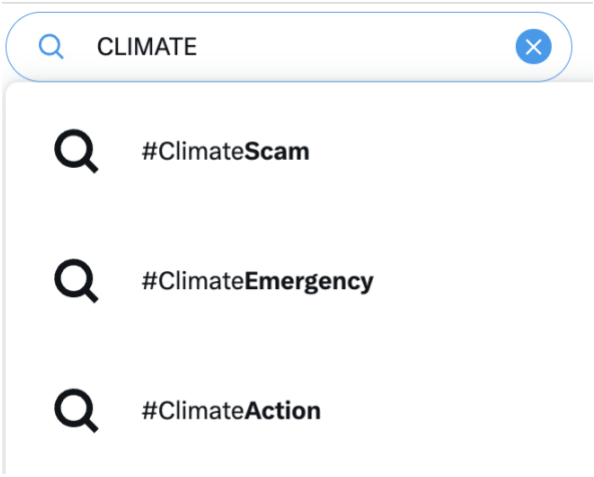
She has further testified on the urgent need to tackle climate disinformation, big tech's role, and policy solutions at the European Parliament's first-ever hearing on foreign interference. Climate mis/disinformation is fueled by weaknesses in digital platforms, allowing such content to dominate public discussion of climate policy at a crucial time, she has noted.

A report by Plotlights[41] the report delved into the gravity of climate disinformation as a growing threat in the UK. It highlighted the alarming rise of certain groups aiming to spread misleading information about climate science, in an effort to create confusion and undermine public trust in the field. These groups were identified as the *Global Warming Policy Foundation*, the *Institute of Economic Affairs*, and the *TaxPayers' Alliance*, all with alleged close ties to the fossil fuel industry. The report noted that these groups disseminated false claims about climate science and policies, adding to the complexity of the issue.

The report further revealed the tactics employed by these disinformation hubs, such as publishing biased reports and opinion pieces in mainstream media, hosting conferences and events, and exploiting social media platforms. These two organizations and their research identify the '*Delay, Deny, and Mislead*' ecosystem that is an integral component of the disinformation tactics utilized by multiple players through different social media platforms, including Twitter.

MUSK'S TWITTER BECOMES A HOTBED FOR CLIMATE DISINFORMATION:

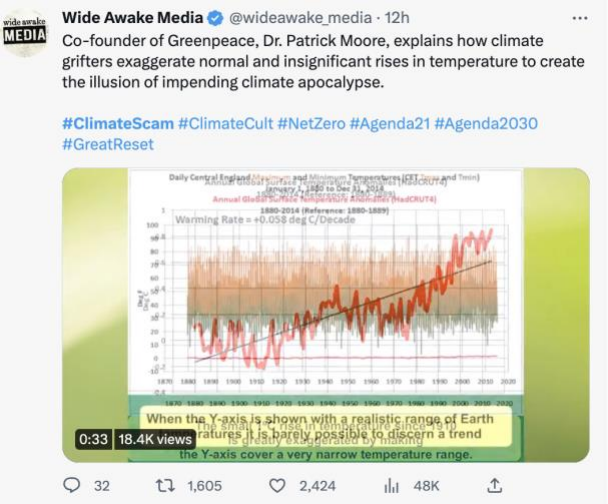
[41] Plotlights. "The Climate Change-Related Disinformation Hubs in the U.K." Accessed April 24, 2023. https://www.plotlights.com/blog/the-climate-change-related-disinformation-hubs-in-the-u-k/.



When I searched for the term "climate" on Twitter, the initial suggestion was not "climate crisis," "climate jobs," or "climate change," but rather "climate scam." Subsequently, when I followed this recommendation, I came across numerous posts that denied the existence of climate change and spread inaccurate information about attempts to combat it.

Although misinformation has been rampant on Twitter since it was purchased by Elon Musk in 2022, the platform is not the only one disseminating content that undermines public support for policies aimed at addressing climate change.

Accounts like Wide Awake Media, @Cotupacs, and @Mullaly_elaine are responsible for utilizing the algorithmic biases constituted by the latest verification changes at Twitter to spread disinformation through the #ClimateScam hashtag. These accounts subscribed to Twitter Blue, Musk's attempts at monetizing Twitter, and hijacked major climate conversations to utilize the delay and deceive methodology and subsequently prevent climate action.



During Musk's leadership, Twitter terminated the employment of numerous staff members and modified its content moderation approach. The company disclosed in November 2022 that it would no longer enforce its policy against spreading misinformation about COVID-19. A recent study by the nonprofit organization Advance Democracy revealed that tweets containing words associated with climate change denial surged by 300 percent[42] in 2022.

The Center for Countering Digital Hate, another group that monitors online misinformation, suggested in a report that Musk's new verification system may be a contributing factor.

[42] Boddie, Maya. "Climate Misinformation Plagues Twitter under Elon's Watch." Salon, January 20, 2023. https://www.salon.com/2023/01/20/climate-misinformation-plagues-twitter-under-elons-watch_partner/.

Previously, blue check marks were only granted to public figures such as journalists, government officials, and celebrities. However, now anyone willing to pay $8 monthly can apply for a check mark. Posts and responses from verified accounts receive an automatic boost on the platform, increasing their visibility over content from non-paying users.

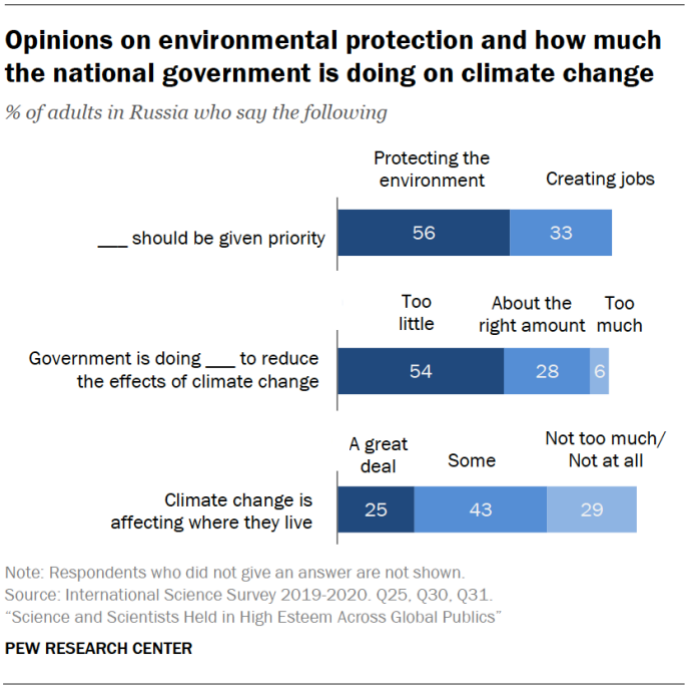
PART TWO: THE RUSSIAN INFORMATION ECOSYSTEM

The secondary part of this research will be supplemented with an ecosystem analysis of Russia's disinformation ecosystem and the ways it is weaponized against Western countries for political and economic gains. The section will explore how disinformation originating from Russia has diffused into the local audience, thereby reducing Russian citizens' trust in political institutions and climate science. It will analyze the role played by tech platforms in both climate disinformation ecosystems and Russia's distrust in climate science, impacted by its disinformation campaigns against the West through this diffusion process and the role played by key stakeholders, including political actors like Putin.

Russia, one of the world's largest producers and exporters of oil and gas[43], has been accused of spreading climate disinformation to maintain the status quo of fossil fuel consumption. This includes propaganda and misinformation campaigns on social media, attempting to undermine international efforts to address climate change, funding climate-denying research[44] and think tanks, and using political influence to weaken climate policies in other countries. While Russia has made efforts to reduce its greenhouse gas emissions[45]Its role in spreading climate

[43] "International - U.S. Energy Information Administration (EIA)." Accessed April 24, 2023. https://www.eia.gov/international/analysis/country/RUS.
[44] Ashe, Teresa, and Marianna Poberezhskaya. "Russian Climate Skepticism: An Understudied Case." Climatic Change 172, no. 3 (June 28, 2022): 41. https://doi.org/10.1007/s10584-022-03390-3.
[45] Reuters. "Russia's Putin Signs Law to Curb Greenhouse Gas Emissions." Reuters, July 2, 2021, sec. Environment. https://www.reuters.com/business/environment/russias-putin-signs-law-curb-greenhouse-gas-emissions-2021-07-02/.

disinformation remains a cause for concern for scientists, policymakers, and the global audience alike.



RUSSIA'S CLIMATE SKEPTICISM:

A recent Pew Survey[46] revealed that a majority of the 20 surveyed audience in Russia prioritized environmental protection over economic growth, even if it meant slower progress. 71 percent of the median respondents expressed their commitment to protecting the environment. However, the survey also found that Russians were among the least likely to prioritize environmental protection, with only 56 percent choosing it over job creation, even if it meant the loss of jobs. The study further indicated that public concern about global climate change had significantly increased in recent years, with the majority of respondents from all 20 publics reporting some impacts of climate change where they lived. A whopping 70 percent of the median respondents reported experiencing a great deal or some impacts of climate change, while in Russia, the percentage was 68 percent. The survey also indicated that 58 percent of the 20-public median believed that their government was doing too little to reduce the effects of climate change. In Russia, 54

[46] NW, 1615 L. St, Suite 800Washington, and DC 20036USA202-419-4300 | Main202-857-8562 | Fax202-419-4372 | Media Inquiries. "Public Views About Science in Russia." Pew Research Center Science & Society (blog). Accessed April 24, 2023. https://www.pewresearch.org/science/fact-sheet/public-views-about-science-in-russia/.

percent of the respondents shared the same belief, while only 6 percent thought their government was doing too much to reduce the effects of climate change. These findings underscored the importance of prioritizing environmental protection and the need for governments to take urgent and decisive action to address the adverse impacts of climate change domestically and internationally.

According to the research article "Russian Climate Skepticism: an understudied case" by Teresa Ashe and Marianna Poberezhskaya[47], the main finding was that there is a lack of literature directly addressing the topic of Russian climate skepticism in both Russian and English. However, they identified a distinct climate skeptical narrative in Russia that shared similarities with the United States but also had its own unique characteristics. Russian climate skepticism was not a response to a well-established environmental movement with a strong public and media presence, they noted. Instead, it arose from competing pressures and internal debates within a closed elite circle, which will be expanded upon later in this paper. Furthermore, the paper surveyed U.S. climate skepticism between 1988-1997 and derived major findings, including ways skeptical scientists challenged “global orthodoxy on climate science” through the utilization of conservative think tanks, publication of climate skeptic viewpoints in mainstream media, furthering the interests of fossil fuel industry players and weakening of public concern[48]. These are akin to the digital narratives/alternative narratives in the climate disinformation space and the ways political and climate disinformation intersect. The climate movement in Russia is weak, in contrast to other countries, and amid the Russian invasion of Ukraine, the former has focused on seeking buyers for its crude oil, thereby limiting its emphasis on human-induced climate change. This has resulted in public awareness of the

[47] Ashe, T., Poberezhskaya, M. Russian climate skepticism: an understudied case. Climatic Change 172, 41 (2022). https://doi.org/10.1007/s10584-022-03390-3
[48] *Ibid*, 46.

dangerous impacts of climate change being low[49]. Additionally, Vladimir Putin's government has been restricting press freedom[50], NGO activities, thereby impacting civil society activism. For example, during the Global Climate Strike in September 2019 globally, only 85 Russians took part, meanwhile, these numbers were 650,000 in the U.S[51].

Search Summary	
Text	climate change"" or ""global warming"" or ""глобальное потепление""
Date	01/01/1980 to 31/12/2004
Source	Russia
Author	All Authors
Company	All Companies
Subject	All Subjects
Industry	All Industries
Region	All Regions
Language	English Or Russian
Results Found	1,517
Timestamp	##########
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A Factiva search for the keywords: Climate change or global warming.

To understand the emergence of climate science and climate change in the Soviet Union and in the subsequent Russian context, I conducted a Factiva analysis between 1980-2004 and found the primary instance of climate change appearing as a terminology was between 1994-1995 in major Russian publications. Both climate change and global warming appeared over 1,517 times in my analysis and were spread across publications including *ITAR TASS, Interfax,*

[49] Graybill J (2015) Urban climate vulnerability and governance in the Russian North. Polar Geogr 38(4):306–320
[50] Shorenstein Center. "Conveying Truth: Independent Media in Putin's Russia," August 10, 2020. https://shorensteincenter.org/independent-media-in-putins-russia/.
[51] Ibid, 46.

Sputnik News Service, The Moscow Times, Izvestia, Moskovskii Komsomolets, Kommersant, Vremya MN, Nezavisimaya Gazeta, Moskovskaya Pravda, The St. Petersburg Times, etc.

Date	Document Count
Start Date: 1 January 1994 End Date: 31 December 1994	1
Start Date: 1 January 1995 End Date: 31 December 1995	2
Start Date: 1 January 1996 End Date: 31 December 1996	1
Start Date: 1 January 1997 End Date: 31 December 1997	8
Start Date: 1 January 1998 End Date: 31 December 1998	29
Start Date: 1 January 1999 End Date: 31 December 1999	30
Start Date: 1 January 2000 End Date: 31 December 2000	81
Start Date: 1 January 2001 End Date: 31 December 2001	141
Start Date: 1 January 2002 End Date: 31 December 2002	210
Start Date: 1 January 2003 End Date: 31 December 2003	480
Start Date: 1 January 2004 End Date: 31 December 2004	534

This image highlights the first time climate change appeared in Russian media and subsequently increased between a decade-long timescale to 534 times, thereby highlighting how conversations about global warming and climate change were part of Russian society during Putin's ascension to power.

RUSSIAN DISINFORMATION ECOSYSTEM: A POLITICAL TIMELINE

In their book, '*Disinformation, Narratives, and Memory Politics in Russia and Belarus*'[52], authors Agnieszka Legucka and Robert Kupiecki outline how Putin, since his rise, has weaponized disinformation and "distorted historical narratives for foreign policy purposes, including by targeting Western nations, the European Union and North Atlantic Treaty Organization (NATO)". They further analyze how the Soviet Union's victory over the Nazi Third Reich acts as the pillar of new Russian identity, thereby defining clear out-group enemies and consolidating the Russian society around Putin. This has resulted in the formation of a new Russian identity[53].

[52] Legucka, Agnieszka, and Robert Kupiecki. Disinformation, Narratives and Memory Politics in Russia and Belarus. Edited by Agnieszka Legucka and Robert Kupiecki. Abingdon, Oxon ;: Routledge, 2022.
[53] Ibid, 54.

During an event at The Fletcher School, Dr. Kathryn Stoner spoke about the perception of power in Russia. "It's all about the perception among the Russian people that [Putin] controls. They're supporting the war because of the information that they've been given, which we know isn't the whole picture," she said, outlining how Putin's disinformation ecosystem is based on perpetuating Russia's political identity, restoration of dignity and recognition while destabilizing the West [54]. These could be traced through Russian troll farms' support of former U.S. President Donald Trump's election campaign, support for Brezit in the UK, and bolstering Marine Le Pen's electoral support in France.

Meanwhile, the European Commission has recognized Russian disinformation campaigns as the biggest challenge due to their "systematic, well-resourced and perpetrated on a larger scale" nature, in contrast to campaigns by countries like China, Iran[55], or North Korea. Meanwhile, author Tom Philips[56] has noted how the Soviet bloc used disinformation in secret instructions pertaining to intelligence work but eventually, it morphed into the Russian leaders using disinformation as a tool in the information warfare against the West. The Russian secret services have utilized disinformation[57] as a tool in multiple instances, including during *Operation Trust* and *Syndicate*-2. Both these operations were used to mislead Western countries and allowed Russia to consolidate its position[58].

Kupiecki and Legucka[59] further note how Russian propaganda mostly was targeted at the internal masses but subsequently shifted gears in the 1920s when the Soviet Union realized the impact broadcasting propaganda could have both internally and externally. This resulted in

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[54] "Dr. Kathryn Stoner Joins the Fletcher Community for a Conversation on 'Russia Resurrected: Its Power and Purpose in a New Global Order' – Fletcher Russia and Eurasia Program," May 24, 2022. https://sites.tufts.edu/fletcherrussia/dr-kathryn-stoner-joins-the-fletcher-community-for-a-conversation-on-russia-resurrected-its-power-and-purpose-in-a-new-global-order/.

[55] Carnegie Europe. "Russia's Long-Term Campaign of Disinformation in Europe." Accessed April 25, 2023. https://carnegieeurope.eu/strategiceurope/81322.

[56] "TRUTH: A Brief History of Total Bullsht." Kirkus Reviews. Austin: Kirkus Media LLC, 2020.

[57] Paul, Christopher, and Miriam Matthews. "The Russian." RAND Corporation, July 11, 2016. https://www.rand.org/pubs/perspectives/PE198.html.

[58] "Modern Russian Statecraft: Neither New nor Hybrid, Part One | Small Wars Journal." Accessed April 25, 2023. https://smallwarsjournal.com/jrnl/art/modern-russian-statecraft-neither-new-nor-hybrid-part-one.

[59] Ibid, 54.

Putin and his loyalists using hybrid warfare or *maskirovka*[60] (obscuring the image of reality to confuse the viewer), which was further utilized during the Russian annexation of the Crimean peninsula in 2014. While the Russian population is subjected to internal disinformation campaigns, they also believe a sense of threat emanating from the West. According to Levada Center, 55 percent of Russians[61] believe the U.S. and other Western states have engaged in warfare against Russia. This results in low trust in climate science, mostly originating through international organizations or through peer-reviewed journals in the West.

To this effect, Russia has acquired technology architecture to control internet traffic on the domestic internet, also known as RuNet, with Deputy Chairman of the Security Council of Russia, Dmitry Medvedev[62] announcing it was Russia's final step in establishing a sovereign internet. Meanwhile, the U.S. State Department[63] has acknowledged Russia's objective to "question the value of democratic institutions, weakening the international credibility and cohesion of the United States and its partners." This two-pronged approach is established with the goal to ensure Russia attains an international multi-polar world order in which it gains its respective place. This is applicable to utilizing climate science by sowing seeds of disinformation and reducing public trust in the Western nations including U.S. and European Union and delaying climate advocacy and action, therefore contravening the IPCC reports that are rooted in science and quantitative modeling. The methodology comprises utilizing the internet, specifically social media, and traditional media platforms and is a collection of "official, proxy, and unattributed communication channels and platforms that Russia uses to create and amplify false narratives[64]." For example, Russia[65] has been utilizing *Sputnik* and *Russia Today*

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[60] BBC News. "How Russia Outfoxes Its Enemies." January 29, 2015, sec. Magazine. https://www.bbc.com/news/magazine-31020283.

[61] "Attitude towards Countries and Their Citizens." Accessed April 25, 2023. https://www.levada.ru/en/tag/the-west/.

[62] Ryabikova, Victoria. "Russia Experiments with Internet Isolation. What's Going on?" Russia Beyond, July 31, 2021. https://www.rbth.com/science-and-tech/334062-russia-experiments-with-internet-isolation.

[63] GEC Special Report, August 2020.

[64] GEC Special Report, August 2020.

[65] Elliott, Robert. "How Russia Spreads Disinformation via RT Is More Nuanced than We Realise." The Guardian, July 26, 2019, sec. Opinion. https://www.theguardian.com/commentisfree/2019/jul/26/russia-disinformation-rt-nuanced-online-ofcom-fine.

to spread disinformation, adopt the propaganda model and increase Russian influence in the West. Meanwhile, the Russian Troll Factory or *Internet Research Agency* (IRA), owned by Putin's associate Evgeni Prigozhin[66] has often been accused of targeting democracies and democratic actors in its efforts to undermine constitutional norms elsewhere, including the U.S., France, and India. Jessica Aro, in her book *Putin's Trolls: On the Frontlines of Russia's Information War Against the World,* has outlined how trolls were successful in making it difficult for audiences to differentiate between falsehoods and facts, thereby manipulating public perceptions and opinion.

Similar disinformation campaigns have been deployed in Ukraine's Crimea and previously in Georgia as well. Experts, meanwhile, have cautioned against Russia's goals with disinformation campaigns - the primary goal is to undermine trust in democratic institutions, and not to convince the audience about the veracity of the claims. Therefore disinformation campaigns emanating from Russia aim to sow social discord, reduce public trust in democracy, and science, and reduce the effective functioning of the state in enacting policies. Additionally, reports have highlighted how interactive AI-powered bots could be used to manufacture and disseminate disinformation, as seen by recent events in the controversy surrounding images of Trump's arrest. These were AI-generated[67].

In the chapter *How to Weaponize Disinformation*, Jakub Olchowski noted methods Russian agencies used that focused on polarizing society, reducing public trust in governance institutions, and discrediting its opponents. The focus has been to achieve tangible benefits for Russia, either the removal of sanctions or the Nord Stream 2 pipeline's construction. This project has been shelved[68] by Germany amid Russia's continued invasion of Ukraine. Some of the strategies Olchowski noted included the following:

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[66] Chernova, Mick Krever, Anna. "Wagner Chief Admits to Founding Russian Troll Farm Sanctioned for Meddling in US Elections." CNN, February 14, 2023. https://www.cnn.com/2023/02/14/europe/russia-yevgeny-prigozhin-internet-research-agency-intl/index.html.

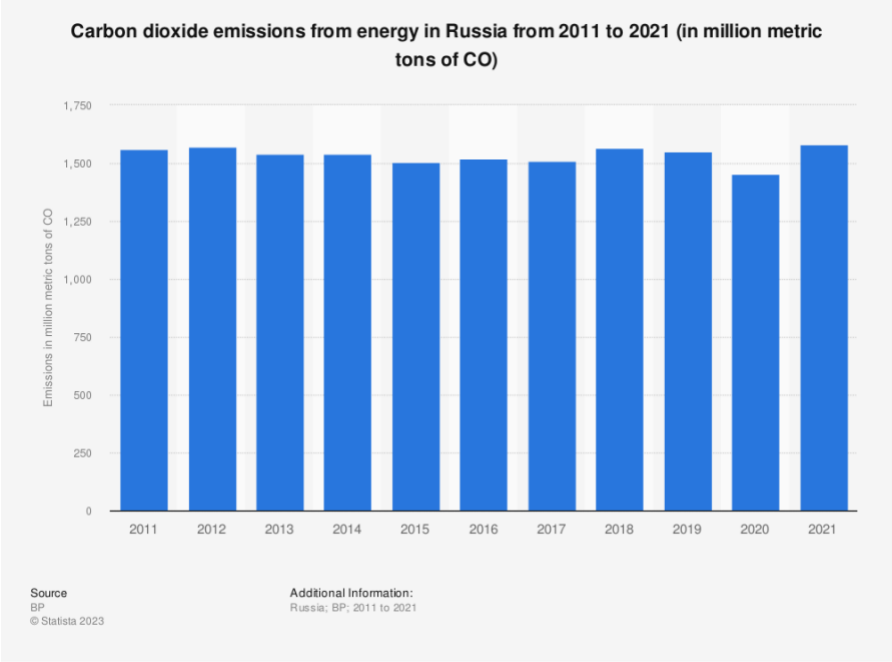
[67] BBC News. "Fake Trump Arrest Photos: How to Spot an AI-Generated Image." March 24, 2023, sec. US & Canada. https://www.bbc.com/news/world-us-canada-65069316.

[68] Marsh, Sarah, Madeline Chambers, and Sarah Marsh. "Germany Freezes Nord Stream 2 Gas Project as Ukraine Crisis Deepens." Reuters, February 22, 2022, sec. Energy. https://www.reuters.com/business/energy/germanys-scholz-halts-nord-stream-2-certification-2022-02-22/.

- Tailored narratives targeting Western counterparts.
- Using corruption and blackmail to reduce legitimacy.
- Using protests and stoking violence to build narratives.
- Establishing entities controlled by Russia's KGB in the West.

Therefore, Russia utilized these tactics to legitimize itself in the global arena by creating a Soviet matrix of historical narratives including a mythologized narrative of World War Two in which the Soviet Union was a "benevolent actor" in the Great Patriotic War. Putin further utilized this narrative to unite Russians and ensure a rallying around the flag effect, which was observed during Russia's invasion of Ukraine[69].

RUSSIA IN CHARTS:

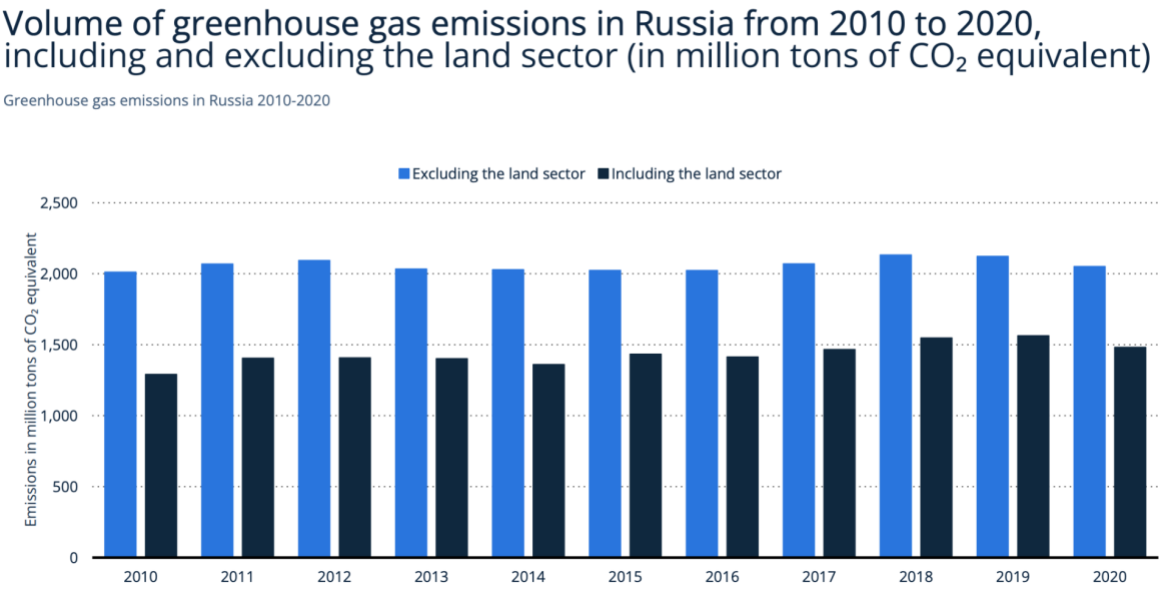


Around 1.58 billion metric tons of CO2 were emitted from energy sources in Russia in 2021, representing a rise compared to the previous year[70]. Over the period of 2000 to 2020, there was an eight percent increase in

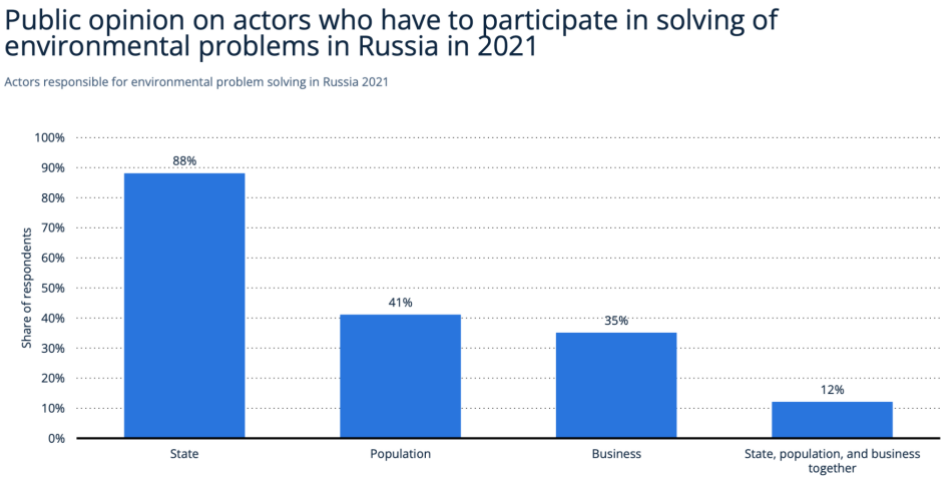
[69] "Putin's Public Approval Is Soaring during the Russia-Ukraine Crisis, but It's Unlikely to Last – Fletcher Russia and Eurasia Program," February 23, 2022. https://sites.tufts.edu/fletcherrussia/putins-public-approval-is-soaring-during-the-russia-ukraine-crisis-but-its-unlikely-to-last/.

[70] Statista. "Russia: Carbon Dioxide Emissions from Energy 2021." Accessed April 24, 2023. https://www.statista.com/statistics/449817/co2-emissions-russia/.

Russia's per capita carbon dioxide emissions within its borders.



In 2020, Russia's greenhouse gas emissions, not including land use, exceeded 2.05 billion tons of CO2 equivalent, showing a minor reduction from the previous year. Meanwhile, the figures, which include the land sector, also decreased between 2019 and 2020, approaching nearly 1.5 billion tons of CO2 equivalent in the most recent year surveyed.



In 2021, close to 90 percent of Russians held the belief that the state should be involved in addressing environmental problems. Additionally, 12 percent held the

perspective that the resolution of such issues required collaborative efforts between the state, population, and business[71].

These charts highlight Russia's challenges in addressing carbon emissions, the impact of its invasion of Ukraine on its political economy, and its weakened climate goals. While Russia hoped to leverage European reliance on its gas and oil, the impact was counterintuitive with the EU accelerating its green projects and Russia selling its oil and gas to India and China, albeit at tangibly lower prices.

THE WEST'S RESPONSE TO RUSSIAN DISINFORMATION ECOSYSTEM:

The European Union and NATO (through the establishment of the East *StratCom* team in 2015) have taken considerable actions to counter Russia's disinformation campaigns and help Eurasian counterparts tackle falsified narratives. Meanwhile, the United Nations, The Organization for Economic Co-operation and Development, and the Council of Europe have made efforts to acknowledge Russia's propaganda model in politics, policy, and climate. Therefore, Russia's lack of trust in climate science is not surprising as it relies heavily on selling hydrocarbons to generate revenue.

A survey conducted by the independent Levada Center revealed that 48 percent of respondents considered climate change to be the biggest threat to humanity in the twenty-first century. Despite this, the most pressing environmental concerns in Russia, such as air pollution, waste management, and wildfires, have not translated into a wider concern about global warming or activism for public policy change. In fact, an Ipsos survey conducted in April 2020 showed that

[71] Statista. "Climate Change in Russia." Accessed April 25, 2023. https://www.statista.com/study/67191/climate-change-in-russia/.

only 13 percent of Russians regarded climate as the most significant environmental issue in their country, well below the global average of 37 percent[72].

Here's a timeline of how Putin has responded to climate change, the Paris Climate Agreements, and other issues.

October 2019: Putin acknowledges for the first time that global warming is a result of human activities. (Amid global tilt towards climate action, justice and equity).

November 2019: Putin expresses doubt about the feasibility of a global shift to renewable energy and suggests that such a move could lead to a return to a primitive way of life. (This can be construed from the lens of Russia's burgeoning hydrocarbons industry).

2019: Russia signs on to the Paris climate accord, but uses a 1990 benchmark that allows it to increase emissions and still meet its 30 percent reduction target.

2019: Legislation is introduced to institute emissions quotas and carbon pricing as part of Russia's ratification of the Paris Agreement.

March 2020: A Ministry of Economic Development strategy document predicts that Russia's emissions will continue to rise through the next decade.

[72] Conley, Heather A., and Cyrus Newlin. "Climate Change Will Reshape Russia," January 13, 2021. https://www.csis.org/analysis/climate-change-will-reshape-russia.

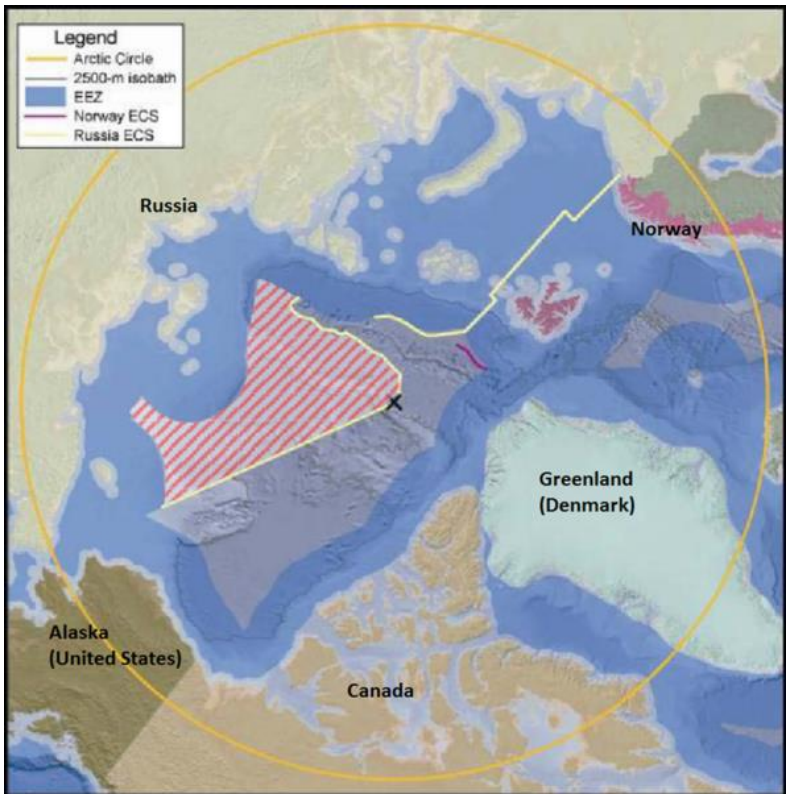
2019-2020: Lobbying efforts by the Russian Union of Industrialists and Entrepreneurs[73] weaken the emissions legislation, resulting in weaker provisions on emissions reporting and the elimination of a national carbon trading system and penalties for polluters[74].

2023: The existing perspective in Russia remains one of passive resignation or misguided optimism about the economic consequences of climate change. Some Russian officials believe that it is beyond Russia's means to resolve and that the country should extract revenue from its hydrocarbon resources while there is still global demand. Others believe that Russia will benefit economically from warmer temperatures by way of an increase in arable land and greater use of the Northern Sea Route for commercial shipping, despite the unproven sustained commercial interest in an Arctic shipping route. This was highlighted in Thane Gustafson's book *Klimat*, which will be introduced later in the paper.

[73] Ibid, 72.
[74] Ibid, 72.

INTEGRATED ANALYSIS:

Russia is the world's fourth largest emitter of greenhouse gasses[75] and has oil reserves exceeding Saudi Arabia. Additionally, it has a robust nuclear power program making the triage a complex matter for issues concerning climate change policies globally. In his book *Klimat: Russia in the Age of Climate Change,* author Thane Gustafson notes how the "Russian economy has made considerable progress in the last 20 years," with the oil and gas industry modernizing[76] rapidly with improvements in telecommunications and hydrocarbon exports.



Gustafson further notes how the West has not acknowledged these developments, thereby creating a schism between how Russia perceives itself versus how the West perceives it to be. These developments have made Russia more vulnerable to climate change as it depends on exports of fossil fuels and has a geography surrounded by the Arctic Circle, with over 24,000

[75] Conley, Heather A., and Cyrus Newlin. "Climate Change Will Reshape Russia," January 13, 2021. https://www.csis.org/analysis/climate-change-will-reshape-russia.
[76] Gustafson, Thane. *Klimat : Russia in the Age of Climate Change*. Cambridge, Massachusetts: Harvard University Press, 2021.

kilometers of its coastline comprising permafrost, which is projected to melt amid rising global temperatures[77].

Russian climate scientists raised cautionary notes on global warming and its impacts 40 years[78] ago and these entered the media lexicon 30 years ago, as noted through Factiva research. These warnings were ignored as Russia faced the geopolitical realities of the collapse of the Soviet Union, rise of authoritarianism, and Putin's consolidation of power in the West versus Russia cold war. But, in recent times, climate change has gained more attention. From ministries, and companies, to politicians, different climate teams are engaging in debates but this takes a backseat amid security and civil society issues.

Gustafson has divided Russian climate actors into four key categories.

a. The first comprises climate scientists and related experts who started studying climate change in Russia during the 1970s, focusing particularly on the Arctic. This group includes scientific institutes and government agencies, such as Rosgidromet, and provides regular studies, media commentaries, and a balanced perspective on extreme narratives[79].

b. The second group includes government bodies responsible for managing climate-related external diplomacy and public relations. The Ministry of Economic Development and the Ministry of Energy are among the ministries becoming advocates for proactive climate policies. International conferences now feature official Russian pavilions, indicating the institutionalization of climate change in the Russian government[80].

c. The third group of Russian companies are those that have significant assets outside Russia or are publicly listed on foreign exchanges. These companies, some of which are state-owned, are facing increasing external threats to their businesses, including the possibility of carbon export taxes in Europe and pressures from foreign investors and regulators. In response to these threats, many Russian companies are taking steps to improve their environmental sustainability[81].

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[77] Ibid.
[78] Ibid 76.
[79] Ibid 76.
[80] Ibid 76.
[81] Ibid 76

d. A group of conservatives in Russia, including Sergei Ivanov and Igor Sechin, close associates of President Putin, have prevented significant action on climate change. They hold conservative opinions, particularly those in the coal and metals industries, and are influential in the Russian parliament and the leading business lobby group, the Russian Union of Industrialists and Entrepreneurs (RSPP).[82]

Furthermore, with the Russian invasion of Ukraine, the usage of Foreign Agent Laws[83] for activists, journalists, and academics alike, climate change in Russia has been restricted to a minuscule group, as outlined above, belonging to either the political, business, or scientific communities based in Moscow. While group 1 is invested in the direct impacts of climate change, other groups are primarily focused on international policy, diplomacy, and negotiations to ensure Russia can continue to export its oil and gas resources. Putin has taken modest actions on climate change, which sets the limits for Russia's actual policies. This is because Russia's economy heavily relies on the export of hydrocarbons, and any significant policy changes related to climate change could potentially harm Russia's economy and the power of its political elites[84].

RUSSIA AND THE WEST: DISINFORMATION DEMAND AND SUPPLY

In the late 1950s and early 1960s, rising CO2 concentrations in the atmosphere were observed by scientists in both the United States and the Soviet Union[85], marking the beginning of the modern history of climate change. American scientists warned the White House of the potentially harmful effects of global warming caused by the greenhouse effect as early as 1965, based on meticulous

[82] Ibid 76.
[83] Human Rights Watch. “Russia: New Restrictions for ‘Foreign Agents,’” December 1, 2022. https://www.hrw.org/news/2022/12/01/russia-new-restrictions-foreign-agents.
[84] Newlin, Cyrus, and Andrew Lohsen. “Russia Futures: Three Trajectories,” May 4, 2022. https://www.csis.org/analysis/russia-futures-three-trajectories.
[85] Doose, Katja. “Modelling the Future: Climate Change Research in Russia during the Late Cold War and beyond, 1970s–2000.” Climatic Change 171, no. 1 (March 9, 2022): 6. https://doi.org/10.1007/s10584-022-03315-0.

measurements of CO2 concentrations by Charles Keeling at Mauna Loa in Hawaii[86]. The Soviet Union was not far behind, with geography being a traditionally strong area of scientific research in Russia, including climatology, hydrology, and geomorphology. One of the first Russian scientists to speculate on the possibility of global warming caused by the greenhouse effect was climatologist Mikhail Budyko[87], who developed a numerical climate model linking the growing atmospheric concentration of CO2 to human combustion of fossil fuels. The first Soviet conference on climate change and its possible man-made origins took place in Leningrad in April 1961, and a decade later, Budyko published a monograph, The Influence of Humankind on Climate, which he publicized widely in the Soviet popular press. In the 1970s, Soviet climatologists and their Western counterparts came into close contact during the East-West détente, and in the 1980s, they jointly created the Intergovernmental Panel on Climate Change (IPCC) to bring the results of scientific research to a wider public and decision-makers. Although the Soviet Union disintegrated at the end of 1991, many Russian scientists continued to forge ahead in climate studies, taking advantage of Russia's increased openness to the outside world to strengthen their professional ties with Western colleagues and participate in the growing climate-change community.

CONCLUSION:

In his book *Public Opinion in Soviet Russia*[88] Alex Inkeles highlights the role of propaganda in establishing relations between the party and the population and furthermore for “international operations of the party”. It further explores Marxist-Leninist propaganda and how Soviet officials, propagandists, and journalists were trained, leading to social stratification. Though the book was written in 1950s, the core tenets of how the former Soviet Union and currently Russia utilize propaganda have remained belligerently similar. As we studied, Russia has developed internal

[86] American Chemical Society. “Keeling Curve.” Accessed April 28, 2023. https://www.acs.org/education/whatischemistry/landmarks/keeling-curve.html.

[87] Lapenis, A. “A 50-Year-Old Global Warming Forecast That Still Holds Up.” Eos, November 25, 2020. http://eos.org/features/a-50-year-old-global-warming-forecast-that-still-holds-up.

[88] Inkeles, Alex. *Public Opinion in Soviet Russia; a Study in Mass Persuasion.* Cambridge: Harvard University Press, 1958.

tools, standards, and propaganda machinery to counter political, social and climate-related information that can threaten Putin's survival and dent its economic gains through the sale of hydrocarbons to other countries. Furthermore, Inkeles explores how newspaper editors in Soviet Russia were answerable to the state and appointed by the party. "Political training and ideological reliability are the prime characteristics that qualify a man for a position as editor of a Soviet newspaper," Inkeles noted[89] This highlights the Russian state's disdain for independent publications like *Meduza* and *TVRain* and strong support for state-linked Russia Today and Sputnik. These platforms have been used to deny climate science, the urgency of emissions reductions, thereby resulting in falling public trust on climate science.

The identification of Russian media that is responsible for amplifying disinformation and furthering the goals of the KGB and Kremlin needs to be documented by the West, NATO, and international organizations. For issues as sensitive as climate change that need profound intervention and usage of market mechanisms, Nationally Determined Contributions, GSTs, and other UNFCCC-led instruments to ensure nations adhere to their Paris Climate Agreement commitments, increasing trust in climate science is crucial. Additionally, exposing disinformation actors and their influence operations is crucial and G7, EU, NATO, and other groups must create an alert system to conduct systematic assessments of emerging narratives from the Russian ecosystem.

Subsequently, we must also acknowledge how the public communication system in the Soviet Union was developed specifically to mobilize the mind and will of population by the party in power[90], thereby serving as instruments for the government. This has remained deeply entrenched in how Russia under Putin operates, though a certain degree of freedom can be witnessed prior to the 2014 annexation of Crimea. Subsequently, Russia has banished, apprehended, and shut down journalism and activism that is contrarian to its goals.

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[89] Ibid.
[90] Ibid.

Finally, it is crucial to understand how climate disinformation in the U.S. has been a staggering issue with multiple levels of indoctrination including - inoculation, intervention, and overturning belief, being utilized to spread climate science denial, in conjunction with political disinformation. This has been specifically amplified by digital disinformation ecosystems and platforms, as illustrated in previous examples. In his book, *How to talk to a science denier*[91], author Lee McIntyre notes how previous beliefs about intervention to mitigate scientific disinformation and prevent setting in of faulty perceptions is challenging. They further note the challenges associated with addressing audiences that have been exposed to years' worth of science disinformation and are committed to their beliefs. Similarly, platforms and current disinformation networks utilize these specific frameworks to indoctrinate gullible subjects through social media by creating in-group and out-group narratives.

Dealing with disinformation in its various forms needs a multi-pronged approach - from debunking false news, and analyzing narratives, to finally the human element - Respect, trust and engagement[92] are central tenets of understanding social context, political context, and engaging with deniers through conversations, supplanted by facts. In the 21st century, the internet of things (IoT), artificial intelligence, machine learning, and social networks are rapidly developing, creating ecosystems that are fragmented, siloed and a hotbed for marinating disinformation. The key is to understand that climate science denial exists on a spectrum and mapping degrees of persuadability is crucial in responding to and engaging with different communities.

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[91] Filas, Michael. "How to Talk to a Science Denier: Conversations with Flat Earthers, Climate Deniers, and Others Who Defy Reason by Lee McIntyre (review)." *Configurations (Baltimore, Md.)* 30, no. 4 (2022): 497–500.

[92] Ibid

After the issuance of the 2022 UN Third Intergovernmental Panel on Climate Change report[93], UN Secretary-General António Guterres announced, “The jury has reached a verdict. And it is damning….We are on a fast track to climate disaster.” He further cautioned how the world was on a pathway to “global warming of more than the 1.5° Centigrade” [2.7 degrees Fahrenheit] limit agreed in Paris at the UN Climate Change Conference there in 2015.

This report came close after the world witnessed over 27 Climate Summits[94], multiple high-level negotiations, and half a century after the Stockholm conference was organized in 1972. From Berlin, Kyoto, and Marrakech to Geneva and Egypt, the annual Conference of Parties (COP) has spanned the globe, aiming to hold the global economies accountable for rising emissions, incentivizing sustainable development, and amalgamating technology and innovation to create a more sustainable and just future.

Highlighting the looming climate catastrophe, Guterres further painted a bleak warning in 2022, “Major cities underwater. Unprecedented heat waves. Terrifying storms. Widespread water shortages. The extinction of a million species of plants and animals. This is not fiction or exaggeration. It is what science tells us will result from our current energy policies.”

In conclusion, with the intensifying race towards Net Zero and record-high global temperatures, it is crucial for policymakers, technologists, journalists, and international organizations to prioritize climate science and tackle disinformation with urgency. The fate of our sustainable prosperity and future rests on the decisions we make today. It is up to us to take bold actions that are grounded in scientific evidence and address the spread of disinformation that undermines our efforts towards a sustainable future. By doing so, we can create a world where we can all thrive, free from the looming threats of climate change.

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[93] “AR6 Climate Change 2022: Mitigation of Climate Change — IPCC.” Accessed April 30, 2023. https://www.ipcc.ch/report/sixth-assessment-report-working-group-3/.

[94] Accessed April 30, 2023. https://unfccc.int/process-and-meetings/conferences/past-conferences/past-conferences-overview.

PODCAST:

As part of my capstone project, I am excited to create a podcast titled "Climate In Review" that will focus on disseminating information about climate change, policy developments, and the use of disinformation as a tool to weaponize them.

Through this podcast, I will interview 15 industry experts in emerging technologies and climate policies, and Eurasian experts to gain insights into their respective fields. I will conduct a thorough analysis of the data gathered from these interviews, and divide it into key thematic areas, which will be mapped and integrated into a blog, to be published with CIERP or *The Fletcher Russia and Eurasia Program*.

One of the main focuses of the podcast will be on the future of climate disinformation and its deep links to political rhetoric and developments globally. I believe that it is critical to understand the impact of disinformation on climate change policies and emerging technologies, and I hope to provide insights on how to counter its effects and promote factual information.

As someone passionate about the environment and the impact of climate change, I am excited about the opportunity to create a platform that will educate and inform people about the complexities of this issue. I believe that the "Climate In Review" podcast will be a valuable resource for those seeking to better understand climate change and policy developments, and the role of disinformation in shaping public perceptions of these issues.

Notable subjects to be interviewed for the podcast:

1. **Jacob Werksman** - Professor at The Fletcher School and an expert in climate change policy, international environmental law, and sustainable development.
2. **Cyrus Newlin** - Energy Policy Advisor at the Natural Resources Defense Council (NRDC) and expert in energy and climate policy.
3. **Jennie King** - Senior Climate Change Advisor at the International Institute for Sustainable Development (IISD) and expert in climate finance and governance.
4. **Jakub Olchowski** - Energy and Climate Policy Expert at the European Commission and expert in renewable energy policy and climate change mitigation.
5. **Ekaterina Bliznetskaya** - Senior Climate Change Specialist at the World Bank and expert in climate adaptation and resilience.
6. **Massamba Thioye** - Senior Climate Change Advisor at the United Nations Framework Convention on Climate Change (UNFCCC) and expert in climate policy and negotiations.
7. **Francis X. Johnson** - Senior Director of Energy and Climate at the Stockholm Environment Institute and expert in climate change mitigation and energy policy.
8. **John Morton** - Director of the Sustainable Development Programme at the Natural Resources Institute and expert in climate change adaptation and food security.
9. **Carroll Muffett** - President and CEO of the Center for International Environmental Law (CIEL) and expert in environmental law and policy.

10. **Stéphane Dion** - Former Canadian Minister of Environment and Climate Change and expert in climate policy and international relations.
11. **Jack Layton** - Former leader of Canada's New Democratic Party and advocate for climate action and social justice.
12. **Lee McIntyre** - Research Fellow at the Center for Philosophy and History of Science at Boston University and expert in science denial and misinformation
13. **Michael Mann** - Distinguished Professor of Atmospheric Science at Penn State University and author of "The Hockey Stick and the Climate Wars."
14. **Katharine Hayhoe** - Climate scientist and professor at Texas Tech University who has been actively involved in communicating climate science and addressing climate disinformation.
15. **John Cook** - Climate communication researcher and professor at George Mason University who specializes in countering misinformation about climate change.
16. **Naomi Oreskes** - Professor of the history of science at Harvard University and author of "Merchants of Doubt," which examines the role of disinformation campaigns in sowing doubt about climate change.
17. **Ed Maibach** - Director of the Center for Climate Change Communication at George Mason University and expert in the field of climate communication.
18. **Peter Jacobs** - Postdoctoral Researcher in Climate Science Communication at George Mason University.
19. **Brenda Ekwurzel** - Senior Climate Scientist and Director of Climate Science for the Union of Concerned Scientists.
20. **Maxim Krupskiy** - Visiting Scholar at The Fletcher School at Tufts University. Krupskiy has 12 years of legal experience in Russia. Throughout his legal career, his work has primarily revolved around defending refugees, NGOs, and activists labeled as foreign agents by Russia.

21. **Ilya Yablokov** - Founder and Head of the Russia Division at the Disinformation Index, an organization that tracks and exposes Russian disinformation campaigns.
22. **Nataliya Ryzhkova** - Assistant Professor of Political Science at the European University at St. Petersburg, with expertise in Russian politics, propaganda, and disinformation.
23. **Maria Snegovaya** - Adjunct Fellow at the Center for European Policy Analysis (CEPA) and expert in Russian politics, disinformation, and propaganda.
24. **Peter Pomerantsev** - Senior Fellow at the London School of Economics and Political Science and author of "This Is Not Propaganda: Adventures in the War Against Reality," which examines the role of disinformation in Russia and beyond.
25. **Anton Shekhovtsov** - Research Fellow at the Institute for Human Sciences in Vienna and expert in far-right politics, disinformation, and propaganda in Russia and Europe.
26. **Andrei Soldatov** - Russian investigative journalist and expert in Russian politics, surveillance, and disinformation campaigns.
27. **Alina Polyakova** - President and CEO of the Center for European Policy Analysis (CEPA) and expert in Russian influence operations, propaganda, and disinformation.

APPENDIX:

CDD: Climate Disinformation Demanders. For this research, I am promulgating the audience.

MFL: MFL can be defined as “large-scale competition for power, in a shuffle for allegiances, and regulation of communications to organize a cartel of imagery and identity among themselves” (Price, p. 31)

LCC: Low-conscientiousness conservatives, a segment of the conservatives that are further on the far-right spectrum and spread and believe in disinformation on climate and politics. While conservatives are more inclined towards believing in disinformation than liberals, LCCs are strongly inclined to demand climate disinformation and thereby need specific interventions to avoid antagonizing the entire conservative section of the population.

Gratitude:

I am filled with gratitude as I reflect on the completion of this capstone project, knowing that it would not have been possible without the incredible support and guidance of so many dedicated individuals.

My deepest appreciation goes to my capstone advisor, Professor Josephine Wolff, for her flexibility and trust in me throughout this process. Her unwavering support provided the foundation for this project and gave me the confidence to explore new ideas and push the boundaries of my research.

I am also deeply thankful for Professor Jacob Werksman, whose invaluable insights on utilizing IPCC standards as the baseline for climate science and sharing his experiences negotiating the Paris Climate Agreement were essential in shaping my research. Additionally, I extend my heartfelt gratitude to Professor Carolyn Gideon, who generously reviewed the first part of my paper and provided guidance on setting up the Markets for Loyalty model, as well as offering stringent feedback that pushed me to refine my work even further.

Finally, I extend my appreciation to Arik Burakovsky for his guidance on the disinformation ecosystem in Russia and access to multiple sessions organized by The Fletcher Russia and

Eurasia Program. His contributions were crucial in helping me to deepen my understanding of this complex issue.

To all of you, I offer my deepest gratitude for your unwavering support, mentorship, and guidance throughout this capstone journey. Your contributions have made an indelible impact on my work, and I will always be grateful for the invaluable lessons I have learned from each of you.