Scientific and Climate Denialism and Disinformation as Threats to Academic Freedom in the Americas

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SUMMARY

This report examines climate denialism and disinformation in the Americas, focusing on the political aspects of the phenomenon, including its origins, manifestations and impact on the political and social landscape. The report aims to understand the relationship between this phenomenon and broader scientific disinformation and denialism, how it intersects with the rise of authoritarian leaders and movements, and the ways in which these elements reinforce each other and threaten academic freedom. Employing a qualitative exploratory approach, the report includes a systematic literature review, dialogues with fourteen specialists from academia and international organisations, and a comparative case study focusing on Brazil, the United States, and other Latin American countries.

The study presents a typology of climate denialism and disinformation to serve as a pragmatic tool that sheds light on the various ways in which climate science is attacked or dismissed. Additionally, it provides an overview of the actors most commonly involved in promoting different forms of disinformation. It also proposes strategies to counter these phenomena through public policies, civil society initiatives, science communication and educational actions, providing examples from countries such as Brazil, the United States, Colombia, Chile, Mexico and Argentina.

The report emphasises that scientific denialism, particularly climate denialism and disinformation, poses a direct threat to academic freedom — the right to produce, share and defend knowledge without interference. International instruments recognise the right to science as a human right, and recent reports emphasise the importance of academic freedom and the right to participate in scientific research. However, attacks on scientists, including harassment and threats, are becoming increasingly common, and academic freedom is being restricted in many countries.

The document also highlights the importance of COP30 as a platform for discussing information integrity, the right to science, and academic freedom, particularly in light of the documented surge in climate disinformation in the lead-up to the event.

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CONTEXTUALIZATION: Denialism and Academic Freedom

Over the past 50 years, climate science has gathered information and scientific findings that corroborate the unanimous consensus on the anthropogenic origin of climate change and its accelerated impacts (Santini & Barros, 2022; Schweickart, 2019; Cook, Ellerton & Kinkead, 2018). Nevertheless, over the past decade, the American continent has become one of the main areas experiencing a resurgence of scientific denialism — the systematic rejection or distortion of well-established scientific consensus (Björnberg et al., 2017; Losekann, 2024) — which is closely linked to disinformation, misinformation, political polarisation, post-truth, corporate interests and the weakening of academic institutions. In this context, denialist narratives have recently emerged in various scientific fields, particularly in public health, vaccine efficacy, epidemiology, evolutionary biology and soil and mining studies (Cassiani, Selles & Ostermann, 2022; Hansson, 2017; McLintic, 2019), as well as in the social sciences, manifesting as historical denialism and attacks on feminist and critical race theories.

The Covid-19 pandemic was a significant event that, on the one hand, represented an urgent situation that demanded attention for scientific discoveries and science-driven public action. On the other hand, it was characterised by the continued influence of disinformation in public rhetoric and decision-making (Marta & Toraldo, 2023; Fonseca et al., 2021; Jaspal & Nerlich, 2023).

Concurrently, discourses promoting climate change denialism and disinformation, and undermining scientific research, have gained traction in recent years, directly challenging consensus and efforts towards climate adaptation and mitigation (Pulles, 2025; Hansson, 2018; Cann & Raymond, 2018; Wong-Parodi & Feygina, 2020). Furthermore, climate denialism and disinformation can be identified as a significant reason why policies to reduce greenhouse gas emissions have been ineffective over the past two decades, particularly in the United States (McCright & Dunlap, 2010; Petersen, Stuart, & Gunderson, 2019). Nevertheless, the 2022 Intergovernmental Panel

on Climate Change (IPCC) report suggested that climate inaction has been partly "due to misinformation about climate science that has sowed uncertainty."

It is important to note that scientific denialism, of which climate denialism is an example, poses a direct threat to the right to education, particularly academic freedom. This refers to the right of scholars and institutions to produce, share and defend knowledge without interference.

The right to science is recognised as a human right in a number of international instruments, including the Universal Declaration of Human Rights, the International Covenant on Economic, Social and Cultural Rights, and the Charter of the Organization of American States, among others. Furthermore, in light of these instruments, as well as General Comment No. 25 of the UN Committee on Economic, Social and Cultural Rights, the International Science Council has emphasised that science is a public good that must be protected, particularly in a global context that undermines the right to participate in, benefit from, and contribute to science.

In August 2025, the Inter-American Court of Human Rights (IACHR) issued an Advisory Opinion (AO) on Climate Emergency and Human Rights, ruling that the right to science is autonomous and that climate policies must therefore be based on empirical evidence. The Court also stated that denying the existence of climate change or adopting ineffective measures could constitute a breach of the obligations set out in the American Convention on Human Rights and the Protocol of San Salvador. The Court also recognised that Indigenous and traditional knowledge are interconnected with science, and that their intellectual rights must be respected.

The Report of the Special Rapporteur in the field of cultural rights, Alexandra Xanthaki, regarding the right to participate in science (A/HRC/55/44) highlights a more inclusive perspective on the right to science. She notes that the concept of science has evolved to encompass a variety of scientific approaches. The Special Rapporteur emphasises that everyone must be able to engage with science in various ways. To this end, she recommends establishing numerous and diverse connections between scientists and policymakers, and enacting specific measures to dismantle the barriers that hinder participation in science. She concludes that scientific freedom is essential, and that all individuals and institutions at every level must adopt a human rights-based approach to science.

In her report on the right to academic freedom (2024), the Special Rapporteur on the right to education, Farida Shaheed, frames the

concept of academic freedom from the perspective of the right to education. Shaheed defines academic freedom as the liberty for individuals to access, create, and share information; to think without constraint; and to engage with diverse knowledge within their field, both inside and outside academic settings. This right carries with it the responsibility to pursue truth, uphold professional ethics, and apply knowledge to solve current societal issues. Shaheed argues that this freedom should extend not just to academics, but to all educators, researchers and students at every level of education.

The report outlines four pillars of academic freedom: the right to teach; the right to debate openly; the right to conduct research; and the right to share findings and opinions. In order to achieve this, the Special Rapporteur recommends reevaluating educational neutrality, developing curricula, and accrediting textbooks. She stresses that educators can only cultivate critical thinking and offer varied viewpoints if their own academic freedom is protected. Finally, Shaheed urges the Human Rights Council and all stakeholders to adopt and implement the "Principles for Implementing the Right to Academic Freedom" to strengthen this right globally.

This is important since, as documented by the Academic Freedom Index, 80% of the world's population lives in countries that restrict academic freedom in some way. In several countries across the Americas, for example, scientists, researchers and students engaged in climate-related research have faced harassment, funding cuts and institutional pressure. Conversely, a variety of strategic initiatives have been implemented to combat climate misinformation in educational, political, communication, and community settings (Mendy, Karlsson & Lindvall, 2024; Oliveira et al., 2024; Hestres, 2020; Hansson, 2017, 2018).

In the United States and Mexico, a study conducted by the Cambridge Globalism Project (2024) found that 13% of US citizens and 10% of Mexicans believe that climate change is not caused by human activity, while 5% and 2%, respectively, stated that they do not think the phenomenon is real. In Brazil, a national study mapped citizens' perceptions of climate change (Spektor, Fasolin & Salgado, 2024). While there is a consensus about the reality of the phenomenon, 44% of respondents said that they did not believe in the severity of its impact on their daily lives. Another study found that 9% of Brazilians do not believe in climate change (DataFolha, 2025).

It is a phenomenon representing an extreme consequence of the continuous spread of disinformation. This phenomenon should not be understood merely as the reproduction of isolated falsehoods, but rather as a systematic method of producing untruths that attack the

institutions, norms and consensuses shaping social reality (Bortoluci & Guerin, 2025). Denialism represents an extreme on a spectrum of science integrity, and it is important to understand its nuances and how it operates within the context of disinformation and climate inaction.

It is therefore crucial to situate climate and scientific denialism and disinformation within the broader context of the democratic institutional crisis and the post-truth era (Fischer, 2019). This manifests itself in political discourse, social mobilisations and campaigns that manipulate information to create the idea that climate change — or even historical events — is merely a rhetorical construct driven by political agendas.

Furthermore, in November 2024, the Global Initiative for Climate Change Information Integrity was launched as a partnership between UNESCO and the Brazilian government, aiming to fund research, civil society initiatives, awareness campaigns, and diplomatic actions.

According to UNESCO's Programme on the Freedom and Safety of the Scientists, academic freedom is a pillar for the "flourishing" and "development" of science. However, recent phenomena have pointed to a worrying trend: "trust in science gets continuously undermined." Reports from other entities indicate this, such as: 49% of women scientists have experienced harassment in their workplaces (Ipsos, 2023); 39% of scientists working on climate topics have suffered online harassment due to their research (Global Witness, 2023); from 2022 to 2023, 409 attacks on higher education institutions were recorded according to the Free to Think of Scholars at Risk (2023); 22% of researchers received violent threats after speaking about Covid-19 in the media (Nature, 2023).

In this context, the UNESCO programme is structured around five key pillars aimed at strengthening the protection of scientists and academic freedom. These include: i) engaging with Member States at both ministerial and technical levels to identify supportive policies; ii) enhancing visibility through a "Call to Action" to highlight the urgency of scientists' freedom and safety; ii) collecting and analyzing data to monitor the status of researchers; iv) strengthening institutional capacities on the ground, particularly in emergency and conflict zones; and v) forming strategic alliances with various stakeholders to maximize programme impact.

The Observatory of Information Integrity has stated that all climate action depends on the integrity of climate science, information, and data. As an update of new narratives and shapes, climate disinformation in the 21st century is not only political but also

an economic phenomenon, a strategy to delay and block climate solutions. The rhetorical use of denial, skepticism, and other nuances in spreading disinformation is employed differently across countries as a means to postpone action, particularly by governments.

COP 30 as an opportunity to discuss information integrity, the right to science, and academic freedom

During the Special Climate Event for Heads of State and Government at the United Nations in September 2025, President Lula stated that COP 30 will be the "COP of truth" because "it will have to say whether we believe what science is showing us. Whether or not we, as leaders and heads of state, trust science." He has also said that climate change and multilateralism are being denied and that "we need to overcome this vicious circle of distrust and inaction."

In this sense, Lula called on the international community to act and make real commitments at COP30, as failure to do so could further fuel denialism. This is especially important since, in the 50 days leading up to COP 30 in Belém, the Observatory for Information Integrity documented a doubling of the spread of climate disinformation — keywords related to the global conference appeared 14,000 times alongside words such as "disaster," "joke," "catastrophe," and "failure." This represents a 267% increase compared to July.

To address this issue, the COP30 presidency has identified the integrity of climate information as a priority topic for the event and has appointed Special Envoy Frederico Assis to establish channels of dialogue and reach mutual agreements on this issue. This issue is considered to impact negotiations, mobilization, and the action agenda.
Additionally, COP 30 will feature an official Scientific Pavilion for the first time in 30 years. Coordinated by scientists, the pavilion will discuss scientific evidence and data and promote academic freedom.

In this context, the objective of this study is to examine climate denialism, disinformation, and misinformation in the Americas from a political perspective. The study will analyze the origins, manifestations, and impacts of these phenomena on the region's political and social landscape. The primary objective is to understand the relationship between this phenomenon and broader scientific denialism, as well as its intersection with the rise of the far right across the continent. The study highlights the interrelationship and mutual reinforcement of these elements and their impact on the right to academic freedom.

The study also presents strategies to confront different forms of climate and scientific denialism and disinformation. These strategies focus on public policies, civil society initiatives, science communication, and educational actions. Examples and discussions centered on countries in the Americas, such as Brazil, the United States, Colombia, Chile, Mexico, and Argentina, reflect the recent unfolding of the phenomenon in the region.

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The methodological approach of this study is justified by the lack of systematic research on scientific and climate denialism and disinformation within the political context of the Americas, given the negative impact of these phenomena on academic freedom. Though the topic has gained visibility in recent years due to the rise of authoritarian movements and the spread of disinformation, scientific production remains fragmented with significant gaps in the articulation of science, climate change, and democratic institutions. Therefore, the relative novelty of the phenomenon demands careful mapping of existing approaches as a starting point for more in-depth, critical analysis.

Furthermore, the polysemy of terms such as "climate denial," "climate skepticism," "epistemic populism," "disinformation," and "misinformation" highlights the urgency of conceptual definition. These terms are often used interchangeably or ambiguously, hindering the construction of precise diagnoses and the comparability of studies. Thus, developing an analytical typology that organizes and categorizes the various manifestations of scientific and climate disinformation is crucial. This will provide a more robust theoretical foundation for future research and practical interventions. The primary goal is to understand the phenomenon and its manifestations in local contexts.

To this end, the study employs a qualitative exploratory approach, focusing on a systematic literature review to map and understand the primary theoretical and empirical discussions about scientific and climate disinformation, particularly in the context of the contemporary democracy crisis in the Americas. The intention is to identify the social, political, and institutional mechanisms that fuel skepticism regarding scientific evidence on climate change in the region; the factors that favor the spread of misinformation; and the strategies employed to combat such dynamics within democratic regimes. First, 85 reports and scientific papers were analyzed through systematic research on international databases. A set of keywords was selected to capture national and international literature on the topic, guiding this process. The main terms were: "scientific denialism," "climate denialism," "science denial," "climate change denial," "disinformation," "denialism," "epistemic populism," "climate change delay,"

"climate skepticism," and "misinformation." These terms were combined with "democracy," "democratic values," "institutions," "democracy crisis," "authoritarianism," "far-right," "politics," and "political leaders" to provide a political perspective on the phenomenon.

Second, a series of dialogues was held with specialists who have directly studied and worked to understand the mechanisms behind climate disinformation. Between June and July of 2025, seven conversations were conducted with 14 participants from academia and international organizations. These dialogues were crucial for deepening and debating conceptual definitions, identifying gaps in the literature, and gathering examples of successful practices and actions to combat climate denialism, disinformation, and misinformation.

Finally, a comparative case study focusing on the debate surrounding the phenomenon in three specific contexts over the last five years was conducted: Brazil, the United States, and other Latin American countries, including Argentina, Colombia, Chile, and Mexico. These countries were selected due to their political, territorial, and social relevance in the Americas, as well as the importance of their climate policies and the rise of a wide range of political discourse regarding science and academic freedom in recent years. Analyzing these contexts and specific events illustrates how climate disinformation manifests, presenting local strategies for resisting and combating disinformation and denialist narratives.

Case selection

The selection of the USA, under Donald Trump, and Brazil, under Jair Bolsonaro, for analysis is due to their status as the two largest economies on the American continent, where scientific denialism and disinformation and attacks on academic freedom have permeated state and government structures.

Argentina, as the 4th largest economy in Latin America and the 4th largest oil producer in the region, is experiencing a phenomenon similar to that of Brazil and the USA under the current government of Javier Milei.

Mexico, as the second-largest economy in Latin America and the second-largest oil producer in the region, was chosen because it has been governed by left-wing administrations, including López Obrador and Claudia Sheinbaum, who is the first climate scientist to govern a country in the world. Even so, there are contractions especially regarding climate delay and inaction in some economic spheres.

Similarly, the governments of Colombia, under Gustavo Petro, and Chile, under Gabriel Boric, represent interesting counterpoints to the denialist agenda and opposition to academic freedom, with the Colombian case holding significant importance due to its role as a key player in the Amazon region.

This study employed a triangulation of three methodological strategies to provide a comprehensive, critical, and evidence-based understanding of scientific denialism, climate denialism, and disinformation. Through the integration of theoretical frameworks, expert insights, and empirical case analyses, this study proposes a conceptual typology and identifies critical areas for action to promote information integrity.

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Disinformation, misinformation, and denialism in a post-truth era

The terms "disinformation," "misinformation," and "obscurantism" are often used interchangeably in literature discussing climate denialism and disinformation (Gertrudix et al., 2024; Losekann, 2024), indicating a lack of conceptual clarity (Broda & Strömbäck, 2024; Treen, Williams, & O'Neill, 2020; Björnberg et al., 2017). Furthermore, terms such as "fake news" and "post-truth" have gained prominence in public discourse over the last decade (Lewandowsky, Ecker, & Cook, 2017; Fischer, 2019). The Oxford Dictionary defines "post-truth" as "relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than emotional appeals," which will be explored below.

First, misinformation refers to false or inaccurate information, meaning "the facts are not real." It is often related to "mistakes" and the inaccuracy of fact-checkers (European Commission, 2018). Disinformation, a similar yet different phenomenon, represents the spread of false information deliberately intended to mislead — in other words, it is created as "fake news."

The main distinction between misinformation and disinformation is whether the false information is intended to mislead. Both can be considered strategies of climate disinformation communication (Humprecht et al., 2020; Wardle, 2018; Broda & Strömbäck, 2024). As early as 1995, the IPCC's Second Assessment Report on Climate Change addressed the use of misinformation to create uncertainty about climate science (Gertrudix et al., 2024).

Furthermore, while it is important to note the conceptual differences, Heffernan (2024, p. 1) argues that, in the context of climate disinformation and attacks on climate science, it may be more

productive to view all of these terms as "misleading information as if it stems from a deliberate, targeted, well-funded, and often nefarious disinformation campaign".

Term	Brief description	Intentionality	Example
Misinformation	False or misleading information based on incorrect or misunderstood facts.	Not intentional	Sharing outdated climate data as accurate.
Disinformation	Deliberately false or manipulated information intended to mislead.	Intentional	Fossil fuel company funds reports downplaying climate change.
Obscurantism	The practice of deliberately preventing the facts or full details from becoming known, which withholds or complicates access to truth or knowledge.	Often intentional	Avoiding publication of scientific evidence on the impact of fossil fuel industries on climate change.

Misinformation, disinformation and obscurantism are not a recent social phenomena, but they have gained new shapes, which include an increase in strategies that could be related to the advent of the internet and the use of social media (Oliveira et al., 2024; Wang & Liu, 2022; Cook, 2022; Santini & Barros, 2022). Furthermore, they have a direct impact on how the public perceives climate change and its consequences in their daily lives (Lewandowsky, 2021; Noorgard, 2011, 2019), as well as on their ability to interpret accurate information on the issue. Usually, the main fallout occurs when misinformation, disinformation and obscurantism are embedded in a conspiracy theory (Lewandowsky, Ecker, & Cook, 2017).

Some authors have pointed out that disinformation about climate change has a polarizing effect, which means that it serves as a strategy to exacerbate an already tense public debate and political beliefs (Cook, 2022; Cook, Lewandowsky, & Ecker, 2017; Antonio & Brulle, 2011; Lewandowsky, 2021; Lewandowsky, Ecker & Cook, 2017).

In this sense, coordinated efforts designed to hinder climate initiatives—frequently grounded in misleading narratives about climate change (Almiron & Moreno, 2022)—significantly influence decision-making processes, undermine public trust, and reduce the efficacy of public policies and their implementation. Campaigns aimed at creating confusion and shaping alternative narratives that counter scientific consensus are at the core of climate disinformation (Roe & Shapira, 2021; Lewandowsky, 2021). The fossil fuel industry is recognized as one of the primary drivers of widespread disinformation (Supran & Oreskes, 2020), a phenomenon that drew attention to denialism in the 1980s (Dunlap & McCright, 2011).

In this sense, the term "denial" or "denialism" has been used by the literature as a catch-all concept to synthesize the different strategies and attitudes that question scientific consensus on climate change (Losekann, 2024; Gertrudrix et al., 2024; Toni, 2024). Beyond that, the term denialism helps to understand the institutional and political dimension of this phenomenon (Santini & Barros, 2022).

Concurrently, Bosco, Fetz & Souza (2024) argue that climate denialism is related to an expression of attacking science as a modern institution that builds up power relations in the public sphere. In this sense, for these authors, the phenomenon would be an expression of a social dispute regarding the role of science in the construction of truth rather than a discussion about the internal dynamics of scientific work, such as its ambivalences, uncertainties, and limitations.

Authoritarian regimes and anti-science politics

Recent research has suggested that people's susceptibility to misinformation, disinformation, and denialism about science may also be asymmetrically distributed across the political divide (Lewandowsky, Ecker, & Cook, 2017; Cook, 2020). Science denial can be understood as an "unwillingness to believe in existing scientific evidence" (Björnberg et al., 2017, p. 237).

In this sense, not only is climate science threatened by politically driven asymmetric polarization, but other scientific consensuses are as well, having been related to right-wing, authoritarian and populist governments (Gauchat, 2012; Lewandowsky, Cook & Lloyd, 2016; Antonio & Brulle, 2016; Wong-Parodi & a Feygina, 2019). The creation of "alternative facts" and the emergence of a "post-truth" era have been discussed as threats to democratic governance (McIntyre, 2018; D'Ancona, 2017; Fischer, 2019). Antonio and Brulle (2011) demonstrate that climate denialism and disinformation are symbolic and political strategies that increase resistance to climate policies by constructing an ideological conflict that transcends technical and scientific discussions.

In this context, the production of pseudoscience or fake science emerges as a distortion of facts and reality through biased lenses and false premises (Thaler & Shiffman, 2015; Santini & Barros, 2022; Oliveira, Martins & Toth, 2020). Specific research suggests that this type of dispute and attack on science as a liberal value tends to focus more on topics associated with political, ideological, and religious identities (Guilbeault, Becker, & Centola, 2018), such as climate change, vaccines, other health issues, and the social sciences. Therefore, as observed since the 1980s in the case of fossil fuel industries' campaigns in the USA, climate deniers usually claim "another type of science" instead of simply adopting an anti-science posture (Petersen, Vincent & Westerling, 2019; van Eck & Feindt, 2021; Dunlap & McCright, 2010; Santini & Barros, 2022; Brulle, 2018).

According to a report from the Clayman Institute for Gender Research at Stanford University, attacks on Diversity, Equity, and Inclusion (DEI) initiatives —understood here as expressions of scientific denialism and disinformation —have increased exponentially in recent years. Between 2023 and November 2024, 84 anti-DEI bills were introduced in 28 U.S. states, 12 of which became law and 13 are awaiting final legislative approval. The report also suggests that the increase in attacks on DEI can be characterized as an escalation of conservative panic, which began, in particular, with denialist attacks on Critical Race Theory (CRT), as a continuous response to the 2020George Floyd protests.

The prohibition of books about Black people in schools, as well as the restriction of teaching about the history of racism, corroborates the thesis that these attacks are another expression of scientific denialism and disinformation. This is no longer confined to the discursive level of a radical fringe but primarily targets institutions, especially educational ones. In the same report, Hakeem Jefferson, assistant professor of Political Science at Stanford and director of the program on Identity, Democracy, and Justice, clearly illustrates the anti-academic freedom component of this agenda, predicting that "we're going to see a lot of universities fearful of being called before a congressional committee, fearful of being investigated, fearful of losing dollars...I think we're going to see... a lot of giving in and giving up." Correlated phenomena occur in gender and sexuality studies, encompassed by the empty and pejorative concepts of "gender ideology," "gender theory," or even "genderism," widely disseminated between conservative groups in countries such as the USA, Brazil, and Argentina.

Some authors have stated that the scenario of campaigns promoting climate denialism through various strategies such as misinformation and disinformation, is closely related to democratic disintegration because it undermines evidence-based policies (Hefferman, 2024; Gwiazdon & Brown, 2023). By fostering a sense of uncertainty and false equivalence in the public discourse, a fertile ground for inaction and delay is created (Lindvall, 2021). This is closely related to the right to access and produce science as well as the democratic values such as autonomy and freedom (Hefferman, 2024; Lindvall, 2021). Therefore, science plays a central role in "truth regimes" (Fischer, 2019).

As mentioned above, there is nothing "critically disruptive" in this phenomenon; however, the election of Donald Trump in 2016 raised concerns about the emergence of a "post-truth politics" (Fischer, 2019). In this sense,

> **"Postreality politics and post-truth are seen to denote a political culture in which discussion and debate are shaped by emotional appeals disconnected from the empirical details of policy issues. They relate to the repeated assertion of arguments and issues that ignore expert opinion and factual refutation. Instead of emphasizing empirical verification and falsification, post-truth relegates facts at best to secondary considerations."** (Fischer, 2019, p. 134)

Climate deniers are often be mobilized by emotions and beliefs rather than by ignoring facts irrationally. In this context, climate skeptics usually believe that climate scientists are part of a political agenda driven by a "leftist" truth regime that advocates for economic planning and regulation, restrictions on social and economic freedoms, and increasingly centralized governance (Fischer, 2019; Antonio & Brulle, 2016). This scenario could contribute to increased political polarization regarding climate, science, and information.

Additionally, authors have argued that the anti-science stance, associated with feelings of betrayal by scientists, is being encouraged as a pillar of support for the neoliberal project in the 21st century (Hameleers & Van Der Meer, 2021; Santini & Barros, 2022; Dunlap & McCright, 2010).

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A TYPOLOGY OF CLIMATE DENIALISM AND DISINFORMATION

This section discusses distinct categories that can all be framed under the umbrella term "climate denialism and disinformation". By promoting a specific typology for this polysemantic phenomenon, which lacks conceptual consensus in the literature, we can foresee a series of strategies, actions, and inactions that comprise the phenomenon as a whole (Almiron & Moreno, 2022; Losekann, 2024; Gertrudix et al., 2024; Toni, 2024). This approach helps us understand the phenomenon in a broader and also more specific way, considering its multiple nuances and divergences.

Promoting and creating doubt on the science, rejecting human-driven causes of climate change or its possible consequences, and targeting scientists with personal attacks have all served as tactics employed by this climate opposition movement - or "countermovement" (Lamb et al., 2020; Pringle & Robbins, 2022; Mann, 2021; Supran & Oreskes, 2021).

The following typology was developed after a systematic analysis of the literature, as well as interviews and dialogues conducted as part of this project. As with any typology, it should not be considered a definitive description of phenomena but rather a set of tools for understanding complex episodes or clusters of disinformation, which are deeply affected by regional, national, social, communicational, and political variables.

The types presented below are:

- Literal Climate Denialism
- Climate Skepticism
- Climate Delay or Obstruction
- Climate Doomerism
- Event-driven Disinformation

LITERAL CLIMATE DENIALISM refers to the rejection of the scientific consensus on human-driven climate change as well as the total denial that climate change is an issue (Toni, 2024; Losekann, 2024). It has evolved from a fringe stance to a potent socio-political force over several decades (Petersen, Stuart & Gunderson, 2019). Historically, climate science denial dates back to the 1980s and 1990s, when fossil fuel corporations and aligned think tanks began sowing doubt about global warming to protect their interests (McCright & Dunlap, 2003, 2010; Cook, 2019; Cann & Raymond, 2018). These efforts are aimed to "fund, shape, and advance climate denial," successfully delaying policy action (Lindvall, 2019). Climate denial can be characterized as a motivated rejection of evidence in favor of political or personal views (Hefferman, 2024; Reed et al., 2021; Gwiazdon & Brown, 2023; Fischer, 2019; Antonio & Brulle, 2023). Over time, simplistic denial has become less common, with more sophisticated arguments emerging (Petersen, Stuart & Gunderson, 2019; Toni, 2024; Losekann, 2024; Cann & Raymond, 2018; McCright & Dunlap, 2015; Bjornberg et al., 2017; Almiron & Moreno, 2022).

> **"Ideological denialism refers to the ideas and practices underlying climate change responses that (1) acknowledge the reality, human origins, and severity of climate change and desire immediate action, (2) yet misdiagnose the structural drivers of climate change, (3) thereby limiting more effective actions, and (4) reproducing the social formation that drives climate change"** (Petersen, Stuart & Gunderson, 2019, p. 135)

Beyond literal denial - the outright rejection that global warming is happening - climate denialism encompasses more nuanced forms. These include interpretive denial, where the facts are not denied but given a different meaning (such as attributing climate change to natural causes rather than human activity), and implicatory denial, which accepts the evidence but rejects the necessary "psychological, moral or political implications" for reducing emissions, such as changes in habits (Petersen, Stuart & Gunderson, 2019).

The dismantling of scientific climate research, including defunding and attacks on scientists, is profoundly and intentionally connected to climate denialism, serving as a core strategy to impede climate action and protect vested interests (Thaler & Shiffman, 2015; Santini & Barros, 2022; Oliveira, Martins & Toth, 2020). Key methods used to dismantle scientific research and its findings, thus enabling climate denialism, include:

- **Attacking the Science and Scientists:** This pervasive strategy involves accusations that climate research is "junk science" or that scientists manipulate data for funding or to advance their political leanings. Events such as "Climategate," which involved the misinterpretations of stolen emails, have been exploited to attack scientists and cast doubt on the integrity of climate science. It also includes "ad hominem" attacks that target the credibility and motives of individual scientists and activists rather than their data.
- **Manufacturing Uncertainty:** A long-standing tactic is to "manufacture uncertainty" by highlighting perceived scientific uncertainties or demanding absolute certainty as a prerequisite for policy action, even when a strong scientific consensus exists (Dunlap & McCright, 2010). This creates the illusion of a lack of scientific agreement, making people less inclined to support policies.
- **Controlling Information Flow and Resources**: This involves directing research towards "non-threatening areas," concealing harmful information, or selectively interpreting research findings to cast doubt on the links between industrial products and environmental consequences. It can also entail directly suppressing climate information, removing scientific expertise from government agencies, or the underfunding of climate research.
- **Misrepresentation of Scientific Method:** Deniers often demand "proof" of climate change rather than accepting "consensus," appealing to a conventional understanding of science while misrepresenting the nature of scientific progress in complex fields. They employ "fake experts," engage in "cherry picking" of data, or "create impossible expectations" for scientific evidence.
- **Conspiratorial theories:** A common feature is the promotion of "conspiratorial ideation," portraying climate science as a "hoax" or part of a "conspiracy" orchestrated by "cosmopolitan elites" or a "deep state" (DeLay, 2024). These narratives are designed to make "climate science itself as the product of academic and political corruption".

As already discussed in the previous section, the ultimate consequence of these efforts to dismantle scientific research is the erosion of public trust in science and democratic institutions, creating confusion, apathy, and complacency, which in turn become a climate inaction (Noorgard, 2011, 2012, 2019; Gauchat, 2012; Lewandowsky, Cook & Lloyd, 2016; Antonio & Brulle, 2016; Wong-Parodi & a Feygina, 2019).

In the context of climate change, "alternative science" and "pseudo-science" are deliberate strategies employed by climate change deniers to create the *appearance* of legitimate scientific debate or valid alternative explanations, while actively rejecting the overwhelming scientific consensus (Hansson, 2017; Pongiglione & Martini, 2022).

Ultimately, this is a strategic effort to disorient the public, erode trust in legitimate scientific institutions, and delay meaningful climate action by transforming a scientific consensus into a perceived political or ideological dispute (Hansson, 2018; Clarke, 2024).

CLIMATE SKEPTICISM is a term used to describe individuals or groups who doubt or dispute the mainstream scientific understanding of climate change (Hoffman, 2011; Dunlap, 2013). While often self-applied by those who challenge climate science, it is important to distinguish it from genuine "scientific skepticism," which is an essential part of the scientific method involving scrutinizing all evidence, questioning assumptions, and reserving judgment until evidence is compelling (Dunlap, 2013; Petersen, Stuart & Gunderson, 2019; Poortinga et al., 2011). In contrast, climate skepticism refers to another term to address the opposition to acknowledging the reality and seriousness of anthropogenic global warming. It is a way of fabricating doubt (Biddle & Leuschner, 2015) and discussing concerns that often mask interests and motivations (Stern et al., 2016). As stated by Perkins (2015, p. 287), neo-skeptics "do not deny anthropogenic global warming, but minimize its projected effects and see mitigation efforts as unjustifiable".

Rahmstorf (2004) influential typology identifies three primary forms: trend skepticism, which denies that global warming is occurring; attribution skepticism, which accepts that warming is happening but claims humans are not responsible (also known as "soft denial"); and impact skepticism, which assumes that global warming will be harmless or even beneficial. These types are seen as parts of what Cohen (2013) termed as "literal denial".

Beyond these, scholars also distinguish epistemic skepticism, which questions the scientific evidence itself, from response skepticism, which expresses doubts about the feasibility, necessity, or consequences of policy actions aimed at addressing climate change. Response skepticism often raises arguments about high economic costs, personal sacrifices, the impracticality of solutions, or "whataboutism" (e.g., concerns about the emissions of other countries). These various forms of skepticism, though distinct, are often "strongly interlinked" in the public mind. They are frequently rooted in political ideology, personal worldviews (such as conservative or anti-establishment preferences), and a general distrust in political institutions and scientific experts (Hobson & Nieymeer, 2012, p. 396).

Some authors argue that "skepticism" is an inaccurate term for science - and climate - disinformation and denialism (Jacques, 2006, 2012; Lewandowsky et al., 2013; Liu, 2012; Monbiot, 2005; O'Neill and

Boykoff, 2010; Whitmarsh, 2011; Bjornberg et al., 2017; Poortinga et al., 2011). In this sense, it can be seen as a synonym and has been used by some scholars to discuss the same ideas; Dunlap (2013) proposes a notion of skepticism-denial as a *continuum.*

CLIMATE DELAY OR OBSTRUCTION represents a contemporary and often more insidious form of opposition to climate action, distinct from outright climate denial yet frequently employed by the same actors (Losekann, 2019; Lindvall, 2019; Pringle & Robin, 2022). While traditional climate denialism explicitly rejects the scientific consensus on human-driven climate change, delayism accepts the existence of climate change but justifies inaction or inadequate efforts. In this sense, it is based on the idea that "we have time" or "the technology will help us take action in time" (Toni, 2024). Although it appears to "support climate action" it actually serves as a strategy to postpone it (Supran & Oreskes, 2021; Pringle & Robin, 2022).

As blatant denial has become increasingly implausible due to the multiplying and intensifying impacts of climate change, more sophisticated discourses have emerged as a subtle strategy to challenge the consensus on climate change (Pringle & Robin, 2022). In this sense, fossil fuel interests and allied organizations have shifted tactics, replacing outright denial with misinformation designed to sow enough doubt to delay real climate action and protect their vested economic interests and maintain business as usual. (Supran & Oreskes, 2021) In this sense, some authors have pointed out that "delay is the new denial" (Shue, 2023; DeLay, 2024) due to its pervasive nature and effectiveness in hindering climate action. This approach employs rhetorical tactics that seem to facilitate legitimate debate, yet ultimately serve to obstruct policies (Losekann, 2024).

The "discourses of climate delay" can be categorized into different strategies (Lamb et al., 2020):

- **Redirecting responsibility:** This involves shifting the burden of climate action away from powerful actors or systemic changes to individuals, other industries, or other countries. The sophistication of climate denialism through delay is also observed as "climate opponents are emphasizing the negative effects of climate policies on average people, in addition to their anti-science arguments" (Cann & Raymond, 2018, p. 17).
- **Pushing non-transformative solutions:** This strategy advocates for incremental or technological fixes that do not challenge the underlying economic system or necessitate profound societal changes. This can manifest as "all talk, little action," where ambitious long-term targets are set without concrete implementation plans in place.

- **Emphasizing the downsides of climate policies:** This tactic highlights the potential negative social and economic impacts of climate action, such as job losses, increased costs, or threats to prosperity, often overlooking the benefits or the greater costs of inaction. Arguments for "policy perfectionism" also fall under this category, insisting on disproportionate caution to avoid losing public support.

These delay discourses often incorporate partial truths and appeal to legitimate concerns, making them more compelling and challenging to counter than direct denials. They are actively disseminated by conservative think tanks, fossil fuel industries, and politicians, who leverage media and social platforms to erode public and political support for climate policies and delay the achievement of climate targets.

CLIMATE DOOMERISM is a specific discourse (also frequently referred to as "climate doomism") closely associated with climate delay that accepts the existence of climate change but justifies inaction or inadequate efforts (Lamb et al., 2020). It argues that any actions taken are "too little, too late" and that catastrophic climate change is already "locked-in" (Lamb et al., 2020, p. 5). Proponents of doomerism often express the sentiment that "The climate apocalypse is coming. To prepare for it, we need to admit that we can't prevent it". This approach falls under the broader strategy of "surrendering to climate change," which dismisses the possibility of effective mitigation due to what appear to be insurmountable political, social, or biophysical challenges. Unlike literal climate denial, which rejects the reality or human-caused nature of climate change, doomerism acknowledges the problem but promotes a sense of hopelessness regarding solutions (Mann, 2021; Johnstone & Stickles, 2024). Furthermore, the primary consequence is that it mobilizes feelings such as fear and anxiety, creating a state of total shock and inaction (Hulme, 2019; Coffey et al., 2021).

> **"Exaggeration of the climate threat by purveyors of doom – we'll call them "doomists" – is unhelpful at best. Indeed, doomism today arguably poses a greater threat to climate action than outright denial. For if catastrophic warming of the planet were truly inevitable and there was no agency on our part to avert it, why should we do anything? Doomism potentially leads us down the same path of inaction as outright denial of the threat"** (Mann, 2021, p.179).

This discourse implies that mitigation efforts are useless (Pinto et al., 2019; Johnstone & Stickles, 2024). By arguing that deep societal transformations are scarcely imaginable, it promotes non-transformative solutions, diverting focus from stringent policies toward minimal interventions or technology-based measures that are ultimately insufficient. This strategy hinders public and political support for ambitious climate policies, effectively delaying the achievement of climate targets. Such "apocalyptic framing" of system collapse can derail public engagement by fostering apathy (Davidson & Kemp, 2024).

EVENT-DRIVEN DISINFORMATION (or more precisely, event-influenced climate dismissal or delay) refers to the phenomenon where attitudes and actions regarding climate change are shaped by individuals' or groups' responses to specific climate-related events or alarming scientific information, sometimes leading to inaction or dismissal rather than increased concern. While traditional climate denialism might explicitly reject the scientific consensus on human-driven climate change, this more nuanced form often acknowledges the problem but then finds ways to justify inaction or inadequate efforts based on how these events or information are perceived and processed. This can manifest as a strategic evasion of urgency or responsibility, allowing for the maintenance of the status quo.

The impact of events on attitudes is complex and not always straightforward. For instance, extreme weather events can lead to increased pro-environmental attitudes, particularly if individuals attribute these events to climate change. However, paradoxically, as evidence for climate change mounts and predictions become more alarming, interest and concern can sometimes *decline* —a phenomenon sometimes referred to as "climate fatigue." This can be a result of psychological coping mechanisms, where individuals experience feelings of fear, helplessness, or guilt when confronted with overwhelming information. To alleviate this "cognitive dissonance", people may reinterpret facts, shift responsibility, or deny the implications of their actions. This process is part of a "socially organized denial", where cultural norms, conversational tactics, and selective attention are used to distance oneself from disturbing information, making inaction feel like "everyday life" while maintaining a comfortable "double reality".

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ACTORS THAT PROMOTE CLIMATE DENIALISM AND DISINFORMATION AND ATTACKS ON CLIMATE SCIENCE

Climate denialism and disinformation in the Americas are complex and multifaceted phenomena closely tied to the political and social dynamics of each country. Rather than a simple denial of scientific and climatic facts, it is an articulated ideological strategy that involves political, economic, religious, and media actors. Furthermore, this structure of resistance to climate science has significantly contributed to the delay of environmental action and the dissemination of disinformation to the public (Pulles, 2025; Hansson, 2018; Cann & Raymond, 2018).

In this sense, various actors at the local, national and global levels play a significant role in disseminating climate misinformation (Dunlap & McCright, 2010; Dunlap & Bresler, 2020; Bjornberg et al., 2017; Dunlap & Brulle, 2020), which contributes to climate denialism as an extreme expression of it, as well as a way of denying science and democratic values such as the right to scientific freedom.

The following table presents some of these actors, categorizing them by type or scale of operation and how they promote denialism and disinformation. We also briefly present examples from countries in the Americas, which will be further developed in the following chapter.

Scale: Global and national

Actor: *Big companies and industries*

How they relate to climate and scientific denialism, misinformation, and disinformation

The primary strategy adopted by big oil companies is to mislead the public and investors about their emission reduction targets, their actions to comply with the Paris Agreement, the viability of low-carbon technologies, and their commitments to support various climate policies (a phenomenon called greenwashing). This can be seen as a soft expression of climate denialism expressed in misinformation about climate goals.

Moreover, there are several historical cases where big companies and industries promoted and financed climate denial discourse and narratives through media, corporate associations, and industrial policies - as well as funding pseudo-scientific research to promote uncertainty (Cooks et al., 2019).

Brief example in the Americas [see next section for a more specific debate]

Since the 1980s, different corporations in the fossil fuel industry (e.g., ExxonMobil), trade associations (e.g., National Association of Manufacturers), conservative philanthropists (e.g., The Lynde and Harry Bradley Foundation), and conservative think tanks have created different coalitions of organized climate change denial (Dunlap & McCright, 2010; Dunlap & Bresler, 2020).

In the US, the American Petroleum Institute was also an early and crucial actor, having formulated in 1998 the 'Global Climate Science Communication Action Plan.' This plan was designed to promote widespread doubt among the media (Beder, 1999; Hoggan & Littlemore, 2009; Dunlap & Bresler, 2020). Moreover, ExxonMobil is one of the leading companies that has presented long-term support for climate change denial (Farrell, 2016; Mooney, 2005; Dunlap & Bresler, 2020; Craig, 2016).

Scale: Global and national

Actor: *National leaders*

How they relate to climate and scientific denialism, misinformation, and disinformation

National leaders can downplay or deny climate change to maintain political and economic power, often aligning with corporate interests or nationalist ideologies. They may frame environmental policies as threats to sovereignty or economic development, and suppress scientific data or ecological activism.

Brief example in the Americas [see next section for a more specific debate]

In Brazil, under Bolsonaro's administration (2019–2022), environmental agencies were weakened, and climate change was systematically downplayed (Queiroz-Stein et al., 2023). Official speeches often dismissed global warming as a "leftist plot" (Meneses & Barbosa, 2021).

Actor: *Anti-scientist/anti-climate movements & scholars*

How they relate to climate and scientific denialism, misinformation, and disinformation

These actors often discredit climate science by questioning the legitimacy of academic institutions and scientific consensus. They may invoke cultural or religious values to resist environmental policies and produce counter-knowledge or pseudo-scientific claims to justify denialist positions.

Brief example in the Americas [see next section for a more specific debate]

In Brazil in 2021, more than 20 lectures were held by scientists who received funding from agribusiness to disseminate misinformation about climate change and promote the narrative that it was not human-driven (BBC, 2021).

Climate Change Countermovement is an online network that not only facilitates the circulation of denialist discourses, but also reinforces its legitimacy by establishing links between entities with institutional authority and international reach (McKie, 2021).

Scale: Local

Actor: *Subnational leaders*

How they relate to climate and scientific denialism, misinformation, and disinformation

Governors, mayors and local officials may ignore or obstruct climate policies for political or economic reasons. Some align with national denialist agendas, while others may fail to implement local mitigation or adaptation plans due to political pressures or lack of interest.

Brief example in the Americas [see next section for a more specific debate]

In some Brazilian states governed by agribusiness-friendly coalitions, local environmental monitoring systems were dismantled or defunded, reducing local climate policy capacity (Observatório do Clima, 2022).

Moreover, the governor of Rio Grande do Sul, in the face of the January 2024 floods that impacted more than 700,000 people, publicly avoided references to climate change as a structural cause of extreme weather events, focusing instead on emergency response and infrastructure recovery (Democracia em Xeque, 2024).

Actor: *Community leaders*

How they relate to climate and scientific denialism, misinformation, and disinformation

Local opinion leaders, such as religious figures, authorities, or local businesses, can significantly influence the public's perception of climate change. They may either reproduce denialist discourses or promote resistance to climate action due to regional economic interests or ideological alignment.

Brief example in the Americas [see next section for a more specific debate]

In Latin American communities, some local leaders have openly rejected international climate agreements, portraying them as forms of foreign interference that threaten local traditions and livelihoods.

Scale: Local

Actor: *Local media*

How they relate to climate and scientific denialism, misinformation, and disinformation

Local media outlets may reinforce denialist narratives or underreport the impacts of climate change due to editorial biases, ownership interests, or a lack of specialized knowledge. This can contribute to misinformation or public disengagement on climate issues.

Brief example in the Americas
[see next section for a more specific debate]

In 2022, a local news article in Brazil highlighted a post that claimed more than 1,100 scientists from 57 countries had signed a manifesto denying the existence of climate change. This misinformation circulated and was later countered with facts, yet it remained widespread on social media and in local news.

Scale: Multi-site

Actor: *Traditional national and local Media*

How they relate to climate and scientific denialism, misinformation, and disinformation

Newspapers and television programs may disseminate climate misinformation either due to journalistic negligence, ideological alignment, or economic interests (such as agribusiness, energy, fossil fuel industry, or mining).

In this sense, industries and companies can exert control over the media through economic interests, as traditional media is often owned by the same individuals who run these companies.

The traditional media, both national and local, can also serve as a means to engage with political narratives that a specific leader or candidate relies on.

Brief example in the Americas
[see next section for a more specific debate]

In the United States, Fox News has been closely related to right-wing ideology, climate change denial, and support for Trump (Boulianne & Belland, 2022).

Scale: Multi-site

Actor: *Online platforms and social media*

How they relate to climate and scientific denialism, misinformation, and disinformation

Climate disinformation has found a favorable environment on social media (Treen et al., 2020), primarily because false information and counter-narratives are easily disseminated digitally (Ramos, Vaz, & Rodrigues, 2025). Furthermore, the algorithms serve as tools to disseminate climate denial narratives. They can create **"echo chambers"**, which represent closed communities where the same ideas, whether true or false, are continuously reinforced without being questioned.

Big tech and oil companies are merging and emerging as a single player - the economic interests of a select group of entrepreneurs could be leveraged as tools to promote a particular type of narrative.

Brief example in the Americas [see next section for a more specific debate]

A study conducted in North America, Europe, and Latin America found that social media (52.5%) and websites and pseudo-media (25.8%) are the primary sources of climate change disinformation (Palau-Sampaio, Flores, & Garcés, 2023).

Moreover, most YouTube videos about climate change communicate anti-scientific viewpoints (Allgaier, 2019).

The case of Trump's first election and the role played by Cambridge Analytica in controlling algorithms and narratives is an essential example of how political leaders, large companies, and big tech operate together to promote disinformation to a select group.

Source: Authors (2025).

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CLIMATE DENIAL, MISINFORMATION, AND DELAY IN THE AMERICAS AS A THREAT TO ACADEMICFREEDOM AND THE RIGHT TO SCIENCE

The debate surrounding climate change is an extreme example of the politicization of science. In the Americas, the examples and practical cases show that business interests, political groups, and researchers with little or no qualifications in climatology have joined forces to create a "denial machine". This machine seeks to maintain the appearance of an "open scientific debate", while systematically distorting the scientific data capable of sustaining an informed public debate on climate change (Begley, 2007).

Moreover, climate denialism is closely associated with neoliberalism (Neubauer, 2010; Fremstad & Paul, 2022) and populist governments (Agius et al., 2020; Huber, Greussing, & Eberl, 2018; Krange, Kaltenborn, & Hultman, 2021). In both North American countries and Latin America, one of the primary narratives that underpins climate disinformation is that "excessive" environmental and economic regulation constitutes a barrier to economic development (Miguel, 2022).

This section provides an analysis of the climate denial and its nuances - as disinformation, denial, event-driven, etc. - in the United States and Brazil, as these are contexts in which denialist discourse has become most institutionalized and globally influential. Additionally, specific events and political dynamics in other Latin American countries (Colombia, Chile, Mexico, and Argentina) are examined to illustrate how this broader and complex phenomenon manifests through legislative resistance, anti-environmental rhetoric, institutional dismantling, and the promotion of extractivist policies, as well as an economic discourse to postpone climate action. This comparative perspective highlights how disinformation manifests in various political cultures and contexts, ranging from overt rejection of climate science to more subtle forms of inaction, obstruction, skepticism, misinformation, delay, and discursive minimization.

United States

In the United States, the first formulations of climate denialism and disinformation date back to the 1970s and reinforce that this phenomenon transcends disputes over the legitimacy of scientific knowledge (Hoggan, 2009; Oreskes & Conway, 2010; Lahsen, 2013; Miguel 2022) and cannot be described solely by the energy sector's opposition to climate action (Collomb, 2014; Dunlap et al., 2016). The phenomenon's expression in the United States is complex, encompassing political, economic, social, cultural, religious, and moral dimensions. A study analyzing data from the X platform (formerly Twitter) between 2017 and 2019 found that 15% of Americans deny the existence of climate change (Gounaridis & Newell, 2024). Other estimates suggest that 12% to 26% of Americans deny climate change in some form - whether due to its anthropocentric nature or outright denial (McDonald et al., 2020; Leiserowitz et al., 2021).

Studies show that climate denialism in the US is expressed differently across the region, with a higher prevalence in areas with greater economic dependence on fossil fuels (Knight, 2018), in rural communities, and historically Republican districts (Gounaridis & Newell, 2024). A racial dimension is also observed: white men are the principal adherents of climate denialism (McCright & Dunlap, 2011).

As several authors have documented and as has been mentioned previously, corporate associations representing the large oil and fossil fuel industries waged a direct battle against climate science in the 1990s (Dunlap & McCright, 2010; Dunlap & Bresler, 2020; Craig, 2016). This movement included a series of direct attacks on and challenges to the Intergovernmental Panel on Climate Change (IPCC), based on a narrative promoting the "free market" and directly opposing environmentalists, who were perceived as "communists in disguise" (Oreskes & Conway, 2010, p. 249). Furthermore, climate action was seen as threatening American capitalist competitiveness (Collomb, 2014; Groves, 2013) as well as neoliberalism globally (Dunlap & McCright, 2015). Such dynamics would have even contributed to the U.S. withdrawing from the Kyoto Protocol in 2001 during the George W. Bush administration (Hovi, Sprinz & Bang, 2010; Jacques, Dunlap & Freeman, 2008; McCright & Dunlap, 2003; Collomb, 2014; Armitage, 2005).

During the 1990s, the media noted that the White House mobilized scientific uncertainty—a White House document leaked to the press argued that the best way to address global warming was to "raise the many uncertainties" surrounding the issue (New York Times, April 19, 1990, p. B4). Furthermore, the Bush administration categorically rejected the 1990 IPCC report, an action that fueled much of the tension surrounding the 1992 Rio de Janeiro Ecological Conference. In July 2008, Jason Burnett, a former EPA official, wrote a letter to the Senate describing efforts by the office of Vice President Dick Cheney and the White House Council on Environmental Quality to censor discussion of the consequences of climate change (The Guardian, January 16, 2009).

In the United States, the debate over climate change has been surrounded by historic ideological, political, and even identity-based polarization (Wong-Parodi & Feygina, 2020; McCright & Dunlap, 2010), manifesting as a split between liberals and Republicans. Several studies demonstrate a strong association between conservative ideology in the U.S. and climate change denial (Ballew et al., 2020; Benegal, 2018; Schmidt-Petri et al., 2017; Hornsey et al., 2016; Sarathchandra & Haltiner, 2021; Boulianne & Belland, 2022; Brulle et al., 2012). The continued "production of uncertainty" and "doubt" about climate science is one of the main strategies used by conservative groups in various sectors in the United States (McCright & Dunlap, 2003, 2011; Painter et al., 2023; Tessler, 2018).

Overall, it is essential to consider that the climate change denial movement in the United States comprises small-government advocates as well as social conservatives and members of the so-called religious right (Collomb, 2014; Boulianne & Belland, 2022; McCright & Dunlap, 2010). This is due to the active dissemination of misinformation; denialism in the U.S. also manifests itself in the strategic silence of specific institutions, such as Protestant churches that have broad influence at the local and national levels. Danielsen, DiLeo, and Burke (2021) demonstrate that religious leaders, such as Catholic bishops, frequently avoid discussions about climate change, thereby contributing to the issue's invisibility and the normalization of inaction. Furthermore, Zaleha and Szasz (2015) and Veldman (2019) analyze how North American Christianity contributes to the delegitimization of climate science by framing the environmental crisis as an issue beyond human control, or even as an affront to divine will. This view, deeply rooted in religious groups, contributes to a moral and spiritual rejection of climate mitigation actions (Danielsen,

DiLeo & Burke, 2021). Added to this is the distrust of academic and scientific institutions as one of the main pillars reinforcing climate change denialism in the United States. Alvarez, Debnath, and Ebanks (2023) highlight that many Americans perceive university researchers as distant and elitist, which undermines their credibility. This skepticism is intensified by the proliferation of "echo chambers" on social media, where false information and conspiracy theories circulate freely among extremist and niche groups (Gounaris & Newell, 2024).

Amid this silence, figures from the political and economic elite gain ground and play a crucial role in shaping public opinion on climate change (Brulle et al., 2012), which includes trust in President Trump as a source of information about climate change (Boulianne & Belland, 2022; Gounaridis & Newell, 2024).

During Trump's first term, the term "climate change" experienced a 40% decrease in the number of times it appeared on the websites of government agencies related to the environment, according to a study by the Environmental Data and Governance Initiative.

The new Trump administration has perpetuated and intensified the history of climate denialism, disinformation, delay, and misinformation in the U.S. As early as January 2025, one of the new president's first actions was to announce the withdrawal from the Paris Agreement - a move similar to that undertaken by the White House at the beginning of the 21st century with the Kyoto Protocol (BBC, January 21, 2025). Climate denialism and disinformation have consolidated as ideological hallmarks of the new Trump administration, driven by political decisions that undermine the scientific basis of environmental regulation. Furthermore, there is a discourse based on "climate realism" that challenges the actual impacts of climate change on the economy and people's daily lives. Consequently, a quieter form has emerged, characterized by the erasure of science and climate issues from government policies.

This approach is a continuation of historical practices but is less overtly offensive in terms of literal and combative denial. It operates through disinformation and the use of social media to disseminate false information. It counters rhetorical narratives in favor of development and neoliberalism and silences climate issues through deregulation and systemic budget cuts to regulatory agencies, climate policies, and research (Waldman, 2025).

Rather than combating scientific consensus directly, the current strategy focuses on dismantling regulations, censoring terms such as "climate change," and restricting access to climate data on government websites. Additionally, funding for environmental justice, public health, and scientific research reflects a policy that prioritizes corporate interests over environmental protection and academic freedom (Waldman, 2025). This approach is both subtle and devastating. It weakens the country's scientific foundation and threatens decades of progress in climate mitigation and adaptation (NDRC, 2022). In the first six months of 2025 alone, the Trump administration has reduced natural disaster preparedness, weakened pollution regulations, and blocked investment in renewable energy (NRDC, 2022).

According to data from the National Science Foundation, the grants funded in 2025 (US$988 million) reduced the average funding from 2015 to 2024 by up to 50% (US$2 billion). Areas with the fewest resources were education (US$52 million) and the social sciences (US$62 million). The American Association for the Advancement of Science estimated that total funding for scientific research would decrease by 34% in fiscal year 2026.

This has been felt throughout the Higher Education system. The Arts and Humanities Division of the University of Chicago is experiencing a decline in PhD students for the 2026-2027 academic year due to budget cuts. An email stated that: "We will accept a smaller overall Ph.D. cohort across seven departments: Art History, Cinema and Media Studies, East Asian Languages and Civilizations, English Language and Literature, Linguistics, Music (composition), and Philosophy", although there is still no information about the numerical magnitude of this fact.

Moreover, in May 2025, the Trump administration proposed cutting NASA's budget by approximately 24% for fiscal year 2026. The agency's total budget would decrease from around $24.8 billion to $18.8 billion. Around $6 billion of the cuts would impact the agency's Planetary Science, Earth Science, and Astrophysics research funding, all of which are part of NASA's Science Mission Directorate.

By August 2025, Health Secretary Robert F. Kennedy Jr. had terminated nearly $500 million in grants and contracts for developing mRNA vaccines. Early in May, the Department of Health and Human Services withdrew a nearly $600 million contract with the pharmaceutical company Moderna to develop a bird flu vaccine.

By October 2025, one-third of the national offices responsible for this work - known as the United States Geological Survey (USGS) Climate Adaptation Science Centers connected to the Interior Department - was forced to drastically scale back their activities due to a lack of funding. For over a decade, researchers at the nine centers have studied ways to protect U.S. natural resources in the face of global warming. Centers in South-Central, Northeast, and the Pacific Islands received funding only until September 2025, and the researchers are seeking alternative grant sources to maintain their projects. This relates to the budget cut for the Fiscal Year 2026, announced in May 2025, where it is expected that the USGS will spend US$564 million in funding.

The maintenance of petty narratives and rhetoric against climate action is primarily supported by figures like the president himself and Energy Secretary Chris Wright, who has written that "Climate alarmism has had a terrible impact on human lives and freedom. It belongs in the ash heap of history." In September 2025, the Secretary also stated that other countries should "follow" the example of the United States and withdraw from the Paris Agreement on climate change.

Recent events involving political attacks on the United States Environmental Protection Agency (E.P.A.) reveal an alarming scenario of dismantling of American environmental and scientific policies—with budget cuts, censorship, and threats. Under the Trump administration, two controversial measures were announced in July 2025: the repeal of the "endangerment finding," which is the legal basis for regulating greenhouse gas emissions, and the elimination of the agency's scientific arm, responsible for the research that informs public environmental protection policies.

Administrator Lee Zeldin called the repeal the most significant deregulatory action in American history, downplaying the impact of vehicle emissions on global warming, despite E.P.A. data indicating that the transportation sector is the largest emitter in the country. At the same time, the closure of the scientific research department, with the dismissal of hundreds of scientists, seriously compromises the agency's ability to assess environmental risks and represents a significant blow to science, scientific freedom, and the right to education.

Brazil

Since Jair Bolsonaro's presidential election in 2018 and the start of his administration in 2019, Brazil has seen a rise in science and climate denialism and disinformation in its political and social landscape (Diele-Viegas et al., 2023; Gramacho et al., 2021; Losekann, 2024). The former president's initial stance on climate change became apparent when he eliminated the Secretariat of Climate Change and Forests of the Ministry of the Environment (MMA) upon assuming the executive branch — a move consistent with a government that appointed Ricardo Salles, one of Brazil's most vocal proponents of climate denialism, as minister.

However, the history of disinformation and climate denialism in Brazil began years earlier. Miguel (2022) points out that one of its first manifestations in Brazil emerged in the 2007 Diário do Comércio article "Science or Clowning?" by Olavo de Carvalho, a Brazilian climate change denialist who has significant ideological influence among Bolsonaro supporters. In this article, Carvalho (2007) criticized Al Gore's Oscar-winning documentary, "An Inconvenient Truth" (2006), about the impacts of global warming; praised British filmmaker Martin Durkin's famous 2007 climate denialist documentary, *The Great Global Warming Swindle*; and linked scientific consensus and political responses to climate change:

> **"The global mobilization to give an air of final scientific truth to the impossible theory of the human origin of global warming is gaining more strength day by day, fueled by the holy alliance of the chic media, international organizations, organized leftist militancy, and great fortunes – the four pillars of contemporary stupidity** (Carvalho, 2007).

Years later, during the Bolsonaro administration, Foreign Minister Ernesto Araújo (2018), appointed by Olavo de Carvalho himself, attacked climate change, insinuating that it was a global conspiracy he called "climatism" in clear defense of his thesis of a left-wing "globalism" (Miguel, 2022; Ramos, 2021). Thus, it is important to emphasize that climate change disinformation already had roots and foundations in Brazilian society, with the Bolsonaro administration having expanded, vocalized, and institutionalized its discourse (Miguel, 2022; Losekann, 2024).

Since 2008, studies have pointed to the association between climate disinformation, the production of pseudo-facts, and the construction

of ideological narratives (Miguel, 2022; Losekann, 2024; Toni, 2022; Rajão et al., 2021). One event worth highlighting is that of the self-proclaimed prince, Dom Bertrand de Orleans e Bragança, who published, in 2012, "Environmental Psychosis," which treats "environmentalism" as the "Trojan Horse" of communism. Nevertheless, in 2019, at a G20 meeting, Bolsonaro, in an open reference to Bragança (2012), stated, in dialogue with Angela Merkel and Emmanuel Macron, that there was an "environmental psychosis" against Brazil.

Comway and Oreskes (2010) demonstrate that, in the case of the United States, the dissemination of denialist arguments benefited from what they understand as a "balance of ideas," that is, a kind of movement in which major local media outlets, in the name of a supposed principle of freedom of expression, opened space for both sides of the "debate," creating dissent in civil society around issues that were already consensus among the scientific community. As Miguel (2022) points out, something similar occurred in Brazil, for example, when Ricardo Felício, a geography professor at the University of São Paulo and a prominent figure in Brazilian climate denialism, was invited in 2012 to be interviewed on the highly rated programs of Jô Soares on Globo and Ronnie Von on TV Gazeta. On the eve of the presidential veto of the New Forest Code and the United Nations Conference on Sustainable Development (Rio+20), Felício said on Jô Soares's TV show that "global warming is a lie" and "the greenhouse effect is the biggest fallacy in history."

Data collected by the National Institute of Public Communication of Science and Technology (INCT-CPCT/Fiocruz) on Brazilians' perceptions of climate change shows that, in 2022, 87% of Brazilians believe climate change is caused by human activities, compared to 13% who think natural factors are responsible.

It's important to note that some Brazilian left-wing politicians have expressed opposition to environmentalism (Losekann, 2024; Spektor, Fasolin, & Salgado, 2023). Another form of Brazilian climate disinformation is linked to developmentalist agendas, as opposed to the US, whose rhetoric is more closely associated with neoliberalism. Here, the strategy involves denying climate impacts in favor of supposed gains in the country's modernization. One example of this type of association is the reformulation of the Forest Code (Bill (PL) 1876/1999), in which the bill's rapporteur, Aldo Rebelo of the Communist Party of Brazil (PCdoB), invited Luiz Baldicero Molion, a professor and meteorologist as well as a prominent figure in Brazilian climate disinformation, to debate at a hearing six days before COP-15. During the hearing, Molion

claimed that CO2 does not affect the Earth's temperature and that releasing more carbon dioxide into the atmosphere would be beneficial (Miguel, 2022). Based on this statement, Aldo Rebelo concluded that environmentalist discourse was embedded in a war of international commercial interests, constituting a new form of colonialism that would impede national food production. As Losekann (2024) states, anti-imperialist rhetoric for developing the Global South provides fertile ground for climate obscurantism. This approach does not deny climate change outright but rather advocates inaction in the face of it.

During Jair Bolsonaro's administration (2019-2022), scientific denialism and disinformation were institutionalized, negatively impacting the implementation of sectoral public policies (Diele-Viegas et al., 2023), including those related to health (Fonseca et al, 2021; Fonseca et al, 2021; Gramacho et al., 2021; Guerreiro & Almeida, 2021) and the environment (Nobre, 2019; Menezes & Barbosa, 2021; Queiroz-Stein et al., 2023; Rajão et al., 2022; Silva, 2022; Escobar, 2019). Thus, the politicization and discrediting of science—and the reproduction of pseudoscience and false information, such as that of Olavo de Carvalho—became the modus operandi of this government, promoting not only discourses that challenged consensus and fact-based truths but also led to inaction and the dismantling of climate policies, forest protection (Escobar, 2019), vaccination programs, and the response to the Covid-19 pandemic (Ricard & Medeiros, 2020). In the first months of his administration, Bolsonaro eliminated the Ministry of Foreign Affairs' climate change division, threatened to pull out of the Paris Agreement, and gave up hosting the 2019 COP25 Climate Conference (Menezes & Barbosa, 2021). Brazil, previously regarded as a model for mitigation and adaptation, has begun to be criticized for its increasing deforestation and CO2 emissions (Queiroz-Stein et al., 2023; Werneck et al., 2021). Meanwhile, in official speeches at the United Nations General Assembly and other international forums, Bolsonaro concealed data and narratives about the state of climate policy (Silva, 2022; Viola & Franchini, 2022; Queiroz-Stein et al., 2023). Thus, it was not just about denialist rhetoric but also the implementation of anti-environmental actions (Deutsch, 2021). The government also reduced opportunities for participation and social control over environmental and climate policies, persecuting civil society organizations, scientists, and environmentalists—thus perpetuating a form of populist authoritarianism regarding the environment (Menezes & Barbosa, 2021; Barbosa et al., 2021).

During this time, public officials and Bolsonarists widely used social media to spread the idea that climate change was a developed country conspiracy against Brazil to prevent it from exploiting the almost infinite resources of the Amazon (Silva, 2022, p. 54). Another means of disseminating "pseudo-facts" was the anti-climate influence exerted

by researchers to misinform members of the National Congress, thereby influencing decision-making on climate and environmental regulations (Rojão et al., 2021).

A long dispute between the Bolsonaro administration and the National Institute for Space Research (INPE) culminated in the dismissal of Ricardo Galvão, then director of the agency responsible for satellite monitoring and mapping deforestation in the country. The president repeatedly criticized the speed and credibility of the data that, at the time, demonstrated a sharp increase in deforestation in June 2020. Bolsonaro even stated that the "data was false" and was being used by NGOs (Escobar, 2019).

During his four years in office, Bolsonaro cut the budgets of scientific institutions by the largest amount since 1999. In October 2021, the Ministry of Science and Technology's budget was slashed by 87%, totaling over US$100 million. The primary research funding agency, the National Council for Scientific and Technological Development (CNPq), experienced a 68% reduction in revenue between 2019 and 2021, with multiple budget freezes occurring during this period. These cuts impacted more than 80,000 research grants (Andrade, 2019; Diele-Viegas et al., 2023).

Brazil's history of threats to academic freedom is relatively recent. During the military dictatorship (1964–1985), academics and students at public universities faced systematic persecution. The 2018 final report of the University of São Paulo's Truth Commission described how scholars were targeted. Professor Boris Fausto wrote: *"The main concern regarding academics centered on their ideas [...] and the fear that they might be 'corrupting' students' minds through leftist indoctrination."*

Under Bolsonaro's administration, this climate of intimidation resurfaced. Anonymous letters were sent to students and professors at the University of Pernambuco who were involved in LGBTQ+ studies, gender research, or discussions about drug policy. The letters warned that, once Bolsonaro was elected, these individuals would be expelled and the university would be "cleansed of all communists" (Mendes et al., 2020).

Furthermore, Provisional Measure No. 1,136, of August 29, 2022, amended Law No. 11,540/2007, which governs the National Fund for Scientific and Technological Development. The measure revoked two significant provisions: one that helped maintain budgetary investments and another, through Complementary Law No. 177/2021, that guaranteed funds would not be frozen. Additionally, it eliminated the provision supporting research aimed at reducing greenhouse gas emissions.

Even after the end of the Bolsonaro administration, it is important to highlight a key example of climate disinformation in political discourse and decision-making regarding investments in the oil and mining industries. A recent example occurred when the current president of Petrobras, Magda Chambriard, directly quoted US President Donald Trump by saying, "Let's drill, baby!" during a speech about oil exploration in the equatorial margin at an IBP (Brazilian Institute of Oil and Gas) panel at the OTC (Offshore Technology Conference) in Houston, Texas, on May 6, 2025. It is also important to mention Eduardo Leite's speech as governor of Rio Grande do Sul in response to the floods in April and May of 2024 that affected the metropolitan area of Porto Alegre and other cities in Rio Grande do Sul. At that time, the governor proposed "a kind of Marshall Plan for the reconstruction of Rio Grande do Sul," referencing the United States' developmentalist plan for the reconstruction of post-war Europe.

The claim that "5,000 projects are stalled in Brazil because of the current environmental licensing model" has been widely repeated by senators such as Plínio Valério, Omar Aziz, Zequinha Marinho, and General Hamilton Mourão, among other politicians from the right and far-right spectrum, some of whom are associated with Bolsonaro supporters. However, this information simply doesn't exist in any official database or reliable study. This is a clear example of misinformation being used as a political tool to justify the weakening of environmental regulations and promote the approval of the so-called "Devastation Bill" (PL 2159/21). By loosening environmental licensing and weakening agencies such as IBAMA (Brazilian Institute of Environment and Renewable Natural Resources), under the guise of modernization and streamlining, it introduces instruments such as the License by Adhesion and Commitment, which favors self-declarations by developers and limits consultation with Indigenous peoples and traditional communities. It opens the door to litigation and irreversible environmental damage. Eduardo Leite, the governor of the Brazilian state of Rio Grande do Sul, has undermined the consequences and human causes of the floods in Porto Alegre in 2024, and expressed that "streamlining the licensing process is a desire, a demand, and a longing of society" (Folha de São Paulo, August 6, 2025).

Finally, climate change disinformation gained momentum, particularly since the Bolsonaro administration took office in 2018 and the rise of the Bolsonarista movement (Miguel, 2022), even though it had already permeated Brazilian society. Nevertheless, the entrenchment and vocalization of these policies in public debate, primarily through social media and speeches by prominent political figures such as Jair Bolsonaro and Ricardo Salles, has been a challenge.

Key Events of Climate Denialism, Disinformation, Misinformation, and Delay in other Latin American countries

The Latin American region is one of the most disproportionately affected by climate change. Yet, there is a lack of studies focusing on climate denialism, disinformation, skepticism, or climate misinformation in the region. Many Latin American economies are also highly dependent on oil and gas revenues (Franchini & Viola, 2022), and the debate over energy transition and climate justice is crucial, given the region's severe inequality.

Furthermore, according to a 2021 UNESCO report, Latin American governments invest only 0.70% of their GDP in research and development, allocating minimal resources to science and scientific development. This data cannot be interpreted in isolation: Latin American countries have a colonial past and a development pattern that did not prioritize science as a human right to be disseminated and accessed by all populations. Multiple inequalities still operate as barriers to access to basic education and other human rights.

A survey conducted by Spektor, Fasolin & Camargo (2023) in Argentina, Brazil, Colombia, Chile, Ecuador, Peru, and Mexico showed that the majority of Latin Americans perceive climate change to be happening (over 90% in all countries) and as a result of human activity (93% on average). Another study by the European Investment Bank (2023) found that 70% of participants reported that climate change was impacting their income or livelihood.

Furthermore, the EIB (2023) documented that **Argentina** has a group of climate deniers (9%), which exceeds the regional average (5%). This phenomenon may be related to Milei's government and its political platform and discourses, which continually challenge scientific data and social consensus and norms (Solorio, 2024; Christel, Gutiérrez, & Möhle, 2025; Ballarino & Gardel, 2025). Additionally, the main force that spreads and structures climate denial in Argentina is economic actors - associated with fossil fuel industries - who lobby against climate and environmental policies and use the neoliberal narrative (Christel, Gutiérrez & Möhle, 2025). In 2024, Milei repeatedly stated that he would withdraw from the Paris Agreement - an action that had not yet been undertaken -, and Argentina withdrew from the COP 29 negotiations in Baku, Azerbaijan.

Since 2023, Milei has significantly reduced the budgets for environmental protection and climate policies. He has also downgraded the Environment Ministry, as well as the Science and

Technology Ministry, to an under-secretariat. His central economic and political platform relates to expanding fossil fuels (The Guardian, 11 December 2024). Milei has repeatedly stated that he does not believe in global warming, calling it a "socialist lie" (Kim, 2023). Furthermore, CAN (2023) documented that Milei banned the use of terms such as "climate change," "sustainability," and "biodiversity" in official documents from organizations such as the National Institute of Agricultural Technology (INTA).

According to the Academic Freedom Index, Milei's recent verbal assaults on university faculty and staff — in which he alleges political bias and claims they cater to elite agendas — pose a risk to the integrity of academia and may endanger academic freedom in the country. From 2023 to 2024, the budget allocated to education was reduced by 40%, according to the Observatorio de Argentinos por la Educación (OAE). The situation is further exacerbated by the government's appointment of interveners and police actions against universities, exemplified by the case of the Universidad de las Madres de Plaza de Mayo (UNMa). The government's appointment of Eduardo Maurizzio as the institution's manager is seen as a direct violation of the university's autonomy. Consequently, the Mothers of Plaza de Mayo have formally requested that the Inter-American Commission on Human Rights (IACHR) to implement urgent precautionary measures against the Argentine Republic, alleging that the government has breached its international commitments, particularly regarding academic freedom and the safeguarding of university autonomy.

In this sense, in Argentina, the denialist narrative includes: (i) the idea that climate change refers to a "natural cycle"; (ii) attacks to delegitimize the work of the National Council for Scientific and Technical Research (CONICET, in Spanish) and cuts in researchers salaries (a loss of more than 35%), such as reported by *The Guardian* - Argentina's leading agency dedicated to promoting science and technology; (iii) the notion that Antarctica is an "ice wall" as the "Earth is flat"; and (iv) conspiracy theories that deny or minimize the responsibility of human activities as a cause of climate change and claim that the climate is being deliberately manipulated through alleged secret technologies and geoengineering (Ballarino & Gardel, 2025).

Regarding the last one, for example, publications have circulated on social media claiming that the flooding in Bahía Blanca on March 7th, 2025, was caused by "chemtrails," which represent trails left by airplanes that, according to the theory, would contain chemicals intended to alter the weather.

In **Chile**, although President Gabriel Boric has publicly stated that "climate change does not forgive deniers" (Globo, 17 November 2024), some right-wing groups have continued to oppose environmental legislation and the scientific consensus regarding anthropogenic global warming. In 2023, 31 representatives, mainly from the Independent Democratic Union (UDI), National Renewal (RN), and Republican Party, voted against a parliamentary resolution recognizing human action as the primary cause of climate change. Although the project was approved by a majority (91 votes), another 17 abstained, which highlights some denialist ideas in the legislative arena. Greenpeace Chile and the Center for Climate and Resilience Science (CR2) warned that this stance weakens public debate and institutionalizes misinformation. Furthermore, resistance to regulating monoculture forestry - widely blamed for worsening forest fires - reinforces an economic rhetoric that ignores climate evidence. This stance promotes a scenario in which the country's environmental crisis is rendered invisible, even in the face of alarming indicators, such as intensifying heat waves and reduced rainfall in south-central Chile.

Meanwhile, **Colombia** and Chile present a more ambiguous scenarios that can be more adequately understood not as a case of climate denial but rather as a posture of climate delay through inaction based on economic interests, in the name of "development." Although President Gustavo Petro has positioned himself against climate denialism, denouncing both the direct denialism of the right and the "transitional denialism" present in parts of the progressive left. At the Amazon Summit, Petro called out Lula, saying: "The right-wing [governments] have an easy out, which is denialism. They deny science. For progressives, it's very hard. It creates another type of denialism: talk of transitions.". Nevertheless, the country still lacks concrete and structured actions to confront the environmental crisis. A notable example is the absence of effective policies to monitor and protect the Andean glaciers, which have lost approximately 90% of their mass since the 19th century. According to World Weather Attribution, the lack of updated scientific data, combined with underfunding of environmental research, creates a "scientific injustice" that hinders the formulation of effective climate policies (El País, July 17, 2025). Colombia, as well as Brazil, is considered one of the worst countries in Latin America for identifying online disinformation, according to the OECD (2024).

In **Mexico**, although disinformation isn't as extreme or prevalent in presidential discourses as in Argentina, there has been a significant setback in environmental policies during the Andrés Manuel López Obrador administration (The New York Times, August 17, 2022). Under the guise of "energy sovereignty," the federal government opted to reinforce the fossil fuel-based energy matrix, thereby reducing support

for renewable energy sources and reducing the role of institutions such as the National Climate Change Fund. These political actions resulted in the dismantling of several initiatives linked to the Paris Agreement and the weakening of environmental agencies' technical roles. The new administration of Claudia Sheinbaum (Euronew, 2024), an environmental engineer who co-authored IPCC reports in 2007 and 2014, although has shifted to a pro-renewable discourse and established more ambitious targets for COP 30, inherited the project of a new pipeline Southeast Gateway, that delivers up to 1.3 billion cubic feet of natural gas per day from Texas to the Yucatan Peninsula. Official silence on episodes of extreme drought, such as those experienced in northern Mexico, also highlights the systematic neglect of global warming's impact on vulnerable communities and water resources.

Finally, climate disinformation, denialism, skepticism and delay, as in its different shapes, nuances, and forms, in Latin American countries manifests in different forms and strategies: from openly denialist discourses, as in Argentina [and Brazil], to more veiled forms of institutional skepticism, as in Mexico, and structural omissions, as in Colombia. In Chile, although the government maintains formal commitments to the climate agenda, the presence of parliamentary forces opposed to science and environmental transparency impedes substantial progress. This multiplicity of expressions reveals that climate disinformation in Latin America is a multifaceted political phenomenon that transcends ideologies and is rooted in economic interests, sovereignty disputes, and institutional weaknesses. Understanding these nuances is essential to strengthening science, environmental governance, and community resilience in the face of ongoing climate change impacts.

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ACTIONS TO OVERCOME SCIENTIFIC AND CLIMATE DENIALISM AND DISINFORMATION AND PROMOTE ACADEMIC FREEDOM

In order to effectively address the growing spread of scientific and climate denialism and disinformation, a multidimensional strategy combining education, institutional strengthening, ethical communication, and international cooperation is essential.

The following recommendations outline a comprehensive framework to protect scientific integrity, promote academic freedom, and reinforce public trust in evidence-based knowledge. These recommendations are intended to guide governments, universities, international organizations, and civil society in developing policies and actions to counter misinformation, protect researchers, and cultivate an informed, resilient democratic culture.

I. Strengthening of academic institutions and promotion of academic freedom

Safeguarding academic freedom and reinforcing the institutional capacity of universities are essential pillars for protecting scientific integrity and democratic resilience in the face of climate disinformation. Academic freedom enables researchers and educators to investigate, communicate, and teach without external interference or fear of reprisal, ensuring that public debate on climate change remains grounded in scientific evidence.

Recent experiences in countries such as Brazil and Argentina show how political attacks on universities and scholars can erode public trust in science and hinder the production of reliable scientific knowledge (Mendes et al., 2020). In this context, strengthening governance frameworks that ensure institutional autonomy, transparency in research

funding, and adherence to ethical standards in science communication becomes crucial.

According to UNESCO (2023), universities play a central role in fostering democratic culture and evidence-based policymaking. Initiatives such as the UNESCO Recommendation on Science and Scientific Researchers (2017) and the UNESCO Global Forum on the Ethics of Climate Change (2024) emphasize that protecting academic freedom and promoting open science are fundamental to addressing global challenges. Similarly, the International Science Council (ISC) advocates for the "free and responsible practice of science," defending the rights of scientists to express opinions and share data without censorship or intimidation (ISC, 2023).

In practical terms, governments and international organizations should adopt monitoring mechanisms to detect and respond to threats to academic freedom, as recommended by the UN Special Rapporteur on the Promotion and Protection of the Right to Freedom of Opinion and Expression (UN, 2024). Regional institutions, including CELAC, MERCOSUR, and the Inter-American Commission on Human Rights (IACHR), can also integrate the defense of academic freedom and scientific integrity into their agendas—linking them to broader frameworks on democracy, human rights, and sustainable development.

Moreover, fostering partnerships between universities, independent media outlets, and civil society organizations can strengthen collective resistance to disinformation campaigns. Supporting international research networks and ensuring equitable access to research funding—especially in the Global South—are key to maintaining plural, diverse, and resilient academic ecosystems capable of confronting climate disinformation on a global scale.

II. Promotion of scientific education and climate literacy

Investing in scientific and climate education is one of the most essential strategies for countering climate disinformation (Mendy, Karlsson & Lindvall, 2024), mainly because findings demonstrate that people's knowledge about climate change matters (Lewandowsky, 2021). According to Mendy, Karlsson & Lindvall (2024), it has the potential to reduce denialism among groups with a high level of social dominance belief (Diamond, Bernauer & Maye, 2020), as well as overcome skepticism among adolescents (Stevenson et al., 2014).

Climate literacy goes beyond a simple transmission of content, since it involves empowering citizens to understand how the climate system works, identify reliable sources of information, and develop critical

thinking in the face of misinformation (Ranney & Velautham, 2022; Busch, 2021; Hansson, 2018). In this sense, climate literacy must be grounded in scientific principles, which include methods and critically analyzing connections between evidence and explanations. This needs to be incorporated on an educational basis so interpretations can be made based on scientific paradigms and fact-checking analysis (Stevenson et al., 2024). Data collected by UNESCO shows that only 53% of national educational curricula worldwide mention climate change, and less than 40% of teachers feel confident teaching about climate education.

Guerreiro & Almeida (2021) emphasize the crucial role of schools and universities in shaping environmentally conscious citizens. Interdisciplinary curricula, educational laboratories, partnerships with scientists, and active learning methodologies can make science more accessible and meaningful for students of distinct ages. Moreover, other pedagogical techniques can be employed, such as extracurricular projects that promote students' engagement (Ranney & Velautham, 2021; Mendy, Karlsson, & Lindvall, 2024). Damico & Baildon (2022) reinforce that critical literacy approaches targeting climate denial texts can be integrated with eco-civic practices such as deliberation, reflexive thinking, and counter-narratives to help students recognize the corporate, financial, and political drivers behind climate denial.

Finally, significant potential exists in fostering international collaborative initiatives between international and civil society organizations, universities, public initiatives, and media outlets to promote information integrity, science literacy and climate education, having in mind the idea that the protection of academic freedom goes hand in hand with the promotion of closer relations between institutions, scientists, governments, communicators and the larger citizenry.

III. Promotion and strengthening of scientific and environmental journalism

The quality of information disseminated by the media has a direct impact on the public's perception of the climate crisis. Communicating and reinforcing scientific consensus is crucial to countering climate disinformation (Cook, 2017; Dixon et al., 2017; Hansson, 2018; Lewandowsky, 2021; Mendy, Karlsson & Lindivall, 2024). Beyond the mere presentation of scientific data, it is essential to communicate with empathy, using narratives that resonate with the public's values and lived experiences, which means culturally appropriate messaging (Lewandowsky, 2021; Jones & Song, 2014).

Schmidt & Betsch (2019) argue that it is vital to expose the rhetorical techniques used by science deniers in public debates and to counter the denialist discourse while presenting the actual facts. Framing messages and information could also be a strategic approach (Mendy, Karlsson & Lindivall, 2024). Schmidt & Betsch (2019) also show that two effective strategies to combat denialism and disinformation are: (i) presenting scientifically correct facts and (ii) exposing the rhetorical techniques employed by denialists — such as cherry picking, attacking the source, and using fallacies — reducing the impact of disinformation.

As stated by Lewandowsky (2021), climate communicators must use nuance for emotions and avoid focusing on fear or anxiety (O'Neill S, Nicholson-Cole, 2009).

Environmental journalism should be strengthened through specific training, access to qualified scientific sources, and institutional support. Building networks of specialized journalists, funding investigative projects, and protecting press freedom are essential to tackling the rise of environmental misinformation.

In Brazil, Sumaúma is an independent local news platform focused on the Amazon region that reports facts related to climate change, indigenous peoples' rights, and other social and environmental issues. In the United States, journalists and organizations such as the Center for International Environmental Law, the Climate Investigations Center, Greenpeace USA, and the Union of Concerned Scientists (UCS) have been documenting internal company research on climate change and public-facing campaigns aimed at casting doubt on climate science and its solutions.

IV. Scientific funding for climate information dissemination initiatives

The sustainability of science communication and community engagement projects depends on adequate funding. Funding agencies, universities, and international organizations must allocate resources to educational initiatives, awareness campaigns, citizen laboratories, and digital platforms that promote climate knowledge. These efforts should prioritize participatory, inclusive, and culturally sensitive approaches that encourage dialogue between science and society. Partnerships between scientists and communicators are also a strategic way to explore innovative formats.

The Climate & Development Knowledge Network (CDKN) initiative sought to fund local climate change communication projects in Argentina, Colombia, Peru, and Chile. It involved 700 participants and

generated over 100 interesting project proposals for communicating about climate change in Latin America - including issues related to gender and climate in rural communities. The projects also addressed the importance of using science as a basis for climate debate and public policy implementation.

V. Community engagement through local actors

Local leaders have a strong influence on collective perceptions of climate change. Effective strategies against denialism and disinformation should value local knowledge and promote the co-construction of solutions. Participatory workshops, climate assemblies, neighborhood forums, and popular education programs are ways to foster community involvement. These actions strengthen the sense of belonging, legitimize science through context, and reduce the influence of denialist leaders. This is important since "climate doomism may be reduced when humans are presented as having agency in addressing the climate crisis" (Johnstone & Stickles, 2024, p. 13).

VI. Regulation of social media and combating misinformation

Social media has become a powerful vehicle for misinformation, often reinforcing climate denialist narratives (Almaliki, 2019; NRDC, 2022; Treen, Williams & O'Neill, 2022; Al-Rawi et al., 2024). Algorithms function as tools for polarizing and producing viral content that often contains false information and spreads misinformation.

At first sight, digital, media, and information literacy is an essential tool for developing critical skills when navigating online information (Bruns et al., 2022; Balakrishnan, 2022; Ecker et al., 2022; Nascimento et al., 2022; Fonseca et al., 2024; Gertrudix et al., 2024). In this sense, it is essential to promote strategies that enable people to perceive, find, evaluate, and analyze information. However, this remains a challenge, as some studies have pointed out that disinformation and denialism are more closely related to cultural and ideological beliefs than to educational levels (Pennycook et al., 2020). In this sense, more than only promoting digital literacy, a complementary strategy is to create channels and mechanisms for "fact-checking" information that circulates on social media and the internet, replacing it with correct information based on reliable sources (Bruns et al., 2022; Crozier & Strange, 2019; Lewandowsky et al., 2020; Fonseca et al., 2024).

In this sense, a regulatory framework is needed to hold digital platforms accountable for the circulation of false content and promote transparency in moderation criteria. Implementing fact-checking systems, labeling misleading content, and blocking repeat offenders are urgent measures.

This may involve enacting laws or regulations that prohibit the dissemination of false or misleading information about climate change, impose penalties for violations, and establish mechanisms for reporting and addressing disinformation (Hefferman, 2024).

Recently, Meta has announced plans to scale back the number of "fact-checkers" responsible for monitoring content on platforms such as Facebook and Instagram. In 2025, Meta, with more than 3 billion users globally, ended its partnerships with external moderators, including independent news organizations and climate experts. According to Mark Zuckerberg, the system would be replaced by user moderation as a means to correct inaccuracies. However, this new configuration increases the risk of spreading misinformation and climate denial. In 2021, in response to public backlash and congressional pressure, Meta took steps to combat climate-related misinformation, including blocking misleading ads and launching a Climate Science Center to share reliable information.

VII. Integration of science into local and national public policies

For climate science to have a real impact, it must be incorporated into the design and implementation of local and national public policies. Sustainable urban planning, low-carbon transport systems, regenerative agricultural practices, and ecological land management are examples of areas where scientific knowledge can guide more effective decisions. This integration bridges the gap between technical discourse and local realities, enhancing public understanding and reducing space for denialism and disinformation.

VIII. Social participation and democratic governance

Creating public forums, citizens' assemblies, advisory councils, and participatory platforms allows diverse social segments to express their perceptions, concerns, and proposals regarding climate change. These spaces for debate and deliberation are essential for bringing science closer to local realities and for generating more legitimate and effective public policies. Initiatives involving civil society, such as environmental networks, youth collectives, traditional communities, and social movements, help root climate solutions in local territories. This community engagement also promotes transparency, strengthens social oversight of environmental decisions, and builds resilience against denialist narratives.

IX. Continuous monitoring of disinformation practices

Systematic analysis of climate misinformation—including its

dissemination channels, involved actors, and most effective formats—is crucial for developing rapid, evidence-based responses to address this issue. Investing in media observatories, social media analysis tools, and science communication research centers enables the identification of trends and assessment of the impact of misinformation campaigns, allowing for real-time strategy adjustments. Recently, Hot Air was launched as a free and publicly available interactive database and visualization tool highlighting the volume of online misinformation surrounding climate change.

X. Strengthening multilateral initiatives for information integrity

International organizations such as the United Nations (UN), the United Nations Educational, Scientific and Cultural Organization (UNESCO), and the International Science Council (ISC), should lead coordinated efforts to ensure the integrity of climate information. United Nations Secretary-General António Guterres has emphasized the importance of global cooperation in countering climate disinformation (Hefferman, 2024). Creating multilateral verification protocols, launching global misinformation awareness campaigns, and fostering collaboration between countries are key to counter disinformation on an international scale. Moreover, environmental diplomacy can also incorporate integrity clauses related to information into climate treaties and agreements.

For instance, as mentioned earlier, the **Global Initiative for Information Integrity on Climate Change**, launched by Brazil together with the UN and UNESCO at the G20 Summit in Rio de Janeiro in November 2024, seeks exactly that: a multilateral fund (administered by UNESCO) to finance research, communication strategies and public awareness campaigns aimed at combating climate disinformation, especially ahead of **COP30.** The World Meteorological Organization (WMO) has joined this initiative, contributing scientific expertise to validate data, strengthen climate-reporting, and ensure that debates are grounded in sound evidence.

Also important are reports from UN human rights and environmental special rapporteurs. Elisa Morgera, UN Special Rapporteur on Human Rights and Climate Change, has recently called for the criminalization of fossil fuel disinformation (including greenwashing) and greater restrictions on fossil fuel industry lobbying and misleading advertising that distort public awareness and human rights obligations. UNESCO has promoted transparency and media freedom in environmental reporting, including a joint declaration by Special Rapporteurs on environmental transparency and media freedom on World Press Freedom Day 2024, which emphasizes the need for legal protections

for journalists covering climate issues and the importance of public access to reliable information.

At the regional level, the **Escazú Agreement** is a treaty that guarantees access to environmental information, public participation, justice in environmental matters, and the protection of environmental defenders. It establishes legal obligations for transparency and accountability in environmental governance. Trade blocks and regional integration agreements also offer entry points. The recent EU-Mercosur Partnership Agreement includes annexes and clauses that refer to environmental measures, sustainable products, and the requirement for data from authorities to assess compliance with technical/scientific standards. It also recognizes that sustainable trade measures must be based on credible, verifiable information.

These are examples of how existing institutions and treaties can integrate information integrity through funding for research and awareness, as well as international treaties that obligate states to guarantee the public's rights to accurate information, participation, and access to science.

XI. Advocacy and litigation against big industries and other actors that promote climate misinformation

Holding companies, institutions, or public figures legally accountable for deliberately spreading climate misinformation is a powerful tool (Mendy, Karlsson & Lindvall, 2024). Civil society organizations and public prosecutors can engage in strategic litigation to pressure denialists and protect the right to information and scientific freedom. Successful lawsuits, such as those against oil companies for hiding data on climate impacts, set precedents that discourage harmful practices.

In 2018, the New York Attorney General sued ExxonMobil over "an alleged fraudulent scheme to systematically and repeatedly deceive investors about the significant impact that future climate regulations could have on the company's assets and value" (The Guardian, 24 October 2024). Other cities in the US, such as Baltimore, Oakland, Chicago, and Charleston, have also filed lawsuits against major companies like ExxonMobil, Chevron, Shell, BP, and API. Local governments claim that these corporations were aware of the dangers of emissions as early as the 1950s and 1970s, but they waged campaigns to undermine trust in climate science. The goal is to hold them accountable for the rising costs of adapting to extreme events, as well as for infrastructure and public health.

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The crisis of climate denialism and disinformation in the Americas poses a profound threat not only to environmental stability but also to the foundational pillars of democratic societies: the right to science, climate justice, education, and academic freedom. As this report details, scientific denialism and disinformation, particularly in the climate sphere, is not merely a rejection of facts; it is often a systematic assault on the institutions, norms, and consensuses that underpin our collective understanding of reality. This deliberate manufacturing of untruths, frequently fueled by corporate interests and authoritarian movements, actively undermines evidence-based policymaking and erodes public trust in scientific authority.

The right to science, recognized as a fundamental human right, and the values of academic freedom are directly imperiled when climate science is distorted or dismissed. This right encompasses the freedom to produce, share, and defend knowledge without interference, a liberty that is increasingly under attack through harassment, funding cuts, and institutional pressures on climate researchers. Academic freedom is essential for fostering critical thinking and enabling educators and scholars to engage with diverse knowledge to address pressing societal issues. When academic freedom is restricted, the very capacity to understand and respond to challenges like climate change is severely compromised.

Furthermore, the fight against climate denialism and disinformation is intrinsically linked to the pursuit of climate justice. The disproportionate impacts of climate change often fall upon marginalized communities, who are simultaneously targeted by disinformation campaigns that seek to delay meaningful action. Upholding democratic values, therefore, necessitates ensuring equitable access to accurate scientific information and empowering all citizens to participate in informed decision-making processes regarding their environment and future.

The insights gleaned from this study, ranging from the typology of climate denialism and disinformation to the identification of key actors, underscore the urgent need for comprehensive strategies. These must include robust public policies that protect scientific integrity, civil society initiatives that counter disinformation, effective science communication that builds trust, and educational initiatives that foster critical literacy. As the world looks toward events like COP 30, the integrity of climate information, the right to science, and academic freedom must remain at the forefront of the global agenda. Only by collectively defending these interconnected principles can we hope to navigate the complexities of climate change and build a future grounded in science, justice, and democratic resilience.

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