

# Unpacking the climate misinformation and disinformation ecosystem



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September 2021

Climate change is the dominant existential challenge of our era. Human-caused global warming is dramatically altering the atmosphere, ocean currents, ecosystems and biodiversity on which all life depends. At least [eight million](#) people die prematurely from ambient pollution every year. As many as 200 million people could be climate-displaced in the coming decades. And while virtually [all scientists](#) agree that the latest phase of global warming is human-induced, that natural disasters are growing more frequent and intense; and that CO<sub>2</sub>, NO<sub>2</sub> and PM<sub>2.5</sub> are harmful, global efforts to mitigate and adapt to climate change are moving far too slowly. A monumental if under-appreciated obstacle to climate action is disinformation and misinformation.

Surprisingly, there was once widespread consensus on the need to dramatically reduce greenhouse gasses and decarbonize the economy. During the late 1980s, climate action was a bipartisan issue in the US, and notions of an energy transition were widely accepted. The 1992 Rio Summit was expected to hasten a revolution in sustainability. But that consensus unravelled when the fossil fuel backed misinformation and disinformation machine kicked into high-gear. Conservative think tanks introduced “climate scepticism” to the lexicon and spread denialism for the subsequent three decades.



# The evolution of climate change disinformation and misinformation

From the beginning, approaches to spreading climate misinformation - the unintentional dissemination of false information to mislead - and disinformation - the intentional circulation of incorrect information - drew heavily from the tobacco-lobby playbook. Generously backed by fossil fuel companies, these [well documented](#) campaigns pushed out dubious science, discredited climate scientists, amplified the voices of conservative pundits and politicians and reached mainstream audiences on conventional, and later social, media. A range of well known [corporate, philanthropic and political actors](#) were involved, as were as many as 80 [think tanks](#) linked to the oil, gas and coal sectors. A relatively small number of groups would fund [a large network](#) of “disinformation” and “misinformation” producers. These groups and their messages have played an influential role in shaping the current positions of the Republic Party in the US.

The impacts of decades of climate misinformation and disinformation are far-reaching. While most [people around the world still believe](#) climate change is human-induced, there is a pervasive (false) perception that scientists are divided on the issue. Researchers refer to this as the [consensus gap](#). It turns out that a relatively small dose of misinformation and disinformation can [lower acceptance](#) of climate change. The lesson is that a [small but vocal group](#) of deniers can have a massive impact. The CEO of the ultra-conservative and Koch-funded Heartland Institute, for example, is credited with urging former US president Trump to withdraw from the Paris Climate agreement. One reason for their disproportionate influence

is that mainstream media often seeks to create “balanced” reporting on the issue, often conflating fact and opinion.

Climate misinformation and disinformation has evolved and adapted over the years. With extreme weather events such as wildfires, heatwaves and glacial melting harder to ignore, there has been a noticeable shift from denialism to “distraction”, “delay” and “inactivism”. The goal is increasingly to highlight the “uncertainty” of climate science, the “benefits” of global warming, and the “risks” of government-led mitigation. A focus on “solution misinformation” is also a common way to stymie green or renewable energy measures. Some even peddle in “[doom porn](#)”, suggesting it is too late to take action, with the goal of slowing, even paralyzing, action. Researchers have detected a [sharp increase in climate disinformation and misinformation](#) before and after global, national and local climate policies with the goal of shaping narratives on everything from the Paris Climate Agreement to carbon pricing bills and green energy subsidies.

It turns out that some people are more predisposed to climate misinformation and disinformation than others. An individual’s [ideological and political persuasion](#) influences their likely acceptance or not of climate science and green solutions. People identifying more as liberal and democratic are more positively inclined while conservatives tend to display stronger resistance. These tendencies have grown stronger as societies polarize, but also as political parties coalesce around different poles of the climate change agenda. In the US, the declared conservative republican view is that “establishment science” is tied to a liberal democratic agenda. Climate misinformation and disinformation are also often connected to wider ecosystems or constellations of conspiratorial thinking.

There are several categories of climate misinformation and disinformation circulating in social media. These can challenge trends (global warming is not new); deny attribution (humans are not to blame, it is solar flares or laser beams); question the impacts (warming is not that serious); discredit regulation efforts (green solutions are a conspiracy of the elite); or undermine the integrity of scientists (casting doubt on the IPCC). When fake news is reinforced by political leaders, mainstream media and social media platforms, they can fairly rapidly distort beliefs and reinforce contrarian behavior.

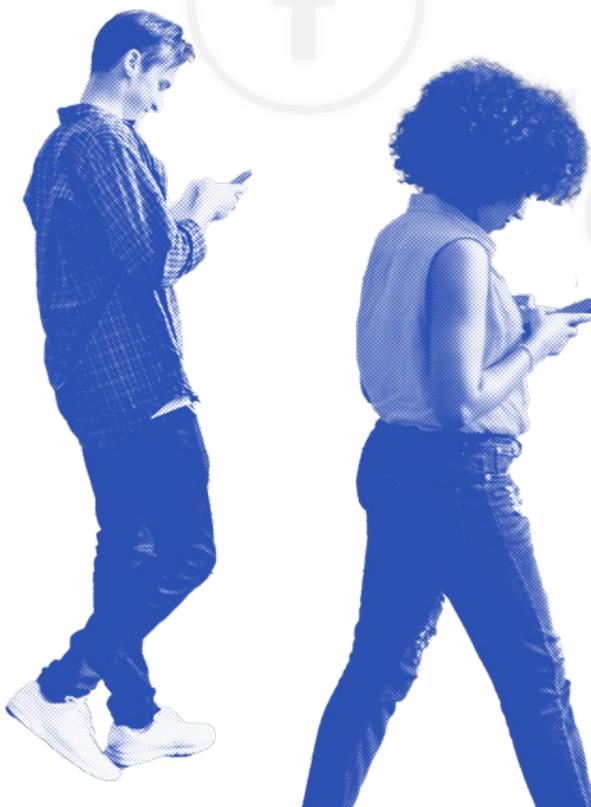
Climate misinformation and disinformation [spreads across social media](#) in various ways. Among the most common is organic engagement across social networks with echo chambers reinforcing messages due to [homophily](#). Recommending and ad-related algorithms can also accelerate sharing from like-minded people to wider communities. For example, in 2020, [dozens of climate misinformation posts featured in Facebook ads](#) slipped through filters and generated millions of views, especially among older individuals in rural areas of conservative states. Meanwhile, Twitter bots are also perceived as a [major source of climate](#) change misinformation

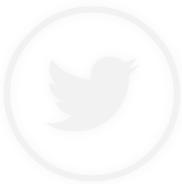
and disinformation. When the US pulled out of the Paris Climate Agreement in 2015, bots accounted for an estimated [25% of all tweets](#) on climate change.

## Fighting back against climate disinformation and misinformation

There are a growing number of efforts underway to prevent and disrupt climate disinformation and misinformation. Like many forms of fake news, it is difficult to dislodge once absorbed by viewers. This is because it is not just specific facts, but rather core beliefs and world views that shape anchor and confirmation biases. Indeed, efforts to shower users with [factual information can backfire](#), reinforcing false beliefs rather than eliminating them. An approach focused on supplying evidence while necessary, is insufficient. Social media companies and researchers are focusing on four types of interventions including education, inoculation, technological measures and regulatory efforts.

The most frequently applied approach is educational, emphasizing critical thinking and climate literacy. The focus is on generating evidence - reports, books, videos, training - to help strengthen individuals' ability to discriminate between scientific facts and fake information. Facebook, for example, has set up a climate science resource center while YouTube links fake and misleading information to Wikipedia sites. There are also large-scale online courses, [including MOOCs](#) as well as gamified responses designed to bring climate scientists and science closer to social media users.





Another approach involves inoculation, drawing heavily on viral or vaccination analogies. The idea is to incorporate education into a more comprehensive strategy of building resilience to climate misinformation and disinformation. Tactics involve training in critical thinking and the ability to spot rhetorical techniques, logical fallacies, fake experts and the cherry-picking of data to support false claims. By offering up small doses of misinformation and then equipping social media users in counter-arguments and reasoning skills, the goal is to help them better refute non-factual information into the future.

Technological solutions are also common among social media companies, including everything from content moderation to automated take-downs. The goal is to detect and neutralize malicious channels and content before or shortly after it is posted. It may require adjustments to existing ranking and selection algorithms as well as redirecting users to “vetted” information cleared through the educational approach noted above. It may also involve working with fact checking groups to identify, flag, demonetize and remove offending content.

Finally, regulatory measures are often focused on adjusting community standards and content violation rules. Social media companies may increase the penalties or costs associated with misinformation and disinformation. Alternately, they can scale up the incentives to feature scientifically credible content. There are also opportunities for governments and non-governmental organizations to help shape the legal or policy frameworks related to deliberately misleading and dangerous content, though this may be more challenging in the climate domain.

Major social media companies are taking steps to address these challenges, but coming under criticism for not doing enough. YouTube, for example, launched an effort in 2015 to

“change the way people discuss climate change” and Google published a white paper in 2019 indicating their intention to address misinformation and disinformation. But a [2019 study](#) of over 200 YouTube sites focused on the company’s [recommendations features](#) and concluded that it facilitated “free promotion”, “ad-related monetization” and a lack of flags. It also determined that YouTube [ran ads with climate denialism](#) alongside promotions put out by major environmental groups. YouTube was singled out as a leading source of dis/misinformation by the US House Select Committee in 2021 after it [issued a letter](#) to Google.

Social media companies such as TikTok and Twitter are also facing a barrage of criticism for not taking sufficient action to limit climate misinformation and disinformation. That said, TikTok is enabling a [lively climate discussion](#): the hashtag #forclimate has 533 million views. There is growing attention to the way its primary user base is applying powerful [story-telling](#) and education to build awareness, including with support from TED, Gates Ventures and other philanthropic groups. Meanwhile, Twitter has come under fire for bots and in mid 2021 the company [started to undertake redirection](#) strategies. When users follow climate-related topics they will be exposed to posts from credible environmental organizations and researchers.

Facebook appears to be the [most advanced](#) in terms of deploying strategies to tamp-out climate change misinformation and disinformation. It launched a pilot project using a combination of educational, inoculation and technical approaches in early 2021 featuring the establishment of a [climate science information center](#) and labels on content pointing out myths about climate change. The company is tagging misinformation as well as downplaying misleading content. It nevertheless faces criticism [in 2021](#) for still not moving sufficiently forward.



# The structural challenges of ending climate misinformation and disinformation

There is a potentially larger systemic challenge to generating rapid and effective collective response to avert major climate change. On the one hand, there is [consensus](#) that solutions to global issues and climate change require evidence-based policy and ethical stewardship. On the other, social media is disrupting our collective capacity to process “scientific” information and take collective action. This is because the structure of social networks and patterns of information flow are determined by engineering decisions that emphasize profitability rather than sustainability. A basic question, then, is whether a friend, news or ad recommending algorithm promotes or hinders the spread of misinformation?

At least 3.6 billion of the world’s 7.8 billion people are connected. Our collective behavior is influenced by multiple communications technologies. Shifts in the nodes and networks of our world have accelerated the frequency of interaction. Communication is no longer geographically bound and long ties are increasing the potential for spreading. Today, highly connected people possess outsized influence, and this is not dependent on the veracity or quality

of their information but rather the cumulative advantage of evoking strong emotional responses. Augmented by algorithms, large amounts of misinformation and disinformation can spread across societies without being encumbered by fact-checking or decay.

Holding back the disinformation and misinformation juggernaut is exceedingly challenging. Adding frictions can reduce transmissions, but information is increasingly cheap to produce and distribute. Algorithms designed to filter, curate and display can induce biases and contribute to polarization. Modest fluctuations in popularity can drive major differences in visibility. Anonymity facilitates the spread of low-quality information with minimal social costs and provides cover for bots that brute-force messaging across networks. In other words, the costs of inaccuracy are low and falling rapidly which means individuals and organizations generate political and ideological benefits from lies. Ultimately, the removal of filters that favor high quality information may represent one of the largest threats to climate change.

Social media companies have all the information they need to decide whether or not to act. The latest findings of the IPCC are emphatic: climate change is widespread, rapid and intensifying. The scientific consensus is stronger than ever. If greenhouse gas emissions are not radically reduced, the 1.5C threshold will likely be breached by the 2030s with devastating human and environmental consequences. There is expert agreement that up-scaling and accelerating multi-level and cross-sector mitigation and adaptation strategies are essential. But this requires a minimally informed public - which is where social media companies come in. The IPCC notes how: “education, information, and community approaches ... can accelerate the wide-scale behaviour changes consistent





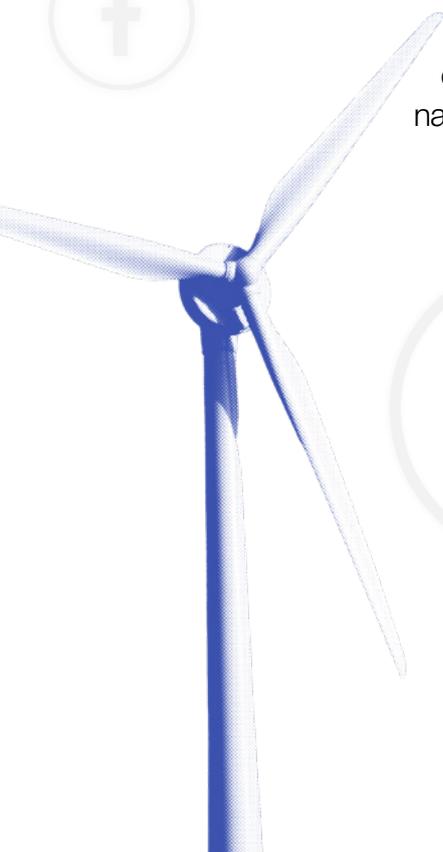
with adapting to and limiting global warming to 1.5°C ... Public acceptability can enable or inhibit the implementation of policies and measures” to mitigate and adapt to global warming. Yet, “public acceptability depends on the individual’s evaluation of expected policy consequences, the perceived fairness of the distribution of these consequences, and perceived fairness of decision procedures.”

The question now is whether social media companies are prepared to take action and what works to disrupt climate misinformation and disinformation. Fortunately, several positive practices are emerging. For example, social media platforms can and in some cases are providing clear and carefully tailored information about climate change, including why it occurs, the scientific consensus around it, and impactful solutions that are available. But they can also do more than this. SecDev is helping social media platforms develop and deploy multilayer strategies to disrupt digital harms. These include monitoring patterns of climate misinformation and disinformation across multiple languages, updating fact-checking policies, improving approaches to flagging and tagging posts with factual information and supporting “myth-busting” capabilities designed to debunk non-factual narratives.

Taken together, SecDev advances three clusters of approaches to disrupt climate misinformation and disinformation.

- ◆ **Rapid Identification** - using a range of machine learning tools build classifiers to map, track and analyze sticky content that gains traction within and across communities. In most cases, a modest number of super-spreaders are responsible for a disproportionate volume of harmful content.
- ◆ **Targeted engagement** - targeting dangerous content and affected communities with inoculation campaigns consisting of nudge strategies, counter-messaging and (automated) redirection with the intent of driving engagement interaction with authoritative sources; and,
- ◆ **Tailored education** - applying design thinking to the development and deployment of innovative strategies ranging from gamification and edutainment to build resilience to deliberate misinformation and disinformation.

Critical to the effectiveness of all these measures is speed of response, a high degree of discretion in how the strategies are applied, persistent engagement and building communities of trust around authoritative gatekeepers. A goal must be to preserve platforms as spaces for freedom of expression while simultaneously amplifying engagement with authoritative sources.



# Social media platform approaches to climate misinformation and disinformation

	Policy stance	Education	Inoculation	Technical	Regulatory
 Facebook	Adopted <a href="#">new policy</a> in September 2020 on tackling climate misinformation. Set carbon reduction targets for 2030.	<a href="#">Climate science information center</a> with links to IPCC, UNEP, NOAA, WMO in France, Germany, UK and US and <a href="#">surveys</a> .	Pilot in February 2021 (UK) to test labels.	Flagging, tagging and downplaying misinformation including 70 fact-checking organizations in 60 languages.	Community guidelines have yet to reflect climate-related rules (thought do refer to false news, inauthentic behavior, manipulated media).
 TikTok	<a href="#">Claims</a> to be increasing fact-checking and moderation on climate change following the November 2020 election.	Evidence of large-scale user-led campaigns on climate change impacts and action	NA	As of 2021, <a href="#">flagging questionable content and removal of misinformation</a> (irrespective of engagement).	NA
 Twitter	Announced a <a href="#">new policy</a> in 2021. Adopted new carbon neutrality power sourcing by 2022, as well as offsets, and LEAD standards.	Introduced " <a href="#">climate change topic</a> " in June 2021. Partnered with UNEP, UNDP, Greenpeace, WWF, <a href="#">350.org</a> , FridaysforFuture, Climate Reality Project, and others.	NA	In 2021, Twitter <a href="#">initiated a redirect</a> strategy to credible global organizations, activists and researchers.	NA
 YouTube	YouTube launched a campaign in 2015, Google White Paper in 2019, but beyond misinformation policy, there limited action in its <a href="#">community standards</a> or <a href="#">policy paper</a> . Google claims to be <a href="#">carbon neutral since 2007</a> and has set a carbon free goal by 2030	NA	YouTube includes <a href="#">links to Wikipedia articles</a> in videos that are/may be targeted by conspiratorial/contrarian viewers <a href="#">since 2015</a> .	Flagrant misinformation is taken down in line with YouTube <a href="#">community standards</a>	Repeat violators and content producers who do not follow basic <a href="#">commercial and community standards</a> are removed.

# About SecDev

SecDev is an agile research and innovation firm helping clients navigate digital-geopolitical, geospatial and geodigital risk. Our team of experts, forecasters and data scientists support a wide range of clients including public sector, corporations and international organizations in meeting their need for timely, accurate decisions. We transform data into intelligence and identify opportunities to drive digital transformation. SecDev builds value through strategic foresight, data science on demand and intelligence as a service. We are global in scope, fluent in data collection and analytics, experienced in cutting edge technology and singularly results-oriented. We empower clients to make informed choices in a rapidly digitizing era.



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