Climate communication

Communicating effectively about climate change and related environmental problems is central to democratic self-governance, as is framing potential solutions that engage citizens and local communities.

To develop a robust public sphere requires action at many different levels. Professional scientists must formulate scientific findings and genuine scientific disagreements in accessible and trustworthy formats to educate lay publics, students, elected officials, media, and a wide array of other institutional actors. They must also counteract climate science deniers in think tanks typically funded by fossil fuel companies and conservative foundations who propagate distorted or outright false claims. If the latter frame challenges in a potentially fruitful or corrective way, we should be prepared to listen and relate.

But focus on information deficits and distortions at the grand scale is not enough. Robust climate communication must find effective ways to address emotions of fear and hope, and to build upon faith traditions and ethnic cultures. Good communication must clarify local and regional conflicts, but also sources of potential agreement, joint problem solving, and everyday stewardship.

And we must keep talking to each other about how and why we want to live together on this good earth.

If climate change constitutes a "social drama," as some sociologists argue, climate communication should help us narrate stories of civic hope and skillful action, collaboration among experts and everyday citizens.

In this essay, we first clarify the various sources of climate denial, and then turn to those initiatives and institutions that enrich climate communication.

> For regular coverage of environment and climate change, see: Inside Climate News, GRIST, and New York Times Climate and Environment, as well as Yale Climate Connections, Yale Program on Climate Change Communication, and our News & Blog.

Why skepticism and denial?

Denial of climate change has a variety of sources. These range from everyday cognitive and emotional factors, to culture and religion, and to an organized climate denial counter-movement. The mix of factors varies for any given individual or community, and they can be shifted by creative climate communication strategies.

Among the major factors in climate denial are the following:

Everyday denial and discounting

In the normal course of everyday life, ordinary people tend to downplay climate change even when they are aware of scientific evidence that it is happening, witness changes in their own communities, and even when they support public action to address the problem. This results from various cognitive and social psychological processes, as well as sociological "feeling rules" and "emotion norms" that, in effect, lead to the "social organization of denial."

Among the factors fostering everyday denial are the following:

- *avoid shame and guilt:* if everyday awareness might make people feel irresponsible or immoral, especially if their personal lifestyle or their country's or region's economy is dependent on fossil fuels for jobs and tax revenues.

- *avoid feelings of helplessness and powerlessness:* if they do not perceive effective or affordable ways for them to contribute to solutions, especially when the problem is so complex and responsibility so diffuse.

- *avoid scaring people:* such as parents being protective of their own children or teachers of their younger students.

- *avoid being a conversation spoiler or downer:* rules of etiquette may operate among friends, dinner guests, dates, or at the local bar, beach, or sports match.

- *discounting future risks:* people tend to discount risks that are projected to materialize in future decades, especially when they are 20 or more years out from the present.

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Culture and religion

In the United States, a cultural schism also tends to polarize views on climate change, with those of conservative cultural, political, and religious identities more likely to be in the camp of denial. This can manifest itself in various ways:

- *distrust of science:* even as the overwhelming majority of climate scientists identify anthropogenic factors as the main cause of climate change – in other words, human, societal, and economic factors, rather than naturally occurring ones. Distrust of science can be exacerbated by conservative populist suspicion of liberal university elites, of scientific agencies seen as part of a "deep state," and of international

agencies, such as the United Nations Intergovernmental Panel on Climate Change (IPCC), which publishes periodic reports of scientific consensus.

The peer review process, which generates trust in research among scientists, may be seen by deniers as "pal review" among scientific and professional elites. The "Climategate" controversy of hacked emails among British climate scientists in 2009, who were exonerated by multiple independent investigations, cast a long shadow in conservative circles and in the media.

- *deference to God:* conservative Christians tend to be in the denial camp, especially high-income, well educated, conservative white men with strong religious beliefs. Conservative evangelicals often see scientific arguments on climate change as a direct challenge to the power and goodness of God, indeed a form of hubris, though some may also see climate disasters as part of a Biblical "End Times" narrative.

- *defense of markets:* conservative denial of climate change is sometimes less about the science than about perceived remedies ("solution aversion") that would interfere with markets, diminish personal freedoms, and even dismantle capitalism (as a small minority on the political Left propose). At the extreme, libertarians see many climate remedies as part of a plot for one-world government and totalitarianism.

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Climate denial movement

An organized and very well-funded climate denial movement has also emerged, though its contours and leading players have shifted over three decades in response to policy opportunities and constraints. The denial movement has its own strategies and tactics, though it seeks to leverage other sources of denial as well. Among the major characteristics of this movement, or "counter-movement" challenging the climate movement, are the following:

- *foundations and think tanks:* large conservative foundations, such as the Heritage Foundation, as well as smaller ones focused specifically on climate change, such as the Heartland Institute and the Marshall Institute, provide funding for contrarian scientists, book publication, framing research, and public events.

  Funders also include the Koch brothers, as well as dark money through Donors Trust. The Competitive Enterprise Institute and the American Legislative Exchange Council (ALEC) advocate vigorously against mainstream climate science and for state policies, including contrarian climate education in schools.

- *fossil fuels industry:* corporations such as ExxonMobil, Peabody Coal, and Koch Industries, as well as industry associations, such as the American Petroleum Institute and the Western Fuels Association.

  Organizations in these first two categories have funded electoral campaigns that support deniers, including those on the farthest extreme who claim that the climate crisis is a "hoax" propagated, in effect, by a vast conspiracy of individual scientists and networks of all the major national scientific academies and disciplinary associations around the world. Such donors also punish those running for office who would deviate from denial.

  The Trump presidential campaigns of 2016, 2020, and 2024 benefitted from large contributions among major climate denial and fossil fuel actors.

- *contrarian scientists:* these include a tiny handful of respected climate scientists, as well as a somewhat broader group of scientists who typically do not publish in peer-reviewed journals or teach at leading research universities. They tend to work at conservative think tanks to avoid the stigma of being employed directly by the fossil fuels industry.

- *front groups and Astroturf campaigns:* to mobilize ordinary citizens, various organizations provide funding for grassroots campaigns on energy costs or evangelical religious beliefs.

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The field of climate communication

The field of climate communication is large and multifaceted, especially when we consider related areas of environmental and science communication. Together these constitute a public sphere where media enable diverse types of democratic talk and a complex mix among them.

This is often referred to as a "communication ecosystem," in which no single form can capture the complete truth nor elicit the full range of action that might be needed to effectively tackle the climate crisis and enhance democracy. However, a dynamic mix of media types and appropriately tailored communication strategies can provide fruitful synergy and corrective capacity among them.

For example, a *New York Times* account of a report from the IPCC may help simplify key findings in a language that a highly literate readership can use to help understand which risks, such as sea level rise or urban heat island effects, might be increasing and why. Yet local news with visuals of a battered coastline or at-risk seniors without adequate air conditioning might be needed to make the statistics real and communicate threats in ways that motivate action.

Still others forms of everyday talk on the street or in local shops may be needed to determine who is most immediately vulnerable and how to connect them to local churches, social service groups, or disaster response agencies. Thus, social capital within the community, as well as across broader social networks and public agencies, can enrich the communication ecosystem. Communicating a sense of collective efficacy is critical. (See social capital in **CivicGreen Glossary**.)

The communication ecosystem can be built out further. A local environmental justice group can highlight disproportionate risks borne by communities of color and Indigenous groups. An ecumenical network of religious congregations and institutions can cultivate cultural frames of

climate action as “stewardship” and “creation care.” A youth climate organization can mobilize protest and policy advocacy through a network of decentralized hubs.

A national environmental organization with state and local chapters of hundreds of thousands of members can publish sophisticated reports based on reputable scientific, economic, and institutional analysis, combined with photos of wondrous landscapes and shocking devastation. They can leverage these for an “advocacy campaign” with a strategic mix of communication activities over a set period of time.

Organizational websites and social media can also depict members working as active citizens to restore ecosystems and communities, thereby providing models to emulate, toolkits to utilize, and schedules to gather.

Collaborative planning and co-production to address specific types of threat, such as sea level rise, require forms of communication, participatory mapping, and other learning strategies appropriate to those threats and to the ecological, civic, and institutional landscape of the region.

To be sure, the climate communication ecosystem also includes popular culture, such as documentary film, science fiction, visual arts, theater, gaming and game nights, even comedy. In addition, citizen science projects that engage youth, lay adults, and professional scientists in collaborative research often include visualization and other methods for communicating with broader publics, as do some environmental education approaches. (See environmental education in **CivicGreen Glossary**.)

As Max Boykoff has argued, the mix of effective communication forms and strategies needs to include experts who can generate appropriate professional legitimacy, as well as peer-to-peer and interactive exchange among ordinary citizens who can generate active engagement and democratic legitimacy. The challenge is to cultivate multiple pathways to knowing and to develop strategies for “effectively connecting with selected audiences in resonant ways.”

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Among the major types of media organizations that specifically seek to enhance the field of climate communication are the following:

Climate news reporting

This occurs in mainstream media, such as major national and international newspapers and broadcast media, as well as in specialized media focused on environmental issues and climate change. Local media, such as metropolitan newspapers and TV stations, often cover local threats (heat waves, wildfires, hurricanes, floods), as well as adaptation and resilience strategies. Some examples are:

- New York Times Climate and Environment, plus Climate Forward Newsletter (for subscribers only).
- Inside Climate News, daily reporting on a wide range of climate and environmental issues, with newsletters.
- GRIST, regular coverage and special sections, with newsletters.
- Bloomberg Green, wide coverage (for subscribers only).
- *Seattle Times Climate Lab*; *Los Angeles Times: California Climate*; *New Orleans Times-Picayune: Environment*.
- **CivicGreen News & Blog**, which curates articles from these and other sources.

University centers and journalism programs

An increasing number of universities engage staff, faculty, and students in research, as well as communications training for scientists and other professionals working in various climate-related fields. Some examples:

- Yale Program on Climate Change Communication: as part of the School of Environment at Yale University, the YPCCC "conducts scientific studies on public opinion and behavior; informs the decision-making of governments, media, companies, and advocates; educates the public about climate change; and helps build public and political will for climate action."

  YPCCC has various projects, but the most visible has been Global Warming's Six Americas, which has traced the trajectories of beliefs of six distinct clusters of the American public since 2008: the Alarmed, Concerned, Cautious, Disengaged, Doubtful, and Dismissive. The trend has been toward greater concern, engagement, and support for climate solutions.

Among YPCCC's other projects is Identifying Climate Messages that Work, which conducts scientific lab and social media experiments to identify which messages best engage the public and key target audiences. It includes climate opinion maps and links to refereed scholarship.

- *George Mason University Center for Climate Change Communication:* "we prioritize research in service of solutions. Our research identifies new opportunities to enhance public understanding of climate change and increases public engagement with climate solutions. Our communication initiatives train, mobilize, and elevate some of America's most trusted voices in local news and medicine, as well as ordinary citizens who expect more from their elected officials. We confront and combat misinformation and misdirection with simple, clear, and effective messages delivered by trusted messengers."

  Further, "we help government agencies, civic organizations, professional associations, and companies apply social science research to improve their public engagement initiatives; and we train students and professionals with the knowledge and skills necessary to improve public engagement with climate change."

  One of the center's key programs is Climate Matters, which is designed to leverage the communication skills and public trust of TV weathercasters to educate local publics. It operates as a partnership with the American Meteorological Society, National Oceanic and Atmospheric Administration (NOAA), National Aeronautics and Atmospheric Administration (NASA), and the Yale Program on Climate Change Communication. It provides localized broadcast quality materials to more than 1,100 weathercasters nationwide, and is growing rapidly.

- *Inside the Greenhouse*, at the University of Colorado at Boulder: "We work to deepen our understanding of how issues associated with climate change are/can be communicated, by creating artifacts through interactive theatre, film, fine art, performance art, television programming, and appraising as well as extracting effective methods for multimodal climate communication."

  Faculty and student teams have also produced comedy clips, such as No Climate Bullshitting, Capisce?!

- UC Berkeley Climate Journalism Lab: "In this time of wild weather and increasing economic, political and social turbulence sparked by environmental crises, how can journalists tell the climate story in a way that inspires people to practical, equitable, and effective action? How can we do so without shrinking from journalism's obligation to hold the powerful to account as they delay in implementing creative and potent solutions?

  "We're working to shift popular narratives from passive despair to active hope and possibility. We're building an engaged, informed, and change-oriented community

for fact-based, inspired climate journalism across the UC Berkeley campus and beyond.

The program includes several components: an introductory course in climate reporting and second-year interdisciplinary thesis seminar for students at Berkeley Journalism, opportunities for research and publishing, and a speaker series and other public programming for the Bay Area community.

- Center for Climate Journalism and Communication, University of Southern California: "We empower journalists and other communicators to tell stories about climate change. We do that through training that amplifies science, elevates communities, and engages audiences."

  A first-of-its-kind certificate program designed to support professionals, civic organizations, business innovators, and others who wish to include more climate change narratives and storytelling in their work. Sessions begin in June 2025.

- Penn Center for Science, Sustainability, and the Media: includes a campus-wide Energy Week in the spring semester and a Climate Week in the fall semester.

Professional associations

- *COMPASS:* a nonprofit organization that provides training to help build the capacity of scientists to develop communication frames and strategies for individual and collective action, including partnerships with community groups and public agencies, as well as policy advocacy and online campaigns. COMPASS provides training and coaching for faculty, graduate students, and postdocs in universities, as well as scientists in professional associations, nonprofits, and foundations.

  COMPASS was originally founded in 1999 by Jane Lubchenco, who later went on to head the National Oceanic and Atmospheric Administration (NOAA), in collaboration with past presidents of the Ecological Society of America.

  See Nancy Baron, *Escape from the Ivory Tower: A Guide to Making Your Science Matter* (Washington, DC: Island Press, 2010), for an early guide on COMPASS practice and training across the worlds of science, journalism, and policy. **Order info.**

- Society of Environmental Journalists: "is the only North American membership association of professional journalists dedicated to more and better coverage of environment-related issues. SEJ's mission is to strengthen the quality, reach and viability of journalism across all media to advance public understanding of environmental issues."

  SEJ was founded in 1990 by a small group of award-winning journalists. Today, SEJ's membership includes more than 1,500 journalists and academics working in every type of news media in the United States, Canada, Mexico and 43 other

countries. It holds an annual conference. In 2025, SEJ meets at Arizona State University, April 23-26. For agenda, click here.

- Union of Concerned Scientists is a science-based, non-partisan non-profit that works for a healthier environment and a safer world. UCS works with scientists and citizens to educate the public, media and policymakers about climate change. In addition to conducting original research, the group also advocates for clean energy and climate resilience at the local, state, regional, federal and international levels. In addition to action campaigns, UCS also offers Reports & Multimedia resources.

- *Environmental Communication*, an international scholarly journal.

Cooperative Extension

The Cooperative Extension System has a long tradition of translating research for practical use by local communities, and sometimes by engaging communities in co-production. While this tradition has been interrupted and compromised in various ways over the years, Cooperative/University Extension nonetheless has enormous potential for promoting sustainability and resilience in the face of climate change.

In March 2012, the National Institute for Food and Agriculture (NIFA, where Extension is housed at the U.S. Department of Agriculture) and the National Sea Grant College Program (at NOAA) held a national summit on the role of Extension in climate adaptation. USDA Climate Hubs – Regional Hubs for Risk Adaptation and Mitigation to Climate Change – were established in 10 regions across the country in 2014, with partners from Extension, the Forest Service and other agencies, and provided further institutional support.

The National Extension Climate Initiative (NECI) was established in 2019 and, while hampered by limited budgets, political and institutional resistance in some states, and opposition from the second Trump administration, it can build on innovative programs in some states.

Extension staff have utilized an array of forms of democratic communication, including scenario planning workshops, deliberative public dialogues, one-on-one interviews and relationship building, and engaged "climate stewardship" course modules. Communication builds upon local and Indigenous knowledge and citizen science models, appropriately aligned with professional science.

Extension staff are not typically tenured research scientists invited to prestigious media outlets to comment authoritatively about the latest climate report or disaster, but work in much more vulnerable spaces where community anger and institutional power might be directed at them. They can be of enormous help, but they must forge mutual understanding and reciprocal accountability on especially difficult terrain where wildfires and floodwaters can devastate communities. Recovery work can take months and even years, and require culturally accountable trauma response, as well as communication and tools that inspire hope and action.

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Enhancing civic communication and action

As the field has grown, the limits of many standard forms of climate communication have become increasingly evident. The "information deficit model" that seeks to elicit opinion change and public will through more data and evidence at the grand scale has important but selective impact at that scale, but much less in local communities, complex ecosystems, and regional landscapes and economies where identity, culture, and livelihood are intertwined.

Civic engagement for sustainable, resilient, and just communities requires robust forms of science and climate communication that are sensitive to context, culture, power, and relationship. More information on climate threats at the grand scale, while indispensable for public education and policy formation, is inadequate for forging common ground in communities and across landscapes, and for developing collaborative strategies that are appropriate and viewed as legitimate.

More information in the form typically produced by scientific agencies is often found impenetrable by policy makers as well.

Several features of climate and science communication have been stressed in recent research and practice that can help enrich the field. Among these are the following:

Relational

Climate communicators often perform key roles in connecting community groups and public agencies with scientists in universities and conservation associations. Building regular channels and trusting relationships through deep listening can enhance the quality of

communication and enable updating and accountability for ongoing projects. Sometimes it's better to ask questions rather than argue.

Relationship building is important in local and regional work, but also for work with Congress and state legislatures, national and state agencies.

Emotions

Climate communication practitioners need to recognize and manage a wide range of emotions prompted by threats to family, community, health, ecosystem, and livelihood. Denying them in the name of dispassionate professionalism or policy detachment does not serve to anchor civic strategies in lived experience, nor can it sustain professionals themselves.

Tapping identities that elicit emotions of care and responsibility, such as parental and community identities, or those of workmates and lovers of nature, can be especially important in bridging other cultural or ideological divisions.

Context

Climate communication can enable understanding of complex issues as these are embedded in local history, culture, and ecology, as they impact diverse publics and stakeholders, and as they elicit productive contributions rooted in local knowledge, skills, and other community assets.

Science communicators must meet people where they are and address why they care, whether rooted in family and community, faith traditions of creation care and stewardship, movement understandings of justice, or some combination of these. The cultural mix will likely be different across a rural landscape and an urban streetscape. Ethnic media are key in many communities, as are tools for visualization.

Conflict and collaboration

Climate communication practitioners often work amidst conflict and are sometimes blamed for it. They need institutional supports to shield them from personal hostility and career retribution, even as they work to engage more collaborative processes and reach out to marginalized communities and to the movable middle. They can and should aim to find common ground across political divisions.

Problem solving and coproduction

Climate communication should engage ongoing initiatives of public deliberation and problem solving and not just crisis events and analytic reports. The role of everyday citizens in co-production is important to communicate locally, as well as part of a larger narrative of democratic engagement and civic responsibility. Everyday citizens are not just framed as

victims deserving of concern and redress, but as dignified and skillful actors who can shape hopeful futures.

To the extent that public agencies at all levels of the federal system help fund and facilitate collaborative projects among citizens and stakeholders, we need communicative strategies that clarify their important role in democratic engagement and self-government. This can enhance legitimacy and defend against "deep state" tropes.

Drama and stories

In a public sphere where climate change is a "social drama," climate communicators can uncover and narrate stories of engaged local actors solving problems, acting with deep commitment and integrity, and working across various occupations and professions. Stories provide important space to dramatize civic virtue and institutional trust and to bridge at least some of the cultural polarization on climate change.

Fear and hope

Fear is an essential emotion that invariably infuses climate communication, especially as practitioners report on disasters and related forms of human suffering, community disruption, and species loss.

However, communication frames should not let fear and loss crowd out hope and efficacy, especially of communities and partnerships taking hopeful civic action with pragmatic steps that can potentially lead to recovery and resilience. Practitioners should continue to track resilience strategies over the medium- and long-term and should cover civic and institutional responses.

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