CONNECTING ON CLIMATE:

A Guide to Effective Climate Change Communication

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Center for Research on Environmental Decisions
EARTH INSTITUTE | COLUMBIA UNIVERSITY

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About the Center for Research on Environmental Decisions

CRED is an interdisciplinary center that studies individual and group decision making under climate uncertainty and decision making in the face of environmental risk. CRED's objectives address the human responses to climate change and climate variability as well as improved communication and increased use of scientific information on climate variability and change. Located at Columbia University, CRED is affiliated with the Earth Institute. For more information visit ***cred.columbia.edu***.

About ecoAmerica

ecoAmerica grows the base of popular support for climate solutions in America with research-driven marketing, partnerships, and national programs that connect with Americans' core values to bring about and support change in personal and civic voices and behaviors. For more information, visit ***ecoAmerica.org***.

We welcome feedback on this guide. Please send emails to ***connectingonclimate@gmail.com***.

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FOREWORD: A CONTEXT FOR CLIMATE CHANGE COMMUNICATION

For most of the past two centuries climate change has been discussed as a scientific phenomenon. The creation of fossil fuels, the chemistry of combustion, and the resulting changes in the atmosphere and planetary temperatures could be explained in no other way.

Then, in the 1980s, from his post at NASA's Goddard Institute for Space Studies, Dr. Jim Hansen began to describe the implications of the planet's rising temperatures. His testimony before Congress in 1988, coupled with Bill McKibben's book *The End of Nature* in 1989, brought the issue to the public's eye.[1] Hansen and McKibben framed global warming in dramatic terms—rising sea levels, melting Arctic sea ice, and extreme flood and droughts—and ushered in an era of framing climate change as planetary destruction.

This pairing of scientific analysis and potentially catastrophic implications moved America and other nations toward action. The formation of the Intergovernmental Panel on Climate Change (IPCC) in 1988 and passage of the United States Global Change Research Act of 1990 led to the UN Framework on Climate Change process, which yielded the Kyoto Protocol in 1997 and legally binding obligations for nations to reduce their greenhouse gas emissions.

In the midst of these major changes, some businesses came to view climate change as a threat to profits. In the 1990s, certain groups began organizing and funding activities to discredit climate science and to stop progress on climate solutions. This ushered in an era of opposition messaging and political polarization on climate change.[2]

The first decade of the new millennium saw an ongoing battle between these two forces. On one side, the Bush administration opposed action on climate change, seeing it as a trade-off with economic growth. On the other side, in 2006, former vice president Al Gore surfaced with the film and the book *An Inconvenient Truth*, which attempted to galvanize further large-scale action on climate change.

In 2009, the incoming Obama administration shifted away from Gore in its approach to communicating climate change. Research and experience suggested that fear-based arguments had run their course as effective tools for inspiring action. So Obama pivoted his focus toward the

co-benefits of climate action, prompting a focus on the economic, social, and health benefits of climate solutions.[3]

On one hand, it seems that none of these communication frames has been decisive. Yet the opposite perspective is in fact more accurate. Each of these arguments has influenced the political, economic, cultural, and psychological factors that mold today's climate debate. It has been a pitched battle to a draw, which is a loss for humanity and the planet.

Then, beginning with no specific event or time, the impacts of a warming planet began emerging. From California to Pakistan, from New Orleans to Bangkok, unprecedented and costly droughts, floods, and extreme weather emerged across the planet. A new era of climate communication emerged—the era of climate impacts.

So where do we go from here? The reality of climate change is upon us. Whether directly or latently, people are becoming more concerned about the issue. They seek guidance on what climate change is, what it means for their loved ones, and what they can do about it in a complex communication climate. Moreover, hundreds of people and organizations seek to refine their communication approaches to help further the case for meaningful action on the issue.

The Center for Research on Environmental Decisions (CRED) at The Earth Institute, Columbia University, and ecoAmerica, a nonprofit that works to build public support for climate solutions, have been leaders in climate communication research. With this guide, we synthesize what others and we have learned about climate change communication over the years into a single useful tool. It is our hope that leaders and communicators will put the insights in this guide into practice, designing and sharing ever more effective communication and practices to motivate an era of climate engagement that pushes America—and the planet—to a tipping point for climate solutions.

USING THIS GUIDE TO UNLOCK SUCCESS IN CLIMATE CHANGE COMMUNICATION

Climate change is not a new issue, but the need for meaningful and sustainable solutions is more urgent than ever. Climate communicators and mainstream leaders are still grappling with how to help Americans find meaningful, actionable paths forward and overcome the social, political, psychological, and emotional barriers that have hindered progress on climate solutions.

To connect with audiences and unlock success in climate change communication, communicators need to shift their approach. Communicators need to go beyond simply providing people with the facts about climate change. They need to connect with people's values and worldviews and put solutions at the forefront to make climate change personally relevant to Americans and those they love.

Getting climate communication right is becoming increasingly important for at least three reasons. First, the issue and timing are both critical. The impacts of climate change are accelerating, and delaying meaningful action to reduce carbon emissions increases the probability of harmful impacts. Second, climate change remains abstract, remote, and distant for many Americans, most of whom are focused on their more immediate needs.[4] Third, influential political and economic actors are organizing solidly against actions to reduce the carbon emissions driving climate change.

With this guide, we have brought together both researchers and practitioners to consolidate the best insights and evidence about how to communicate effectively about climate change. We have combined research from the Center for Research on Environmental Decisions (CRED) at The Earth Institute, Columbia University; ecoAmerica; and other institutions with insights that ecoAmerica has gleaned from communicating about climate change and other environmental issues with mainstream Americans and their leaders. This guide presents information on effective climate change communication in a digestible, actionable form to enable communicators to "up their game" when engaging Americans on climate solutions of all types and scales.

This guide isn't just for people who work in environmental organizations. It's also meant for mainstream business leaders, city planners, educators,

nurses, ministers, and journalists—anyone who wants to benefit from cutting-edge research insights and communicate more effectively about climate change. These recommendations can help anyone be a more successful communicator, whether you are a seasoned expert or just getting started. And while this guide is not intended for an international audience, some of its findings may be applicable beyond the United States.

We have organized this guide into four parts ("The Basics," "Crafting Your Message," "Overcoming Barriers," and "Taking It to the Next Level"), each of which builds on the previous. Throughout the guide, we use ***bold italicized text*** to identify important terms and their definitions. We use **bold text** to identify key insights and takeaways critical for communicators to understand. We also include stories about how practitioners and researchers are putting research into practice; these stories are highlighted in sidebars throughout the guide. In addition, we feature in-depth explanations of certain concepts, for communicators interested in diving deeper into some topics, which are also included in sidebars throughout the guide.

Just one word of advice: communicating on climate is not a one-size-fits-all exercise. The United States is a diverse nation, and messages that appeal to one group may alienate others. For any and all of us to connect on climate change, we need to understand our audiences, respect their concerns, and communicate and engage by example, wherever we live and work. With a little practice and forethought, anyone can be an effective climate communicator. We hope this guide will help you do just that.

THE BASICS:
Putting People First

THE BASICS: PUTTING PEOPLE FIRST

The vast majority of Americans report that they have heard of climate change. Yet Americans hold a wide array of opinions and beliefs about the issue.[5] Understanding one's audience, where its members are coming from, and how they arrived there is the first key to unlocking success as a climate communicator. This part of the guide describes why different groups of people have such different responses to climate change information, explains how people process information and make decisions about the issue, and gives tips for understanding one's audience and targeting climate communication accordingly.

Most of the time, people seek out information that supports their existing beliefs and values and reject information that contradicts the beliefs and values that are most important to them.

1 Put Yourself in Your Audience's Shoes

"No one else I know cares about climate change."

Many climate communicators erroneously believe that the main factor shaping people's engagement with climate change is their level of understanding of the science behind it.[6] The latest social science research, however, suggests quite a different story. People interpret new information through the lens of their past experiences, knowledge, and social context. This is particularly the case when it comes to complex scientific and societal issues such as climate change, where objective facts about the state of the world are not the only factors that influence what people believe and how they respond. This section explains how people's values, worldviews, and identities influence their responses to climate change. It also describes how climate communicators can relate that many elements of a comprehensive response to climate change align with Americans' worldviews and that climate solutions can go hand in hand with existing values and goals.

Identify How Values Shape Climate Engagement

Different individuals often come to vastly different conclusions about climate change in part because they hold different core values. ***Values***—such as honesty, hard work, loyalty, privacy, patriotism, fairness, or interdependence—help people make judgments about whether or not climate change is a problem and if and how they should respond.[7]

Most of the time, people seek out information that supports their existing beliefs and values and reject information that contradicts the beliefs

and values that are most important to them.[8] For example, when someone who strongly values personal property rights hears that dunes that will protect the coast against sea level rise will obstruct her waterfront view, an understandable reaction is to dismiss or deny one of the primary factors that would justify the dunes (namely, sea level rise that is being exacerbated by climate change). Likewise, many Americans hold the values implied by the American Dream—such as opportunity, prosperity, and hard work—near and dear to their hearts. Environmental messages with themes that run contrary to these values—the need to sacrifice, reducing material consumption, and doing more with less—may thus be rejected.[9]

Climate communicators should **appeal to values held by their target audience to make it easier for audience members to recognize climate change as a personally meaningful issue.** For example, someone who values national security may be receptive to hearing about how clean energy can reduce dependence on foreign energy sources, thus improving national security. Someone who values prosperity might be motivated by a message that emphasizes how clean energy solutions can unlock new economic opportunities for American families. And information about strengthening community preparedness for future natural disasters may speak well to people who strongly value hard work and self-sufficiency. To learn more about how to identify the values held by your audience, see **SIDEBAR 1: Getting to Know Your Audience**.

Align Climate Messages with Your Audience's Worldviews

People's responses to climate change (and messages about it) are also powerfully influenced by their worldviews. ***Worldviews*** are sets of deeply held beliefs and attitudes about how the world works

and how people should relate to one another. When it comes to climate change, worldviews often act as filters that help people determine whether or not climate change poses a serious risk to society. By affecting our perceptions of risk, worldviews thus shape beliefs about whether and how to respond to climate change.

Let's look at a couple of relevant types of worldviews. The first one relates to a person's beliefs about whether the world should operate through a hierarchical structure (that is, whether people's or groups' ranks should determine their levels of authority) or through a more egalitarian process (a world in which status doesn't matter and all people are equal and treated accordingly). A second relevant worldview relates to how much or little someone believes individuals should be free to pursue their own interests rather than be constrained (to some extent) by considerations of the "greater good." Social scientists refer to the former view as individualism and the latter as communitarianism. These two sets of worldviews powerfully influence individuals' beliefs about climate change.

SIDEBAR 1

Getting to Know Your Audience

Although it is difficult for communicators to uncover *all* of an audience's preexisting worldviews, values, and identities, here are a few steps communicators can take to better understand their audiences.

Do your homework. Communicators should gather as much as information as possible about their audience before interacting with them. Communicators can learn about local concerns and issues by picking up a local newspaper, observing local billboards and ads, and spending time at local stores, restaurants, community centers, libraries, and parks. In addition, communicators can glean insights about broader social, cultural, and political trends and opinions by consulting polling organizations such as the Pew Research Center.[18] If communicators are working with a specific organization, they can also consult the organization's mission statement, local news stories that feature that organization, and the organization's website and social media streams.

Ask questions. To gauge an audience's initial knowledge about climate change, communicators can pose the following sample questions at the beginning of a presentation:

(1) Which of the following statements do you agree with?
- a. Climate change is happening now and is caused mainly by human activities.
- b. Climate change is happening now and is caused mainly by natural forces.
- c. Climate change is *not* happening now.
- d. No answer/don't know

(2) Scientists use the term "greenhouse effect" to describe:
- a. A hole in Earth's ozone layer, which allows more sunlight to get through
- b. The heat-trapping properties of certain gases, such as carbon dioxide (CO_2)
- c. The warming effect of pavement and cities
- d. No answer/don't know

(3) Do you think that changing weather patterns and an increase in extreme weather events such as storms, floods, and droughts in the United States are caused by climate change?
- a. Yes
- b. No
- c. Maybe
- d. No answer/don't know

Answers can be obtained by a quick show of hands.

Develop a dialogue with your audience. For the development of a larger, more comprehensive communication strategy, communicators can use a range of methods, from one-on-one interviews to focus groups and surveys, to determine what their audiences care about, what they already believe, whom they trust most, and so on. See the **FURTHER READINGS** section on Page 82 for more information on how to conduct effective surveys and focus groups.

For example, individuals who believe the world should operate on egalitarian and communitarian principles tend to perceive climate change as something that affects poorer populations or minorities more severely and that will lead to even greater inequality. This view leads such individuals to be generally supportive of broad action on climate change.

In contrast, individuals who believe in the benefits of a hierarchically structured world and who support strong individual rights (even at the expense of the group) are likely to be less supportive of climate action, especially when government-run policies or solutions are highlighted. This is because these individuals may perceive such proposed solutions to climate change as mere excuses for greater (and in their view unnecessary) government regulation and may be afraid that such policies would infringe on their freedoms and rights as citizens.

Communicators can boost engagement by tailoring their communication strategies to the worldviews of their audiences. For example, someone who holds an individualistic worldview and favors self-reliance might react positively to a message that focuses on the capacity to take action on one's own. In contrast, that same person may respond negatively if messages focus only on climate change solutions that require government-organized cooperative action or strict regulation, because these solutions are perceived to weaken the role of individual responsibility.

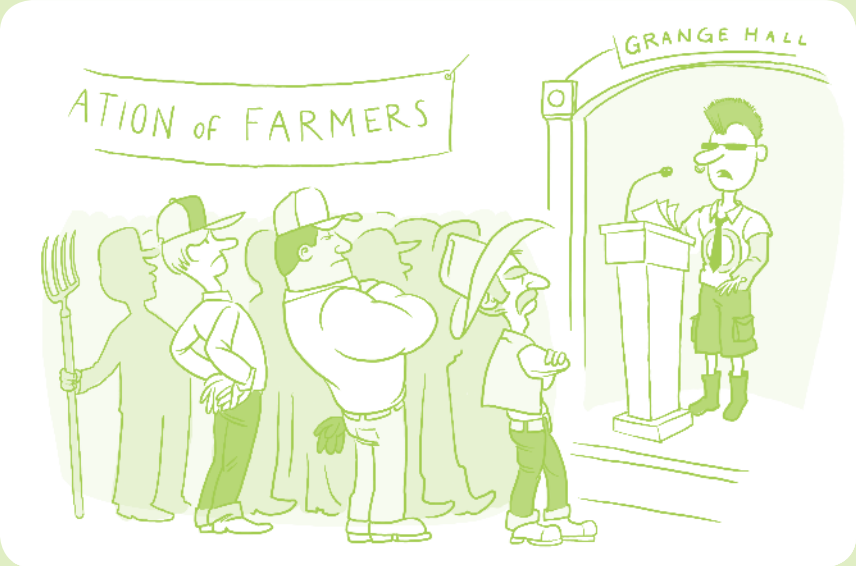
Understand How Identity Shapes Climate Engagement

An ***identity*** is a person's conception and expression of his or her self and the social groups he or she is part of. Everyone holds multiple identities. For example, someone might identify with a political party, be a member of a religious group, be a resident of a city and region, and be a parent or grandparent. People's identities with certain groups play significant roles in shaping how they think, feel, and respond to climate change. People's occupational identities—such as being a business executive or a farmer—can also play a role in shaping the attitudes and beliefs they hold about climate change. Research suggests that how "top of mind" a certain identity (such as being a parent or a Republican) is in a given moment can play a significant role in shaping how a person responds to messages (and public polling questions) about climate change.[10]

Identity plays a particularly strong role in shaping how people respond to climate change when they have limited knowledge about the complex issue and when they have strongly held identities.[11] For example, in the United States, climate change has become closely associated with political identity.[12] According to the findings of a recent study, when Republicans are reminded that they are Republicans, they report even more skepticism about climate change. And when Democrats are reminded that they are Democrats, they report

SIDEBAR 2

Choosing the Right Messenger for Your Audience



No matter how carefully a communicator designs a message, even a perfectly crafted message is unlikely to succeed if it's delivered by a messenger the audience doesn't trust, admire, or respect.

An ideal messenger is someone whose identities, values, and group affiliations are similar to those of the audience; someone the audience trusts and respects; and someone who can identify and connect with the audience's everyday needs and concerns. Often, it just takes some time spent watching and listening to audience members to identify who they repeat, whose advice they share, who they follow and pay attention to, and thus who might be a good messenger. Those with additional time and resources may want to consider conducting focus groups, in-depth interviews, experiments, and surveys, which can also help identify the right messengers. (See the **FURTHER READINGS** section on Page 82 for resources on how to conduct focus groups and surveys.) CRED research suggests that local messengers (both individuals and institutions) may be more likely to get a response for calls to action on climate change than individuals from outside the community. People are more likely to take action when they feel a strong sense of affiliation with the individual or institution making the request.

Finding the right messenger is especially important because it can help people link new identities to climate change. With the desired identity activated in people's minds, a well-matched communicator can more easily speak to people's values and priorities and make a powerful connection with the audience. (Think of how Mothers Against Drunk Driving succeeds by having mothers talk directly to other mothers.) Keep in mind that messengers may need training in how to deliver messages to their social groups and networks.

even more conviction about the issue.[13] This doesn't mean, however, that there aren't opportunities to help shift the association between particular identities and climate change. For example, Republican leaders such as Christie Todd Whitman, who led the EPA under President George W. Bush, have noted that many Republicans believe that climate change is real and human-caused, even though their party platform often indicates otherwise.[14] Other conservative groups have started talking about climate change in terms of its connections to faith, health, the economy, and national security, a strategy that is likely to bolster support for action on the issue among conservatives (in part by redirecting the current relationship between conservative identity and climate change skepticism).[15]

Communicators should keep in mind that nearly any identity may have both productive and counterproductive implications for climate change engagement. For example, emphasizing someone's identity as a good provider for his or her family may seem like an ideal approach to engaging certain types of people on climate solutions. However, if not approached carefully, talking about this identity in the context of climate change may actually have the opposite effect, making people think about the need to protect their families at the expense of the larger community. Strategies emphasizing the identity of being a good provider for one's family will likely be most effective if they emphasize how taking action on climate can help families achieve other goals, such as keeping kids healthy and saving money on energy bills.[16] It is also possible to create new, positive connections between specific identities and climate solutions. To read about a real-world example of how one initiative is working to link climate change to new identities, see **SIDEBAR 3: Harnessing Identity to Bolster Engagement with Climate Change: The MomentUs Initiative**.

When putting together a communication strategy, communicators should start by identifying core identities of their target audiences. Some of these identities may be obvious, but other identities may be more difficult to recognize. For example, it may be readily apparent that someone is a senior citizen but not immediately clear that he or she is interested in humanitarian work or is very religious. **Communicators should then identify whether a certain identity is already linked to a particular stance on climate change** and, if so, how linking climate change to that identity will affect people's support for or opposition to climate solutions. **No matter what, climate communicators should help people identify how taking or supporting meaningful action on climate change aligns with the identities they hold.**

Appeal to People's Desire to Be "Good People"

Tightly linked to people's values and core identities is their sense of what is morally good and what is morally required of "good people." People are highly

motivated to view themselves as good and moral. Identifying climate change as a "moral issue" may help people tap into these desires.[17] However, communicators should take care to communicate the moral significance of the issue using audience members' values, identities, and priorities rather than their own. Otherwise, a communicator's efforts can come across as moralizing, preaching, or finger wagging.

Climate communicators may also wish to appeal to the ***virtues*** (morally good traits and qualities) that people strive for in their personal and social lives. Previous communication efforts have placed little emphasis on virtues (for example, going above and beyond to help others prepare for extreme weather events). Yet emphasizing virtues may be highly effective in encouraging fundamental and long-term change in people's responses to climate change, in part because doing so can help people develop concrete projects that provide concrete personal results. **In short, to encourage long-term engagement, communicators should develop messages that align with their audiences' moral values and that provide opportunities for people to put their virtues into practice.** For more information on how to develop messages that resonate with your audience's moral values, see **SIDEBAR 4: Understanding and Connecting with Moral Foundations**. ■

SIDEBAR 3

Harnessing Identity to Bolster Engagement with Climate Change: the Momentus Initiative

One of the greatest challenges that climate communicators face is that climate change is so tightly linked to politics and political identity. But climate change doesn't have to just be about politics. Responding to climate change can also be about being a good citizen, living out one's faith, doing good business, staying healthy, or being an engaged teacher or student. This is a core motivating idea behind MomentUs, a new ecoAmerica initiative designed to catalyze a game-changing increase in the base of public support for climate solutions in the United States. MomentUs was conceived on the premise that Americans will act on climate change if they come to understand how it is relevant to the many identities they hold outside of the voting booth. MomentUs empowers leaders who interact with Americans where they work, live, play, pray, and learn with research-based guidance on climate communication to help facilitate this shift in understanding among the American public. Through peer-to-peer engagement, conferences, and training, MomentUs encourages leaders to harness the identities they share with their audiences to build trust, credibility, and consequently support for climate solutions. To learn more about MomentUs, visit *momentus.org*.

SIDEBAR 4

Understanding and Connecting with Moral Foundations

Researchers studying moral judgment have established six sets of ***moral foundations*** that drive people's understanding of what is "good" or "moral," as outlined in **TABLE 1: Moral Foundations and their Characteristic Emotions, Virtues, and Examples**. For example, the moral foundation known as "care/harm" encompasses kindness, gentleness, and nurturance, while the "fairness/cheating" foundation encompasses fairness, justice, and trustworthiness.[19] Some moral foundations resonate more strongly with some audiences than with others. For example, psychologists at the University of Virginia found that liberals showed greater endorsement and use of the care/harm and fairness/cheating moral foundations, whereas conservatives tended to use and endorse all moral foundations more equally.[20]

In another study, researchers at the University of California–Berkeley found that environmental messages tend to emphasize care/harm, a moral foundation important to many liberals. This may explain why liberals are sometimes more receptive to environmental messages than conservatives.[21] However, the researchers also found that ***reframing*** environmental issues in terms of sanctity/degradation increased conservatives' concern. **This suggests that reframing the same issue using different moral foundations can have a significant impact on the diversity of individuals and groups who will show concern about it.** For more information on framing, see **SECTION 5: Connect Climate Change to Issues That Matter to Your Audience**.

TABLE 1

Moral Foundations and their Characteristic Emotions, Virtues, and Examples

The table below lists six moral foundations along with the characteristic emotions, relevant virtues, and climate communication themes and concepts associated with each.[22] Climate communicators can decide which climate communication themes and concepts to emphasize with an audience depending on the moral foundations they think the audience will resonate with most.

	Characteristic emotions	Relevant virtues	Examples of climate communication themes and concepts
Care/Harm	compassion for victim; anger at perpetrator	caring, kindness	keeping children safe from climate's health effects; "saving the environment;" protecting polar bears and other wildlife
Fairness/ Cheating	anger, gratitude, guilt	fairness, justice, trustworthiness	effect of climate change on farmers in developing nations; oil companies' pollution and profits
Loyalty/ Betrayal	group pride; rage at traitors	loyalty, patriotism, self-sacrifice	preserving America's natural wonders; being good stewards of American nature
Authority/ Subversion	respect, fear	obedience, deference	following the advice of or obeying respected professionals, business leaders, or the pope
Sanctity/ Degradation	disgust, adoration	temperance, chastity, piety, cleanliness	ensuring clean air and clean water
Liberty/ Oppression	joy, loathing	independence, respect for autonomy, rationality	self-sufficient forms of energy

Source: Adapted from Haidt, J. (2012). *The righteous mind: Why good people are divided by politics and religion.* New York: Pantheon.

TIPS Put Yourself in Your Audience's Shoes

Consider the following questions when thinking about audiences and the role that existing beliefs and attitudes play in shaping how they respond to climate change.

- Who is your target audience?
- What relevant beliefs does the target audience already hold? What do you know about audience members' core values and worldviews? How can you help people recognize where climate change solutions can line up with those values and worldviews? (See **SIDEBAR 1: Getting to Know Your Audience,** for tips on finding this information.)
- What identities do your audience members hold? Are they religious? Liberal? Conservative? Do they work on farms? On Wall Street? Are they single or married? Do they have children or grandchildren? Will reminding people of these identities make them more or less likely to want to positively engage with climate change?
- What virtues and moral values do your audience members find most important? How can you frame your message in a way that shows how doing something about climate change can help people put those virtues into practice?
- What moral foundations might be most important to your audience? (See **TABLE 1: Moral Foundations and their Characteristic Emotions, Virtues, and Examples** and **SIDEBAR 4: Understanding and Connecting with Moral Foundations**.) How can you show that climate change issues relate to those moral foundations?
- Who does your audience trust and respect? Can any of these individuals serve as messengers for a climate communication strategy? (See **SIDEBAR 2: Choosing the Right Messenger for Your Audience**.)

2 Channel the Power of Groups

"Well, if my church is getting involved…"

At their core, humans are social beings, and their identities and memberships in social groups and networks play a seminal role in shaping their attitudes and behaviors. This section explains how people behave and process information differently in groups, which groups are most likely to help catalyze climate engagement, and how communicators can harness groups and social networks to keep people engaged on climate change in the long run.

How People Think and Behave Differently in Groups

People often think and behave differently when they're physically part of a group or reminded of their membership in a group. When people make decisions or process information as part of a group, their goals may shift toward promoting outcomes that are good for the group rather than promoting outcomes that are good for only themselves as individuals. These effects are driven by a number of mechanisms unique to group settings, including an enhanced sense of affiliation and connection with other people, an increased tendency to follow the group's norms, a weakened focus on personal identities and goals, and the desire to avoid social ostracism and exclusion.

SIDEBAR 5

Talking about Climate Change in Group Settings

People process information about climate change differently when they engage with it in a group setting, such as a focus group or neighborhood meeting. In groups, people often consider a wider range of possible options and show deeper engagement with arguments and various courses of actions that are proposed. Australian researchers Anne Pisarski and Peta Ashworth have found that facilitated small-group discussions can produce positive changes in climate attitudes and support for policy solutions.[25] Their "Citizens' Round Tables" provide non-expert members of the public an opportunity to voice their own opinions, ask questions without fear of ridicule, and see themselves as engaged citizens trying to tackle this large problem.

As with other successful group-based strategies, Citizens' Round Tables start with an interactive discussion that provides an opportunity for group members to bond with one another and express their initial attitudes and beliefs. Only once people are comfortable and engaged do they receive a short, focused presentation from a climate scientist. Using multiple formats and media (video, PowerPoint, fact sheets), presenters give participants accurate information about various energy futures and their impacts on climate change. Finally, participants engage in a second discussion with each other and with the scientists in the room, so they can integrate and consider the information they have been presented. Although time-intensive, such focused, group-based approaches to climate change communication can be highly effective. Communicators may wish to keep in mind that **involving highly influential members of society, including policy makers and community leaders, may be an especially productive approach to promoting broader diffusion**.

Climate communicators can channel the influence of groups by helping people view their actions and responses to climate change as part of a larger group effort, whether that group is a neighborhood, a company, or a faith-based organization. Framing climate change as a group challenge is particularly important given the large-scale nature of the problem (which can activate feelings of inefficacy and despair if people focus solely on their own contributions).[23] Climate communicators may also wish to create opportunities to allow people in a community to discuss climate change and climate solutions in group settings. (See **SIDEBAR 5: Talking about Climate Change in Group Settings**.)

Mobilize Social Groups and Networks

One powerful way to keep people engaged in the long term is to weave climate change into the activities of existing social groups and networks, such as neighborhood associations, religious groups, clubs, parent–teacher associations, or company departments. People are more likely to become engaged on an issue when a group they are a part of—and that's important to them—cares about it. The most relevant groups are often relatively small and geographically local, such as a neighborhood or a group of work colleagues. Dispersed but highly interconnected groups (such as virtual, internet-based groups through

Facebook and other social media sites) may also prove fruitful for climate engagement.

Groups and social networks that are particularly powerful are those that hold strong, shared beliefs about questions of "right and wrong." These groups are often able to encourage members to follow group norms of behavior, meaning that a shift in thinking or acting among group leaders can have effects on many others. (For more information on norms, see **SECTION 10: Make Behavior Change Easy**.) Communicators can be particularly effective by identifying and working with such groups, as well as with those that are ready to take action on climate change but are not yet doing so. Providing climate communication and engagement resources to leaders within these groups can be an especially effective strategy for eventually activating the group's entire membership.[24]

SIDEBAR 6

Getting New Constituencies Talking about Climate Change: The Climate Conversations Project

Congregations across Minnesota are holding small, peer-to-peer conversations about climate change as part of a new initiative called the Climate Conversations Project.[26] The conversations, which are led by Minnesota Interfaith Power & Light with assistance from Climate Access and other researchers, are designed to increase engagement around climate change among those who aren't already talking about and acting on the issue. Facilitators pose guiding questions that help participants uncover why climate change is personally relevant, how it relates to what they already value, and what they can do to take action on the issue. The inspiration for the project came from the marriage equality movement, which used similar conversations to catalyze changes in people's beliefs around marriage for gay couples.[27] Initiatives like these have shown that people are more likely to become engaged on an issue when it is brought onto their radar by a group to which they belong and that they deem important.

SIDEBAR 7

Group Affiliation and Cooperation

CRED researchers designed an experiment to measure the effects of social goals, in particular the effect of affiliation on cooperation.[28] Students were split randomly into four-person groups (analogous to four large greenhouse gas emitters). The researchers created different levels of affiliation among group members (temporary, short-lived connections). Groups then played a game that rewarded those who chose to defect rather than cooperate. CRED researchers found the following: as affiliation increased, so did cooperation; affiliation made social goals (for instance, concern for others) a greater priority; and the added benefit of cooperation more than made up for the sacrifice (in this case, monetary sacrifice). Students reported that they felt good about cooperating. Communicators who want to promote cooperation should try to activate concern for others by combining social and economic appeals and by emphasizing an affiliation among group participants. This approach can be more effective than offering economic incentives alone.

A related study shows that when identification with one's group is very high, people are willing to overcompensate for defectors within their group (that is, group members who act selfishly and don't support the greater good of the group) at a personal cost and even when defectors end up doing better than they do. At least part of the motivation for the person overcompensating is a desire to be perceived as "ethical" and as a role model for the not-so-good group member. Tapping into group affiliation and identity not only can lead to greater engagement and cooperation among group members but can also be a powerful tool to help groups reach tipping points in behaviors even when some group members are defecting (not doing the right thing for climate change).[29]

TIPS

Channel the Power of Groups

Most Americans are part of at least one formal or informal social group, like a company department, faith or religious organization, parenting group, professional association, or athletic group. These groups can serve as powerful conduits for climate engagement. Consider the following questions regarding the role of identity and goals:

- What relevant social networks (parents of children in a particular school, for example) and groups (religious denominations or congregations, sports clubs, companies, the Rotary Club) is your audience already a part of?
- Who are the leaders of these groups? Would any of them be amenable to serving as a messenger for your climate communications strategy? (See **SIDEBAR 2: Choosing the Right Messenger for Your Audience**.)
- What values of these networks and groups align with climate solutions?
- How can your audience's existing group identities and networks be leveraged to make climate change salient and personally relevant?
- How can you strengthen individuals' affiliations with each other and thus increase their likelihood of acting cooperatively?
- What opportunities can you create that will allow people in your audience or community to discuss climate change and to brainstorm possible solutions as a group? (See **SIDEBAR 5: Talking about Climate Change in Group Settings.**)

CRAFTING YOUR MESSAGE:

Solutions, Impacts, Framing, and Imagery

CRAFTING YOUR MESSAGE: SOLUTIONS, IMPACTS, FRAMING, AND IMAGERY

Starting with people and their values, worldviews, identities, and group memberships is a critical first step in effective climate change communication. But climate communicators also need to understand how to craft messages that incorporate both climate impacts and climate solutions and that show how climate change relates to other issues people care about. This part of the guide explains why it's essential to keep solutions and benefits front and center, provides tips about how to communicate about climate impacts in a way that both personalizes the issue and empowers people to act, describes how to link climate change to other issues audiences care about through framing, and overviews how to use imagery and storytelling to bolster climate engagement.

Solutions should be described in a way that identifies specific roles for individuals and local communities to play, either in the development or implementation of proposed strategies.

3 Emphasize Solutions and Benefits

"This is just so depressing."

Recent research indicates that a critical barrier to greater public engagement on climate change is the perception that the problem is simply too big to solve.[30] *People realize that confronting climate change will require collective and political action, yet many have little faith in one another and even less in government to solve the problem.*[31] *Not believing that climate change can be solved can paralyze people through apathy and hopelessness and eventually create a self-fulfilling prophecy. To avoid this, climate communicators should take care to put climate solutions and benefits of action front and center. This section describes how "solutions-first" messages can foster engagement, explains why communicators need to help their audiences feel like they can be part of the solution, and helps communicators identify the scale of solutions they should communicate.*

Lead with Solutions to Boost Engagement

Climate communicators often assume that people have to be convinced that climate change is happening before they will support solutions or

take action. However, this is not the only way to approach the issue. In fact, **leading with solutions, rather than the problem, often makes it easier for people to accept that climate change exists.**[32] **This may be especially true when people hear about strategies to prevent or prepare for climate change that align with their values and worldviews.**

Solutions imply action and opportunity. They also provide a goal to reach for, individually and collectively. **When communicators help people envision solutions to climate change, they provide a positive vision of what the future could be like. This can help quell counterproductive feelings of hopelessness and dread.** Images of possible new energy production mechanisms and systems, for example, can provide people with a buffer against the otherwise paralyzing negative emotions about climate.[33] "Solutions-first" messages may also help promote positive emotional responses, including pride and hope, that can motivate action and engagement. It is important to identify solutions that match the level of action that the audience can take. One way to do this is to generate strategies and activities through a participatory process involving representatives of all relevant parties. The Red Cross Red Crescent Climate Centre has applied this approach in developing an early warning/early action system with residents along the Senegal River.[34] Through participatory games, mapping exercises, and discussion, community members generated more than three hundred new ideas for possible actions to take prior to and during a flooding event.

Show Your Audience Members How They Can Become Part of the Solution

People are unlikely to take action when they don't believe an issue can be solved—either through their own or others' efforts. **Successful communication must therefore build confidence that climate change can be addressed.** People's sense of personal and collective ***efficacy***—the capacity and willingness to successfully confront the challenge—is part of what ultimately drives how they respond to the threat of climate change.[35]

Generating positive emotional responses and a sense of efficacy requires that people believe two things about proposed solutions: first, that proposed actions, technologies, or policies can actually solve the problem; and second, that those solutions will actually be implemented. Equally important, solutions should be described in a way that identifies specific roles for individuals and local communities to play, either in the development or implementation of proposed strategies. For large-scale political solutions, this role may be as motivators of change, being part of an engaged citizenry, or taking political and civic action. For more local-scale solutions, the engagement may be more direct: from shifting consumption practices to working with local leaders to encouraging new business models to changing one's own behavior and encouraging one's friends and family to do the same.[36]

Another strategy for helping audience members understand how they can be a part of the solution is discussing the ***behavioral wedge***. The "behavioral wedge" is a term coined by researchers who found that household behavior could make a substantial difference in reducing greenhouse gas emissions as part of a comprehensive climate action plan that includes a number of large-scale technological innovations and responsible policy making to decrease emissions to 80 percent below 1990 levels.[37] Adding a behavioral/personal action component to the wedge approach would mean that in the U.S. residential sector alone, emissions could be reduced in an amount equivalent to the total emissions of France. The majority of this potential comes from

the adoption of energy-efficient behavior and technologies at the household level. Emphasizing the scale of impact that personal choices can have may help inspire audiences to take action.

Highlight the Benefits of Taking Action

Climate change is not an isolated issue. The impacts of climate change extend to the economy, public health, agricultural systems, national security, and even psychological well-being. This also means that responding to climate change can bring benefits to other areas of society. For example, responding to climate change can bolster our health and well-being, strengthen community cohesion, and catalyze economic opportunities in the United States and across the world. **Research indicates that emphasizing co-benefits, especially when they are immediate and personally relevant to audience members, may be an especially effective way to get more people on board with solutions.**[38]

Align Solutions with Your Audience's Values and Priorities

As discussed throughout this guide, people are more likely to respond positively to climate change communication efforts that speak directly to their values. This fact is especially true for communicating about solutions. When proposed solutions align with people's values and worldviews,

people are more likely to endorse both the solution and the existence of climate change.[39] However, the reverse is equally true: when there is a mismatch between the solution (such as greater regulation by federal government agencies) and people's values or worldviews (such as a strong focus on individualism rather than collectivism), people are likely to reject both the solution and the larger issue (even those who might otherwise believe climate change to be a problem). Communicators may also wish to consider using traditionally masculine cultural themes, such as boldness, scale, and dominance, when talking about climate solutions to align with the values and worldviews of, for instance, self-reliance, independence, or patriotism.[40]

Communication efforts should thus:

- Help people **identify how a proposed solution allows them to pursue the priorities and values that they already care about**
- **Link solutions to values that are widely shared** (such as patriotism, independence, and freedom in the United States)
- **Incorporate and account for values and identities in the design and implementation of climate solutions.**[41]

Presenting solutions that align with people's values and goals is also likely to generate greater engagement because individuals, communities, businesses, and organizations see how these solutions will benefit them. This may be particularly true with local-scale or sector-specific solutions. For example, recent efforts to sequester carbon in grasslands and rangelands could motivate individuals and communities who might otherwise be skeptical of climate science and policy with the use of associated financial incentives. (For example, ranchers could be paid to manage their lands in ways that increase how much carbon is sequestered in the ground.)[42] Other research suggests that presenting wind and solar energy as opportunities to bolster the American manufacturing base and to lessen U.S. dependence on foreign oil, which are key priorities for some Americans, could be especially effective in motivating support among some conservatives.[43]

Scale from Local to Global Solutions

Communicators should strive to highlight the personal and local aspects of climate change when possible, with regard to both climate impacts and climate solutions. Connecting local-scale solutions to local-scale impacts helps people see and recognize cause-and-effect relationships between climate actions and outcomes for themselves, something that is harder to communicate when talking about solutions to an issue perceived as far off in time and space. Ideally, proposed solutions are win-win: they both help combat climate change *and* address visible, well-known local issues or local climate impacts.

Solutions should also match the impact and scale of the issue: talking about hyperlocal solutions but framing climate change as a global phenomenon (or vice versa, focusing on local impacts but promoting only national or global policy responses) may backfire by confusing people or making them skeptical that the solutions and problem actually fit one another.

Put Technological Solutions in Context

Highlighting solutions to climate change is a powerful route to engaging people on the issue. However, not all solutions are created equal, and communicators need to be careful not to induce backfire effects by promoting solutions that are mismatched to the scale or time frame of the problem. Some proposed solutions (such as nuclear fusion) could actually

decrease motivation for individual-level action. This is particularly true of technological solutions, which can undermine engagement by promoting false beliefs of "technosalvation" or "solutionism" and can reduce motivation to take personal or collective responsibility.[44] **Solutions that are not plausible at the time of communication (such as immediate widespread adoption of distributed renewable energy systems) should be promoted along with, not as a replacement for, the individual- and local-scale solutions that will also need to take place.** Communicators should also acknowledge that some technological solutions can have (or can be perceived as having) unintended dangerous side effects and should be mindful of people's possible fears associated with engineering innovations. ■

The following table provides examples of climate solutions for various sectors.

TABLE 2

Climate Solutions and Mechanisms to Facilitate Them

Sector	Suggested Climate Solutions and Mechanisms
Energy production	• increasing renewable heat and power (solar, wind, hydropower, geothermal, and bioenergy) • reducing subsidies for fossil fuels • taxing fossil fuels • implementing incentives or requirements to source electricity from renewable/clean sources (such as the Renewable Portfolio Standard) • providing subsidies for producers of renewable energy • facilitating carbon dioxide capture and storage (CCS) • implementing power plant emissions limits • switching from coal to natural gas in the interim • using nuclear power in the interim
Transportation	• using fuel-efficient vehicles, hybrid and electric vehicles, and cleaner diesel vehicles • using biofuels • using and improving public transportation • using nonmotorized forms of transportation (walking and biking) • improving and implementing fuel economy standards for vehicles • changing transportation and land use planning to influence mobility needs • taxing vehicle purchase, registration, and use • pricing road usage and parking

Buildings and homes	• using more efficient lighting, such as CFLs and LEDs • using daylight instead of artificial light • using more efficient electrical appliances and heating and cooling devices • improving insulation • using solar heating and cooling • using appliance standards and labeling that show energy usage • encouraging consumers to use less energy during peak hours • implementing building codes and certification • using smart meters that provide feedback and control
Industry	• recovering heat and power from manufacturing processes • recycling materials • replacing materials with climate-friendly materials • controlling emissions of all greenhouse gases that contribute to climate change (for example, methane and nitrous oxide) • creating and using more efficient electrical equipment • facilitating voluntary agreements with clear targets to reduce pollution • implementing cap and trade systems (like the Regional Greenhouse Gas Initiative in the Northeast)
Food and agriculture	• improving crop and grazing land management to increase the amount of carbon soil storage • using fertilizer more efficiently to reduce nitrous oxide • irrigating crops more efficiently • improving livestock and manure management to reduce emissions of methane • improving energy efficiency in the agricultural sector • providing incentives and regulation for improved land management
Forestry/ forests	• facilitating afforestation (planting trees where there didn't used to be trees) and reforestation (planting trees where trees have been cut down) • using forestry products to create bioenergy to replace the use of coal and oil • facilitating and improving land-use regulation • facilitating and improving forest management and reducing deforestation
Waste	• composting organic materials such as food scraps • recycling and reducing waste • recovering methane pollution produced by landfills • capturing energy produced during waste incineration • controlling wastewater treatment • facilitating regulations and incentives for better waste and wastewater management

Note: The guide authors do not endorse these solutions and mechanisms. Rather, they are suggestions for policies and actions that climate communicators may wish to highlight in their climate communication strategies.

Source: Adapted from Table SPM.4: "Selected Examples of Key Sectoral Mitigation/Adaptation Technologies, Policies and Measures, Constraints and Opportunities" in the Intergovernmental Panel on Climate Change's 2007 Synthesis Report. Available at: www.ipcc.ch/publications_and_data/ar4/syr/en/spms4.html#table-spm-5.

TIPS Emphasize Solutions and Benefits

Helping people imagine a brighter future for their family and community without dangerous climate impacts should be a central goal for climate communicators. Doing so will boost perceptions of personal and collective efficacy and circumvent potential roadblocks to engagement and action, such as fatalism, apathy, doubt, and denial. Providing your audience with concrete, plausible solutions to climate change is one way to accomplish this goal.

Moreover, when people believe there are solutions available, they are more likely to perceive climate change as a problem worth addressing. Whatever solution your organization promotes (see **TABLE 2: Climate Solutions and Mechanisms to Facilitate Them** for ideas), communication efforts should emphasize the role that individuals and local communities have to play in making those possibilities a reality and the benefits that they will accrue as a result of responding to the issue. When developing solutions-based messaging, communicators should consider the following questions:

- Does your strategy highlight solutions to climate change or does it focus exclusively on making people understand the problem?
- Can you clearly communicate the personal benefits of the proposed solution? Do these benefits seem tangible and immediate?
- Are you framing solutions in a way that aligns with the values and identities held by your target audience? Are you communicating how a proposed solution allows your audience to pursue the goals and values they already care about?
- Do the solutions being proposed involve or require individual-level or community-level action? Does your communication make clear which type of action (if any) is required of the audience to whom you're communicating?
- Are you communicating solutions that are plausible at the time of communication?
- Are you being careful not to underpromote the role that individuals and communities need to play, even for large-scale technological solutions?
- Are you focusing on the local aspects of solutions whenever possible?

4 Bring Climate Impacts Close to Home

"But climate change isn't affecting me."

Over the past few years, the narrative about climate change impacts has shifted. Where communicators once focused on polar bears losing their habitat in the Arctic as a key impact of climate change, more communicators are now focusing on impacts that climate change–induced extreme weather will have around the United States. Despite such recent efforts to make climate impacts resonate better with audiences, many people continue to perceive climate change as a distant issue that won't affect them personally.[45] *This section describes how climate communicators can encourage people to respond to climate change by focusing on local impacts, highlighting personal experience, focusing on the "what" and not the "when," and pairing impacts with solutions.*

Focus on Local Impacts

People have a hard time thinking about—or acting on—things and events that are perceived as far in the future, physically distant, happening to other people, or involving uncertainty. Psychologists refer to these as dimensions of ***psychological distance***.[46] Climate change is a prime example of a psychologically distant phenomenon. Thus our minds are not designed to immediately react to climate change, which can weaken motivation to take action.

To overcome these challenges, communicators can use vivid imagery and messages to help people identify the locally relevant, personally experienced consequences and impacts that climate change is already causing.[47] (For more on the use of imagery in climate change communication, see **SECTION 6: Use Images and Stories to Make Climate Change Real**.) For example, the concept of rising sea levels may feel distant or abstract to many people, even those who live on or near the coast. To make this impact more concrete, communicators can describe future water levels in terms of recent flood events that are vivid and easily imagined.[48] Communicators might describe how climate change risks could put parts of a city that were flooded during a past storm underwater more frequently or even permanently. Climate communicators can

SIDEBAR 8

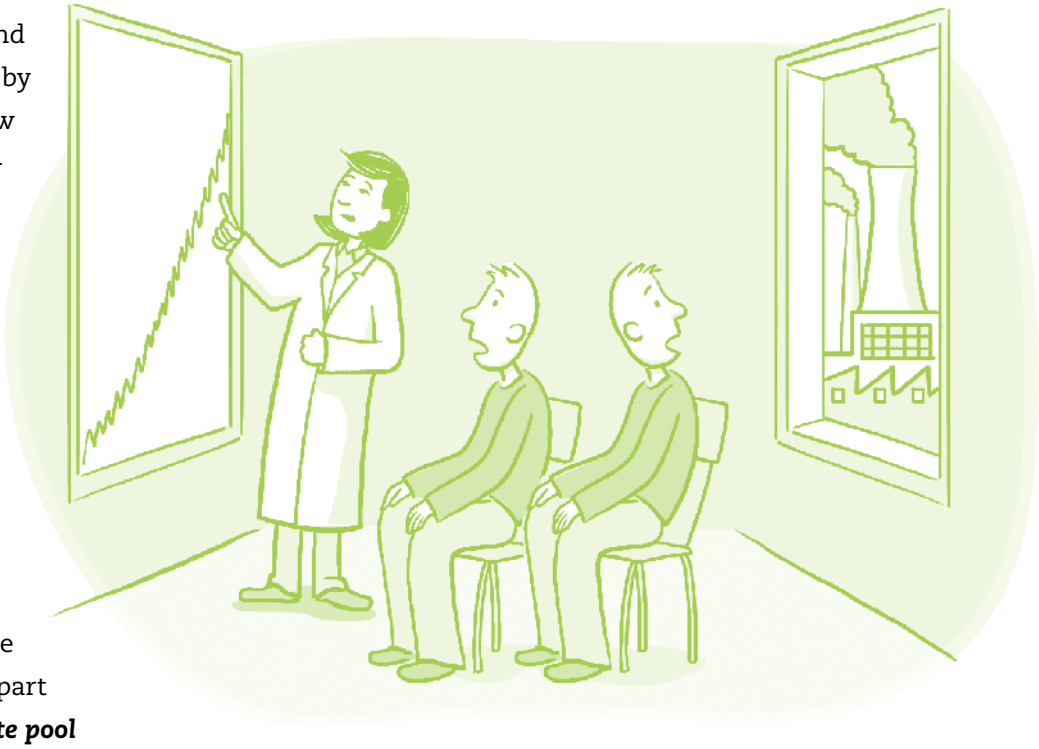
Making Climate Change Concrete through Experience, Real or Virtual

The most vivid way for people to learn about the impacts of climate change may simply be to experience them. Seeing water lapping at one's doorstep removes the psychological distance of flooding in every way: it is certain, it has been pulled out of the future and into the present, and it is physically close and personal. Some evidence suggests that communities that are already experiencing flooding may be better able to connect these events with climate change. Indeed, flood experience has been shown to increase concern about climate change and to reduce feelings of uncertainty.[57]

However, not all communities experience hazardous events that connect easily back to climate change. Moreover, waiting for a natural hazard to strike is of course a costly way to bring climate change psychologically closer to the public. **Personal experience with flood events is only one way to make climate change feel closer and more concrete. Other ways include asking people to detail the specific actions they would take in the event of a hazard, listing the individual effects the hazard is likely to have on their homes, facilitating participation in evacuation drills or mock emergency events, and encouraging people to update their disaster preparedness kits.**

Many groups have made sea level rise psychologically closer to the public by creating "blue line" projects that pair scientists with artists to paint the height of future sea levels on waterfront buildings and infrastructure. Seeing a line of blue paint on telephone poles, mailboxes, and downtown buildings provides a very concrete image of what sea level rise will mean for individuals and communities. Besides increasing support for global efforts to reduce climate change, this type of awareness-raising project has the additional advantage of promoting local preparedness, such as improving building codes or even retreating from flood-prone areas. However, climate communicators should take care to acknowledge the emotional and psychological effects that result from experiencing climate change directly or virtually and should build people's confidence that they can effectively take action on the issue.[58]

also use interactive tools and maps such as those created by Climate Central, which allow people to visualize how different degrees of sea level rise will affect their own neighborhoods.[49]



Highlight Personal Experience

People's lives are filled with immediate and near-term concerns, most of which are perceived as more pressing than climate change. This is the case in part because people have a ***finite pool of worry***, meaning they are able to worry about only so much at any given point. Yet it turns out that many people, including most Americans, are already feeling the negative impacts of climate change, even if they don't associate those impacts with climate change.[50] **Helping people identify the local and personally relevant impacts of climate change—including loss of property from intensified extreme weather events and the greater spread of infectious diseases—may go a long way in making the problem salient and urgent for more people.**

In addition, highlighting people's personal experience with current, local impacts of climate change in general is likely to increase audiences' engagement with the issue more so than communicating additional abstract facts and figures. This is in part because direct experience with climate impacts affects people's perceptions of the risk of climate change and how worried they are about the issue. Researchers in the United Kingdom, for instance, have found that people who have experienced major flooding events report higher concern about climate change and are more certain that it is happening.[51] Other research has found that the effects of personal experience of climate impacts are particularly strong among individuals and communities that tend to be more skeptical of climate change.[52]

Climate communicators should keep in mind, however, that there is a fine line between productively engaging people through their personal experiences with climate-related impacts and unintentionally leading people away from positive engagement with the issue. **Making the issue "too real and too scary" repeatedly is a possibility and can lead to denial of the problem.**

Climate communicators should also exercise caution in attributing specific extreme weather events or other environmental and societal changes to climate change. While scientists know that the frequency and/or severity of many extreme weather events—such as storms, droughts, floods, and extreme temperatures—are increasing with climate change, scientists are unable to attribute any one specific event to climate change.[53] One useful metaphor to

help explain this phenomenon is that of a baseball player using steroids. While no one can know whether any particular home run is directly attributable to a player's use of steroids, one can be reasonably sure that the likelihood of the baseball player hitting home runs is greater as a result of his use of steroids.

Pair Impacts with Solutions to Avoid Emotional Numbing

Communication strategies and messages that make climate change concrete and vivid without simultaneously building feelings of hope, pride, and efficacy are unlikely to be effective, as they are likely to lead to emotional overload and paralysis. If communication efforts repeatedly expose people to emotionally draining messages and images, audiences may eventually stop responding emotionally altogether, a phenomenon that psychologists call ***emotional numbing***.[54] **One key to avoiding these effects is to tie concrete, personal climate impacts to immediate, local solutions already available to individuals and communities.** Using the same overarching frame (for example, public health or clean energy jobs) when communicating challenges and potential solutions can be an especially effective way to make sure the audience both understands the issue and feels empowered to be part of the solution. For example, talking about negative economic impacts of extreme weather could be paired with highlighting opportunities for entire new job sectors in renewable energy to generate feelings of hope and efficacy. See **SECTION 5: Connect Climate Change to Issues That Matter to Your Audience** for more information about using frames effectively.

If communication efforts repeatedly expose people to emotionally draining messages and images, audiences may eventually stop responding emotionally altogether.

Focus on the "What," Not the "When"

One of the mistakes communicators often make is assuming that people will interpret and understand numerical and statistical information exactly as communicators intended. In reality, people often distort, misunderstand, or simply ignore such information, particularly information about mathematical probabilities. **To overcome these obstacles, communicators should focus on the consequences of particular impacts or events (such as a drought or major flood) rather than on the probability or likelihood that such an impact will occur within a particular period of time** (such as this hurricane season or next year). Similarly, common terms used by scientists to describe major events, such as "hundred-year flood," can make people think they are safer than they are in the few years immediately following such an event. Again, climate **communicators should avoid terms like these and instead focus on describing what *will* happen the next time that impact occurs locally.**

Be Sensitive to Recent Losses and "Near Misses"

Highlighting recent losses and major climate-related events can help people understand why climate change is personally relevant and requires immediate action. Yet highlighting these types of events can also quickly backfire if people think that communicators are trying to exploit recent tragedies and fragile emotions to pursue their own ends. Communicators can avoid these negative effects by helping people move quickly from identifying local impacts to embracing local solutions, particularly those that have to do with preparedness. **People will take risks more seriously—and be more likely to act—when they perceive the impacts of climate change as local and personal *and* when they understand concrete steps they can take to prepare for or prevent those impacts moving forward.**

On the other hand, recent "near misses" (as occurred for many people in the New York City area with Hurricane Irene) can push people in the opposite direction. Near-miss events—when people are warned of an impending storm or other negative impact that ends up not happening—can decrease people's trust in communicators and scientists, increase resistance to paying up-front costs for preparedness, and make people generally complacent about future warnings. Specifically, when near misses are interpreted as disasters that *did not occur* (versus events that *almost happened*), people underestimate the danger of subsequent hazardous situations and make riskier decisions.[55] **When interacting with individuals or communities that have recently experienced near misses or false alarms, communicators should be careful to focus people on *what they need to do* to keep themselves safe when the next storm, drought, or other impact does hit, regardless of exactly *when* the negative event will happen.** ■

SIDEBAR 9

The Psychological Impacts of Climate Change

When people think about climate change, they often think about the impacts it will have on the weather and the physical environment. This can make climate change seem distant and abstract. Yet climate change will also have significant impacts on our mental health. For example, as climate change progresses, experts expect heightened levels of stress, anxiety, depression, and post-traumatic stress disorder, as well as a loss of community identity and increases in interpersonal aggression.[59] Communicating about these more tangible impacts of climate change may help personalize the issue and motivate people to take action to prepare for and prevent these effects. As with any climate communication, communicators should take care to balance a focus on the psychological impacts of climate change with a focus on how individuals and communities can prepare for and prevent them.

TIPS

Bring Climate Impacts Close to Home

For most people, climate change is perceived as a distant threat. Even when events made more severe by climate change—such as storm surges or extreme droughts—occur, many people may not readily connect them to human-induced climate change. Communicators should strive to highlight local-scale impacts that are already occurring—and that will occur in the future—as a result of climate change. However, it is important that communicators also explain the need for and build people's confidence in the possibility of preparedness and prevention responses by individuals and communities.[56]

Consider the following questions as you are putting together your communication strategy about climate impacts:

- Are you helping people identify the locally relevant consequences and impacts that climate change is already causing?
- Are you pairing climate impacts with solutions to avoid emotional numbing and to bolster engagement?
- Are you being sensitive to people's recent losses when discussing local impacts and hazards from climate change?
- Are you focusing on the "what" rather than the "when" for disasters and avoiding terms like "hundred-year-flood"?
- Have members of your target audience recently experienced one or more near misses or false alarms involving major hazardous events? If so, how will you confront the challenges this can pose to future decision making?
- Does your strategy help people identify ways to prepare for future events and impacts?
- Are you employing strategies that focus on resilience and preparedness to help make climate change more concrete and to help guide people toward action?

5 Connect Climate Change to Issues That Matter to Your Audience

"I just don't get why this matters to me."

Effective climate change communication helps people make the connection between their personal concerns and climate change. To tell a compelling story, communicators need to make decisions about what information or perspectives to highlight through the process of framing. This section helps communicators understand how to find and use frames that highlight information that will be most meaningful for their audiences and will be most likely to generate meaningful engagement.

Connect Climate Change to Issues That Matter to Your Audience Using Content Frames

Climate communicators are more successful when they show how climate change connects to issues or concerns that their audiences care about. ***Content frames*** describe who, what, why, and how. Content frames might highlight, for example, public health implications of climate change, the relationship between climate change and national security, or how climate change (and climate solutions) affects personal health and family well-being. One frame that has received increasing attention is a human health frame, especially with regard to the Environmental Protection Agency's regulations for emissions from coal-fired power plants. To learn more about framing climate change in terms of human health, see **SIDEBAR 10: Using a Public Health Frame to Talk about Climate Change**. Unsurprisingly, different content frames speak to different audiences and motivations. (See **SIDEBAR 11: Framing and the Politics of Carbon**.)[60]

Provide a Coherent Narrative: Match Audience Priorities with Structure Frames

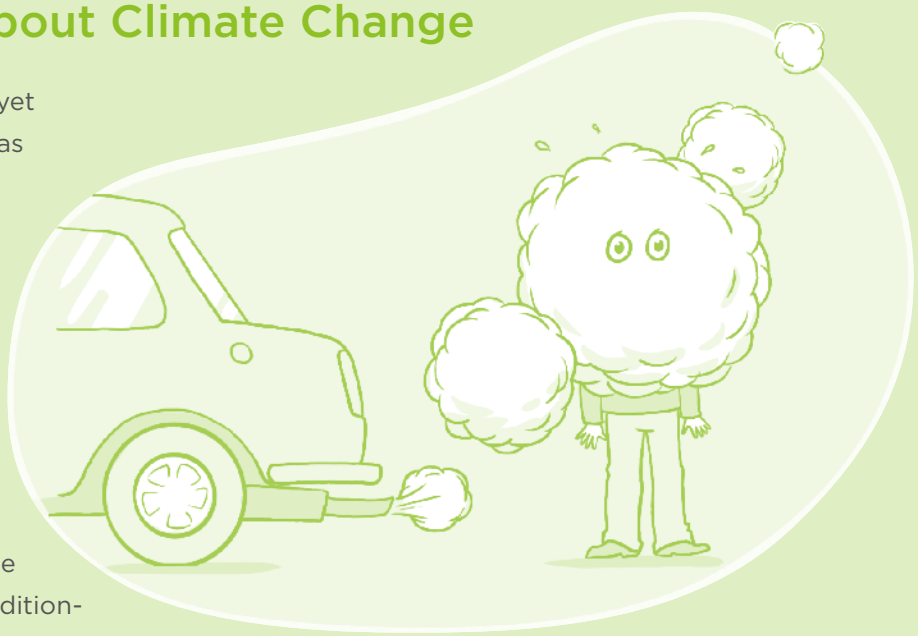
While content frames provide the outline of the narrative a communicator will develop about climate change, another type of frame can shape how particular aspects of the problem or solution are presented. Such frames, which usually have to do with subtle yet powerful changes in wording, are called ***structure frames***.

Structure frames shape how an audience relates to a message by emphasizing "when," "where," and "how many." For example, communicators can frame climate change in terms of potential losses versus gains, local versus nonlocal impacts, the present versus the future, and preventing bad outcomes versus promoting positive outcomes.[61] Impacts on nonhuman species, for instance, can be discussed in terms of "saving biodiversity" (gain frame) or "species extinction" (loss frame).

Researchers have identified a number of structure frames that play a strong role in affecting how people perceive climate change. Communicators

SIDEBAR 10

Using a Public Health Frame to Talk about Climate Change



Many Americans do not yet perceive climate change as a threat to human health. Drawing attention to the connections between climate change and human health may be an effective method for elevating public concern about climate change in the United States. This is especially true for people and groups that have traditionally been skeptical about the negative environmental effects of climate change.[66] By articulating the serious health consequences of climate change and fossil fuel burning, such as more severe and widespread asthma and allergies, more illness and death from extreme heat, and the increased spread of disease, communicators can help frame climate change as a concrete, personal concern for everyone. Health-based messages are often even more effective when they include real stories about people suffering from asthma or heat-related illnesses and when they include statistics from credible, nonpartisan sources like the American Lung Association.[67] Another best practice is to describe how climate change will impact the lives of the most vulnerable populations, like children and the elderly.[68]

Framing solutions to climate change—such as advancing the clean energy economy—in terms of health benefits may also help increase engagement and support for action. The combustion of fossil fuels creates "dirty energy" and emits large amounts of health-damaging pollutants. In addition to advancing climate change, these emissions directly pollute the air and water that people rely on for good health. Highlighting the health impacts of such air pollution—and avoiding direct mentions of climate change—has been found to increase support for mitigation policies among political conservatives.[69]

Communicators may also wish to emphasize the health benefits that come from taking steps to prepare for and help prevent climate change. These benefits include more bicycle- and pedestrian-friendly communities, healthier food, reduced motor vehicle–related injuries and deaths, cleaner air and water, increased physical activity, decreased obesity and reduced morbidity and mortality associated with it, increased social capital and well-being, and lower levels of depression.[70]

should carefully consider each of the following frames and how an audience might respond to it. In some cases, research suggests a clear recommendation about which frame to use no matter what. In other cases, climate communicators need to determine which frame is likely to be most effective with their audiences on a case-by-case basis.

Loss versus Gain: Many environmental issues can be framed either positively or negatively, which can impact how an audience perceives and evaluates them. For example, highlighting the potential for climate change to threaten our way of life evokes a negative, loss frame. In contrast, many preparation-oriented messages use a gain frame when they focus attention on benefits that come from building more resilient communities and infrastructure. The negative feelings associated with losing something (such as losing $100) generally outweigh the positive feelings associated with gaining that same thing (such as winning $100). When policies and outcomes

SIDEBAR 11

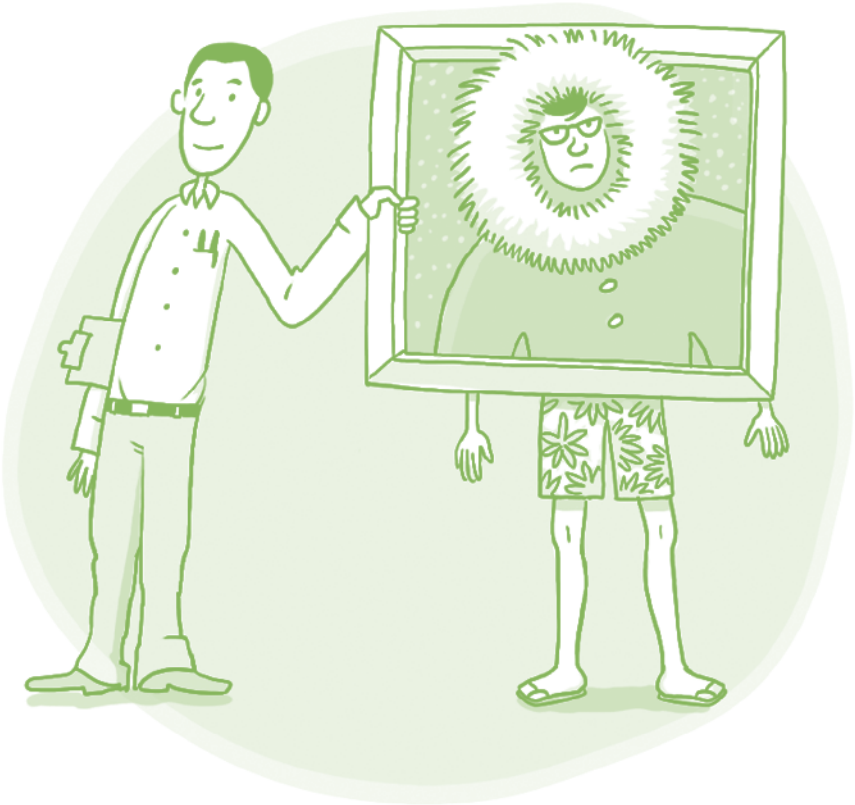
Framing and the Politics of Carbon

Although many economists and climate scientists agree that a carbon tax would be the most streamlined step the United States could take to reduce its contribution to climate change, support for a carbon tax among major politicians is fairly limited. At the same time, many businesses and individuals voluntarily purchase carbon offsets (or carbon credits), which promise to balance out the greenhouse gases produced by particular activities they are engaging in, such as flying across the country. How much of this support is a reflection of the framing power of the words "tax" and "offset"? CRED researchers polled a large national sample about a program that would raise the cost of certain products believed to contribute significantly to climate change (such as air travel and electricity) and use the money to fund alternative energy and carbon capture projects. The identical program was described as a carbon tax to half the respondents and as a carbon offset to the other half. This simple change in framing had a large impact on whether people said they would buy a product with an inclusive carbon fee. When considering a pair of products, 52 percent of respondents said they would choose the more expensive product when the cost increase was labeled a carbon offset, but only 39 percent said they would choose it when the cost increase was labeled a tax. Support for regulation to make the cost increase mandatory was greater when it was labeled an offset than when it was labeled a tax.

Strikingly, the framing effect interacted with respondents' political affiliations. More liberal individuals were equally likely to support the program regardless of the label used, but more conservative individuals strongly preferred the carbon offset to the carbon tax. A follow-up study revealed that the tax label triggered many negative thoughts and associations among more conservative individuals, which in turn led them to reject the carbon tax. These findings demonstrate that communicators should carefully consider the way in which carbon regulations are labeled or presented. Communicators may wish to use politically neutral terms when describing carbon regulations, such as the label "user fee," which makes the point that those who receive a benefit should pay for it.

are framed in terms of potential losses, people are usually willing to take bigger risks to avoid those negative outcomes.[62] The reverse is also true: when policies and outcomes are framed in terms of potential gains, people become more risk averse, preferring "sure bets" or smaller, less risky choices. **Communicators can use this knowledge when deciding whether to frame a message or decision as a loss or a gain, depending on whether the goal is for people to make a risky choice (investing in certain insurance policies) or a less risky choice (line drying clothes to save energy).**

Present versus Future: People tend to perceive immediate threats as more relevant and of greater urgency than future problems.[63] Because people ***discount the future*** (thinking it will be easier to solve future problems due to an [unrealistic] technological fix or an [imagined] greater availability of financial resources), **communicators should generally try to highlight the impacts of climate change that are already being experienced in the present or are likely to occur in the very near future.** This will create an urgency to act now. Similarly, people tend to think that it will be easier to part with money if necessary in the future, as demonstrated by research that shows that employees are often willing to commit next year's pay raise to a retirement plan.[64] **In terms of a climate preparedness or energy conservation program, participation may be greater if communicators**



SIDEBAR 12

Making Clean Energy Attractive across Political Lines

One part of the solution to climate change is the widespread adoption of clean or renewable energy, such as solar power. Energy campaigns typically focus on how solar technologies reduce emissions or utility bills. These "reduce" messages are likely to be effective in motivating liberals to invest in renewable energy, as they see themselves as personally responsible for reducing their energy use and emissions. However, this language may fail to engage more politically conservative individuals who do not share this sense of obligation. Dena Gromet and CRED researcher Howard Kunreuther, both of the Wharton School at the University of Pennsylvania, have investigated how framing renewable energy as *reducing negative aspects of energy use*, as compared to *increasing positive aspects of this use*, interacts with political ideology to affect individuals' interest in adopting solar power.

In two studies of California homeowners, participants could choose to read about different home improvement options, one of which was installing solar panels on their homes.[71] The researchers varied whether the solar option was described as reducing a negative aspect of energy use ("Want to reduce your use of fossil fuels? Get solar panels!") or as increasing a positive aspect ("Want to increase your use of renewable energy? Get solar panels!"). The reduce/increase framing interacted with political ideology to predict people's decisions about whether or not to learn more about solar. Liberals were more inclined than conservatives to choose to learn about solar when a "reduce" message was used, whereas the divergence between liberals and conservatives was lessened (or reversed) when an "increase" message was used. Additional questions revealed that "reduce" messages were more appealing to liberals because they communicated that individuals had a personal obligation to conserve energy, whereas "increase" messages conveyed greater personal benefit.

These findings demonstrate that **the emphasis on reducing a negative aspect of energy use, as compared to increasing a positive aspect, can dramatically affect individuals' interest in renewable energy**. This framing effect appears to be primarily driven by how messages resonate with individuals' political views and sense of personal responsibility for addressing energy issues. **The results highlight the importance of understanding how different framings resonate with individuals' political values, which can influence their energy choices.**[1] **In addition, research suggests that highlighting benefits or gains from taking action may be an effective way to increase willingness to respond to climate change, regardless of an individual's political orientation.**[72]

[1] This research was conducted as part of the Sunshot Solar Energy Evolution and Diffusion Studies (SEEDS) program, Department of Energy.

ask people to sign up in advance to take a more cost-intensive action down the road, such as committing to weatherizing their homes the following year. It is important to note that some individuals may actually respond more positively to future-oriented information about climate change, in part because doing so can make the issue less overwhelming while giving people a sense that they can still do something.

Local versus Global: Climate change impacts and solutions can be framed as local (local extreme weather events; community-level preparedness efforts) or as distant (climate change as a global phenomenon; international agreements). **In general, communicators should frame climate change as a local issue, both in terms of consequences and possible solutions.** In part, this is because local impacts and solutions are more vivid and thus easier to think about for most people. Additionally, research has found that the more traditional approach of highlighting the global scale of the problem without also highlighting local impacts may actually increase political polarization, as such messages resonate well with liberals but poorly with conservatives.[65] **Thus communicators may wish to emphasize local impacts first, before scaling up to show how climate change is affecting other parts of the country and the world.** ■

TIPS Connect Climate Change to Issues That Matter to Your Audience

Your communication strategy should integrate frames that help audience members quickly identify why and how climate change is meaningful to them. To bolster audience engagement, use frames that speak to your audience's major concerns. Consider the following questions before determining which frames to use:

- What are your audience's major concerns and worries? Which content frames (such as a public health frame or a national security frame) would resonate most clearly with your audience?
- How can you use structure frames to make the issue relevant and meaningful to your audience?
- How can you incorporate a focus on present, local impacts into your communication strategy?
- Are there small changes you can make in how you describe climate impacts or climate solutions that would change how your audience reacts to your message?

Keep in mind that your answers to the questions in **SIDEBAR 1: Getting to Know Your Audience**, can also help you to determine the best form and content frames to use in your communication strategy.

6 Use Images and Stories to Make Climate Change Real

"Blah, blah, blah."

All too often, climate communicators rely on written communication and facts and figures to get their messages across. Images and storytelling, however, are critical tools for making climate impacts, solutions, and stories more real. This section describes how images can be used to underscore certain points, what types of images are most memorable, and why images of people and familiar things are usually more effective than scientific graphs. This section also provides tips on how communicators can employ storytelling to enhance their audiences' attention and engagement.

Use Images That Inspire and Empower

People think and feel using images. Images convey emotions and add emotional weight beyond what words can accomplish. Rather than directly telling the audience what to do or how to feel, images can let audiences create meaning for themselves. Although the use of images is not as well researched as other areas of climate change communication, a few studies have highlighted several important considerations that climate communicators can keep in mind when using images.

Climate change imagery often falls into one of two categories: images that increase the emotional impact or saliency of climate change, and images that increase self-efficacy and the feeling of personal agency.[73] Dramatic images that prompt fear (such as those of environmental refugees or "drowning" polar bears) or that depict climate impacts (such as aerial views of flooding) are good for attracting attention and giving climate change a sense of emotional importance. However, these types of images are less effective in the long-term because they distance people from solutions and deeper engagement. On the other hand, images that promote self-efficacy (such as images of renewable energy or insulating one's home to reduce energy use) tend to be less salient (that is, they are less effective at grabbing an audience's attention). **Communicators should take care to use both types of images, depending on whether they wish to attract audiences' attention or help empower audiences to act.**

Climate communicators may also wish to employ cultural archetypes or icons to help audiences relate to climate change more effectively. For example, the quintessence of masculinity, as represented by construction workers, first responders, or cowboys, tends to align with values that are pervasive in American culture—boldness, scale, dominance, and progress—and thus may help engage new audiences on climate change.[74] Climate communicators should also take care to use clear, realistic images that closely match the narrative of accompanying text, which can enhance readers' understanding of climate change and its implications.[75]

Show People, Not Pie Charts

In a series of experiments to find out what features make images more memorable, researchers discovered that **images of people or groups, faces, and common household items are among the most powerful.**[76] Contrary to popular belief, aesthetically pleasing scenes like landscapes, architectural exteriors, wide-angle vistas, backgrounds, and natural scenes leave less of a mark.[77]

Researchers have also found that visualizations such as bar charts, pie charts, and scatter plots (which are frequently used to communicate climate change) are among the least memorable of all images. These kinds of images require prior knowledge and skill to read effectively and thus are appropriate only when designed and chosen with an audience in mind.[78] Unique visualization types, such as those using pictorial elements, repeated small multiples (such as stick figures to represent people), grids or matrices, trees and networks, or diagrams, are easier to remember than common graph types such as pie charts, scatter plots, bar graphs, and line graphs.[79] **Moreover, the inclusion of objects, photographs, people, cartoons, and logos can help enhance memorability of visualizations used to communicate about climate change.**

Stories are among the best ways to connect with core human values and social identities, build bonds between individuals and groups, and engage the public on climate change.

Use Storytelling to Strengthen Engagement

Stories are the single most powerful tool in a leader's toolkit.
–Howard Gardner, Harvard University

According to one recent poll, eight in ten Americans do not understand what it means to study something scientifically.[80] As a result, science- and fact-based arguments about climate change are unlikely to resonate with the majority of the American public. Instead, stories are among the best ways to connect with core human values and social identities, build bonds between individuals and groups, and engage the public on climate change. This doesn't mean that facts cannot be persuasive; it's just that stories are more likely to make those facts more relevant. Stories about climate change can take a range of forms, including personal speeches, films, short stories, plays, or newspaper or magazine articles.

Stories influence people's beliefs because they shift the frames of reference for emotional and cognitive processes.[81] In addition, stories can enhance people's capacity for empathy.[82] As an alternative form of mental processing, both fictional and factual stories open people up

to new information, attitudes, intentions, beliefs, and behaviors.[83] Stories can also focus on a long and glorious past as a motivator to care about and ensure a livable future.[84]

Climate communicators may wish to ask their audiences to tell their own stories about climate change impacts and solutions. **Communicators can then share these stories with others and can create their own by identifying what drives them personally and by determining why climate change matters to others.** For more resources on storytelling, see the **FURTHER READINGS** section on Page 82. ■

TIPS Use Images and Stories to Make Climate Change Real

Audiences bring different knowledge and experiences to their interactions with images—especially technical images like charts and graphs. Subject matter, composition, point of view, and visual style are just some of the ways that images communicate and frame communication, and connecting with an audience is just as important for images as it is for verbal communication.

Consider the following questions as you incorporate images and storytelling into your communication strategy:

- Do your images empower and inspire your audience?
- Do your images depict people, groups, faces, or common household items rather than landscapes and vistas?
- Are you using visualizations like bar charts, pie charts, and scatter plots sparingly and with your audience's previous knowledge and skills in mind?
- Are you using realistic images that closely match the narrative of accompanying text?
- Are you employing storytelling (both real and fictional) to help make climate change more vivid and to help people imagine possible courses of action?

OVERCOMING BARRIERS:
Science, Skepticism, and Uncertainty

OVERCOMING BARRIERS: SCIENCE, SKEPTICISM, AND UNCERTAINTY

Climate change is complicated. It involves scientific jargon, numbers that are hard to comprehend, and significant amounts of risks and uncertainty. The technical language used to describe climate change—terms like "anomaly" and "positive feedback"—can mean vastly different things to the general public than they do to scientists. Moreover, the term "global warming" has confused many people, who have come to understand climate change as a universal increase in temperatures rather than a global shift in weather patterns.[85] While communicating about the science of climate change alone is often insufficient to catalyze engagement around climate change, communicators should still understand how to approach some of the basic issues surrounding science and risk communication (especially as they relate to climate change), uncertainty, and climate skepticism, which are explained in this part of the guide.

People update their mental models (usually unconsciously) by incorporating new information, correcting misinformation, and making new connections with existing knowledge.

7 Make Climate Science Meaningful

"I have no idea what those numbers mean."

Scientists rely on quantification because numbers, even when uncertain, provide a consistent language for discussing the changes they are observing in our climate system. Yet for most members of the public, these types of statements are not meaningful. In part this is because most people are not familiar with or used to thinking in these terms. Similarly, without scientific training, it can be difficult for people to judge the relative importance, meaning, and quality of particular scientific facts or statements. The result is that numbers and statistics—on their own—do not provide an anchor to ground and generate an emotional response, which is crucial for engagement and action for many people. This section describes how people understand scientific phenomena like climate change, explains how to translate scientific and numerical information into familiar terms, and identifies which metaphors can help the public better understand climate change.

Uncover How Your Audience Understands Scientific Phenomena: The Role of Mental Models

Most Americans do not have a complete understanding of climate change and its associated risks. Yet most people have at least a bit of knowledge about climate change, which they will use to interpret new information they hear about it. People's understanding of climate change is often based on a mix of associations with the phrases "global warming" or "climate change," memories of related phenomena and past experiences, analogies they've heard from others, intuitive perceptions, and relevant yet incomplete sets of facts. These form the ingredients of a ***mental model***.

Someone's mental model or ***constructed concept*** of climate change can answer some of the following questions: (1) What is climate change? (the issue and its causes); (2) If the climate changes, what might happen? (impacts); and (3) What can be done about climate change? (policy, individual action). People refer to mental models to judge the level of risk associated with a problem, its controllability, and its manageability. Mental models influence what people pay attention to, how they approach problems, and what actions they take.[86]

While a person's mental model of climate change can be flawed or contain misconceptions, it is not fixed. People update their mental models (usually unconsciously) by incorporating new information, correcting misinformation, and making new connections with existing knowledge. This presents an enormous opportunity for communicators. For new climate change insights to take hold, communicators can map the mental models that an audience already uses, create new models using facts and practices to refine or replace existing ones, and employ strategic messaging to correct wrong information and help people update their assumptions. (See **SIDEBAR 13: A Mental Model Example: Using Images to Understand How People View the Stability of the Climate System**.)

Sometimes people seek out or absorb only the information that matches their mental model, confirming what they already believe to be true. This can lead people to avoid, dismiss, or forget information that will require them to change their minds and possibly their behavior. This phenomenon, called ***confirmation bias***, poses a potential stumbling block for those who try to communicate new information and options for behavioral change. **While confirmation**

bias is difficult to overcome, communicators can make audiences aware of the phenomenon. They can ask audiences to question themselves: "Could I possibly be wrong?" and "What would be the worst thing about being wrong?" Simply making people aware of this bias and encouraging them to have an open mind can be quite effective.

SIDEBAR 13

A Mental Model Example: Using Images to Understand How People View the Stability of the Climate System

Anthony Leiserowitz, director of the Yale Project on Climate Change Communication, has examined Americans' mental models about the stability of the climate system.[90] In nationally representative polls, Leiserowitz and his colleagues asked participants to indicate which one of five different pictures best represented their understanding of how sensitive the climate system is to global warming. The researchers then compared participants' mental models to their beliefs about the existence of climate change.

The results were striking: people's beliefs about the stability of the climate system strongly correlated with their beliefs about whether or not climate change is happening. Those who said they believed climate change was happening were much more likely to endorse *gradual, fragile, or threshold* models of the climate system. In contrast, those who said they were skeptical of climate change overwhelmingly chose either the *random or stable* pictures. These findings point to the pervasive effects that mental models can have on people's beliefs about the role of human action in affecting the natural world. Providing audiences with a basic explanation of the stability of the climate system, in combination with other climate communication techniques discussed in this guide, may help improve people's understanding of our complex climate system.[91]

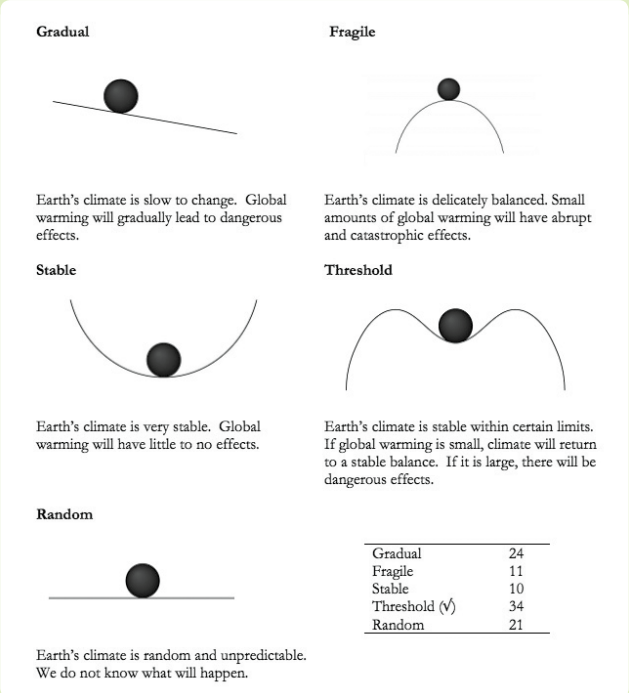


Figure 1: This image shows that people's beliefs about the stability of the climate system strongly correlate with their beliefs about whether or not climate change is happening. Image from Leiserowitz, A., Smith, N., & Marlon, J.R. (2010). *Americans' Knowledge of Climate Change*. Yale University. New Haven, CT: Yale Project on Climate Change Communication. www.environment.yale.edu/climate/files/ClimateChangeKnowledge2010.pdf.

Communicate on a Human Scale

Often, the metrics and scales that scientists use to describe climate science are unfamiliar and unintuitive to most people. For example, people may think about the weight of a car when they hear a quantity measured in tons yet become confused when a volume of gas (such as CO_2) is described using the same metric, since our usual perception of gases is that they weigh nothing. When the scale or metric is confusing and doesn't translate into everyday experience, people have difficulty hearing or processing the information.

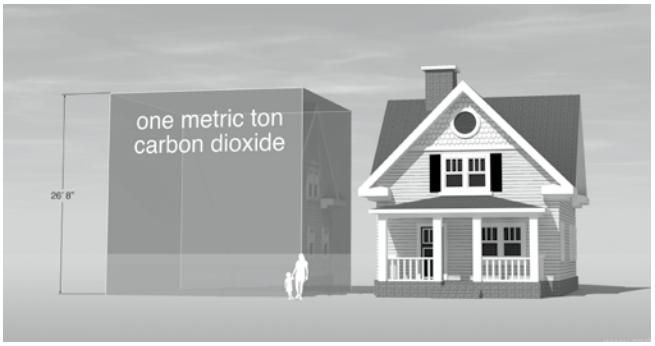


Figure 2: Visual representations of large numbers and unfamiliar concepts (such as tons of CO2) can be helpful to communicate information on a human scale. Image courtesy of Carbon Visuals (carbonvisuals.com) with funding from the Environmental Defense Fund.

SIDEBAR 14

Using Labels to Help Consumers Save Money and the Environment

The fuel economy of a vehicle can be expressed in several different ways. Fuel economy can be expressed as the amount of gas consumed, the cost in dollars to drive a certain distance, or the amount of carbon dioxide or greenhouse gases emitted. The U.S. Environmental Protection Agency and the National Highway Traffic Safety Administration recently overhauled the fuel-economy labels that appear on all new vehicles by adding additional fuel-efficiency "translations." The label still includes miles per gallon (MPG), but also includes an annual fuel cost estimate, gas consumption per 100 miles, and greenhouse gas and smog ratings. (See Figure 3, above.) With these new labels in mind, CRED researchers Adrian Camilleri and Richard Larrick conducted two studies to determine how changing metric and scale information on vehicle fuel-economy labels can help people make more informed choices. Across the two studies, Camilleri and Larrick found that consumers' fuel-efficiency decisions are strongly affected by the type and form of information provided: study participants chose fuel-efficient vehicles more often when fuel economy was expressed in terms of cost of gas over a long time-frame—100,000 miles (or roughly the life of a vehicle). This is an important finding, as current labels do not help people understand the long-term costs of owning less fuel-efficient cars or the savings realized by owning more fuel-efficient cars.

Figure 3: Studies show that consumers' fuel-efficiency decisions are strongly affected by the type and form of information provided on fuel-economy labels.

To avoid these potential pitfalls, communicators should translate unfamiliar or unintuitive statistics and numbers into relatable, easy-to-understand terms. CRED researchers (and others) have shown that using different metrics and scales to represent the same information can strongly influence people's preferences and behavior. For example, people prefer more fuel-efficient cars when information about fuel economy is presented in terms of: (1) the cost of gas rather than how much gas is consumed (different metrics); and (2) the cost savings over 100,000 miles of driving rather than over 100 or 15,000 miles (different scales).[87] This is because people quickly grasp that 100,000 miles is roughly the lifetime of a vehicle, making it easy to incorporate fuel-related costs into the up-front cost of purchasing a car.

It is also easier for people to understand numbers when the same piece of information is simultaneously presented in multiple formats.

SIDEBAR 15

Examples of Powerful Facts from Trusted Messengers

Research suggests that sticking to just one or two facts or figures, especially when they are attributed to trusted and reputable sources (especially those that don't seek profit or political gain), can be an especially effective way to bolster our understanding of climate change. Here are a few powerful facts about climate impacts and solutions that communicators can use to help build people's understanding of climate change and their support for solutions:

- According to the American Lung Association, the toxic chemicals in the air we breathe are affecting the health of nearly half of all Americans.[92]
- According to the Department of Energy, solar energy is the most abundant energy resource on Earth. The solar energy that strikes Earth is equal to more than ten thousand times the world's total energy use.[93]
- According to NASA, the ten warmest years on record were all after the year 2000.[94]
- According to the National Solar Jobs Census 2013, solar jobs in the United States are growing ten times faster than the national average.[95]
- According to the Centers for Disease Control and Prevention (CDC), health impacts from climate change and ozone pollution will result in significant increases in acute respiratory symptoms, asthma, weather-related hospital admissions for children and the elderly, and premature deaths.[96]
- According to an economic risk report jointly conducted by a leading research firm and the world's largest catastrophe-modeling company, if we continue on our current path, by 2050 between $66 billion and $106 billion worth of existing coastal property will likely be below sea level nationwide.[97]

SIDEBAR 16

Using Metaphors to Help People Understand the Science of Climate Change

Metaphors, which help translate abstract concepts into familiar terms, are an especially effective tool for science communication. **Metaphors are especially important when communicating about abstract issues like climate change because they help relate a complex issue to people's everyday life and personal experiences.** Communicators should keep in mind, however, that not all metaphors are created equal—some can actually backfire by leading the audience away from productive engagement with the issue. For example, many medical metaphors about climate change ("Earth has a fever") are easy to grasp because people have lots of personal experience with fevers and illness, but they can also confuse people because they are related to concepts that don't fit the issue well.

Using a combination of methods, the FrameWorks Institute has identified the following metaphors that can help people better understand the causes of and solutions for climate change:

***Regular versus Rampant Carbon Dioxide*:** This metaphor helps people understand why high levels of carbon dioxide are problematic. Some carbon dioxide (CO2) is needed for a lot of life processes. This is called *regular CO2. Rampant CO2*, on the other hand, occurs when we engage in actions like burning fossil fuels and driving cars, which put large amounts of CO2 into the atmosphere and oceans. This is called rampant CO2 because there is too much of it accumulating in the wrong places, causing problems for our climate. Regular CO2 will always be needed, but we need to start reducing rampant CO2.

***The Ocean as the "Heart of the Climate"*:** This metaphor helps people think about the role that oceans play in regulating the climate system. Much as the heart regulates the flow of blood throughout the body—controlling the circulation of blood and making sure the right amount gets to each part—the ocean sustains the climate system and keeps it in balance by controlling the circulation of heat and humidity. The ocean is the heart of Earth's circulatory system. It moves moisture and heat to the oceans, atmosphere, land, and other parts of the climate system.[98]

(See **SIDEBAR 14: Using Labels to Help Consumers Save Money and the Environment**.)[88] Additional research suggests that **sticking to just one or two facts or figures, especially when they are attributed to trusted and reputable sources, can be an especially effective way to bolster people's understanding of climate change.**[89] Visual representations of large numbers and unfamiliar concepts (such as tons of CO_2) can also be helpful.

Use Familiar Concepts to Help People Understand Science and Statistics

People interpret statistics and scientific facts by relating them to what they already know. Communicators should place statistical or scientific facts within a broader, familiar context so it is easy to make sense of that information and use it to make decisions. Communicators can also help people make explicit comparisons to familiar objects and concepts that

they encounter in the course of daily life (such as time or social interactions). For example, the difference between millions and billions of dollars lost to climate impacts is hard for people to grasp because both amounts sound so large. But comparing those losses to the (relatively small) amount of money being spent to combat climate change draws attention to the inequality between the huge scale of the problem and the insufficient scale of the current response. ■

SIDEBAR 17

Translation in Action

Take a look at the following statement: "In 2011, Americans experienced a record-breaking 14 weather and climate disasters that each caused between $1 billion and $10 billion in damages, in total costing approximately $53 billion."[99] This sort of statement is common in reporting on climate change. Yet on its own, this statement is unlikely to provoke a strong response or to motivate action, because $53 billion means very little to people.

Now, compare the initial sentence with the following translation: "In 2011, Americans experienced record-breaking weather and climate disasters that cost our country approximately $53 billion. That is more than eight times what our government spent on financing clean energy projects in the same year. We can either pay now or pay later to address climate change. It is our duty to responsibly and wisely manage our country's financial resources. An important way to do this is by investing in clean energy projects today that can benefit us all in the future."[100] Notice how this translation incorporates an easily understood comparison (between money spent on cleanup efforts and money spent to avoid the problem in the first place) into a message that highlights widely shared core values (responsible management of shared resources; financial prudence) and promotes a particular solution (investments in clean energy). Remember: numbers and statistics can be powerful tools for communicators, but they should not be the centerpieces of the message. Instead, numbers should be used to support a well-framed, consistent core narrative about climate change, climate impacts, and climate solutions.

TIPS

Make Climate Science Meaningful

In some situations, the communication of statistical and scientific data, findings, and facts is important or unavoidable. In these cases, communicators' aim should be to provide numerical information in a way that is readily usable and interpretable by their audiences. Consider the following questions before presenting numerical and scientific information:

- Have you identified what you can and will achieve by communicating numerical information, scientific findings, or facts? Are your expectations of the effects that such information will have on audiences supported by past research on and experience with climate change communication?
- What do you want your audience to do with the information you present? Are there ways to accomplish the same goals by communicating information besides scientific facts about the climate system, such as information about climate solutions or climate impacts?
- How familiar are people with the metrics and scales you are using? Could they be confused by an unfamiliar or nonstandard use of an otherwise familiar term (such as "tons")?
- If you are using numbers or statistics to highlight the scope or severity of the problem, are you successfully incorporating metaphors and real-life comparisons to help make those numbers meaningful for people?
- Are you providing enough context for people to understand the new information?
- Are you using numbers and facts sparingly and attributing the one or two facts and figures you do use to messengers or sources your audience knows and trusts?

SIDEBAR 18

How Time Horizons Affect Our Decisions around Climate Change

One thing that makes it particularly hard to capture the public's attention about climate change is the fact that many of the most serious impacts that must be prevented may not happen for quite a while. Future events are hard for people to care about because humans naturally discount future gains. Winning $100 today feels great, but winning today and waiting one month for the payment feels much less good. When given the choice between $100 today and $120 one month from now, many people will take the smaller reward today rather than waiting a little longer for much more. That future $120 is mentally discounted—enough to feel less valuable than $100 now.[101] CRED researchers David Hardisty and Elke Weber have found that the same attitude also influences people's decisions when it comes to protecting the environment.[101]

A similar effect happens when it comes to losses, such as incurring a loss now or in the future.[103] When scientists tell the public that sea levels will rise by several feet in the coming century, people's natural tendency to discount, combined with a long time scale, can make the predicted rise seem inconsequential. Even with more easily imaginable outcomes such as economic losses of large magnitude, this discount effect is strong enough to make the costs of a $300 million levy project (today) feel about the same as a $1.3 billion flood-cleanup effort ten years later because people often delay large losses, even if delaying the action will result in higher costs than paying in the present. This may help explain why many people are not motivated to invest in flood-prevention efforts despite the fact that mitigation efforts cost much less than recovery on average.[104] A contribution of $1,000 to mitigation efforts is less than $4,000 in recovery costs, but the $4,000 may be discounted just enough to make it feel like less of a hit than the immediate $1,000. Because of this, climate communicators may do better to place emphasis on the pure costs of cleanup and to de-emphasize the fact that cleanup will take place sometime in the future.

TABLE 3

Words with Different Meanings to Scientists and the General Public

The following table lists many words that scientists use to describe and talk about climate change, yet that mean different things to the general public, journalists, and policy makers. Make sure to avoid jargon and use words that truly convey what is meant to be communicated.

Scientific Word	Nonscientific Meaning	Better Language
enhance	improve	intensify, increase
uncertainty	not knowing	range
risk	low-probability event	probability
error	wrong or incorrect information	uncertainty associated with a measuring device or model
bias	unfair and deliberate distortion	offset from the observed value
positive trend	good trend	upward trend
theory	hunch, opinion, conjecture, speculation	physical understanding of how this works
hypothesis	conjecture	framework for physical understanding
sign	indication	positive/negative value, plus/minus sign
values	ethics, money	numbers, quantity
manipulation	exploitation	changes in experimental or model conditions to study the impact of those conditions
scheme	conspiracy	blueprint
anomaly	abnormal occurrence	deviation from a long-term average
mitigation	fixing something after it breaks	avoiding or preventing further climate change and global warming
adaptation	“going with the flow”; dealing with problems as they arise	increasing preparedness before impacts occur; preparing for climate impacts that are already happening
geoengineering	Frankenstein-type messing with nature	deliberate alteration of natural Earth systems
environment		the air we breathe and the water we drink

8 Acknowledge Uncertainty, But Show What You Know

"If the scientists aren't 100 percent sure, why should I listen to them?"

There's no escaping it: communicating on climate change involves talking about uncertainty. Uncertainty exists in part because climate science is complex and the climate system is even more so. While it may be tempting, communicators should not ignore the uncertainties that climate change presents, be they uncertainties associated with timing and severity of impacts or uncertainties related to the success or failure of mitigation and adaptation strategies or technologies. Communicators should be aware that even small levels of uncertainty are often used strategically to oppose climate action. This section explains how climate communicators should focus on what is known, describes which uncertainties matter and which ones don't, and explains how to help audiences become engaged on climate change, even when uncertainties do exist.

Uncertainty on its own is not necessarily a barrier to engagement or action. Rather, it is the implied and perceived implications of uncertainties that can make engagement challenging.

The Role of Uncertainty in Climate Change Communication

At its core, human decision making deals with uncertainty. While people may be uncomfortable when confronted with uncertain situations or information, they are also experts at taking action under such conditions. Take the example of the daily weather forecast. Despite the fact that people tend to misinterpret probabilities and percentages, many people have little trouble translating a 60 percent chance of rain into concrete action (such as taking an umbrella). More importantly for communicators, most Americans now perceive and know that there are real scientific and political uncertainties surrounding climate change. As a result, communicators may need to recognize these uncertainties. **In fact, research suggests that acknowledging uncertainty at the beginning of a climate communication message can increase people's willingness to engage with the issue.**[105] The question is how to engage with uncertainty more broadly in a way that helps people understand and respond to the issue rather than turns them away.

Uncertainty on its own is not necessarily a barrier to engagement or action. Rather, it is the implied and perceived implications of uncertainties that can make engagement challenging. **If people believe that scientific or political uncertainty means that the problem is too difficult**

to solve, they will be unlikely to support action. Conversely, if people are able to understand the ways in which uncertainty can provide opportunities for a new and better future, they are likely to embrace the issue and proposed solutions. Ultimately, it will likely be people's experiences with emerging solutions and policies to address climate change that will narrow the gap between expert and public perceptions of the issue, rather than people's exposure to information about the uncertainties.[106]

Focus on What Is Known

Communicators should generally aim to highlight the facts about climate change that are known with relative certainty. This is especially true of the fact that there is overwhelming consensus among climate experts regarding the basic facts of climate change. Despite this, many Americans

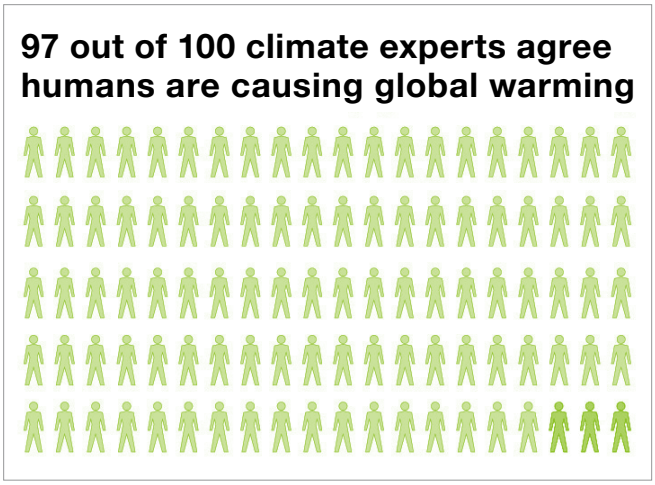


Figure 4: This image provides a clear visual example of the overwhelming scientific consensus on climate change. Image from Cook, J., & Lewandowsky, S. (2011). *The Debunking Handbook*. St. Lucia, Australia: University of Queensland.

SIDEBAR 19

African Farmers and Climate Information

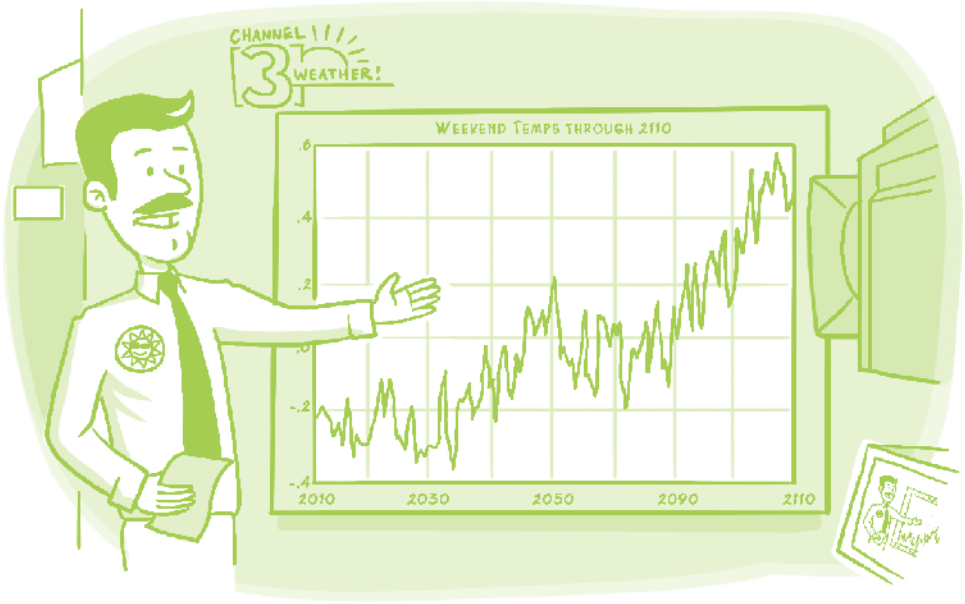
Over the last decade, CRED researchers have been studying participatory processes in a variety of cases to understand how these can affect the use of climate information more broadly. In Uganda, discussion within farmers' groups facilitated the understanding of probabilistic seasonal rainfall forecasts by allowing members to pool their ideas and to plan appropriate responses.[114] This resulted in greater use of forecasts in agricultural decisions by group members, compared with farmers who did not participate in the group discussions. Farmers in Argentina also found value in group discussions of forecasts and other topics to improve their farming. Dairy farmers in the Dominican Republic used participatory meetings to explore the introduction of insurance mechanisms and were able to change the contracts offered to reflect their needs. **Participatory processes have an important impact on decision making and can be valuable for sharing information or preferences, particularly** in settings that have traditionally lacked equal access to information and that are often shaped by the strategic use of uncertainty. In Burkina Faso and Brazil, participation in water user committees has contributed to reducing conflicts over water allocation and enabling greater access to political processes or authorities.[115] In all of these cases, group context eased the problems commonly found in understanding and using uncertainty.

SIDEBAR 20

Better Safe Than Sorry: Invoking the Precautionary Principle

Uncertainty is often used as a justification for inaction or business-as-usual policies. Yet communicators can and should use uncertainty to encourage people to develop contingency plans and to adopt adaptive management strategies. **Highlighting the concept of "better safe than sorry" (also known as the precautionary principle) can help individuals and communities reframe a potentially paralyzing uncertainty into justification for strong, protective action.** Former governor of California Arnold Schwarzenegger referred to the precautionary principle when he said, "If ninety-eight doctors say my son is ill and needs medication and two say 'No, he doesn't, he's fine,' I will go with the ninety-eight. It's common sense—the same with climate change. We go with the majority…the key thing now is that since we know this industrial age has created it, let's get our act together and do everything we can to roll it back."

continue to perceive a lack of scientific consensus, which researchers have identified as a major barrier to greater public engagement with the issue.[107] **Research shows that short, simple statements are some of the most effective ways to increase public understanding about the scientific consensus on climate change.**[108] Using simple, audience-appropriate pie charts can also enhance understanding of the scientific consensus on climate change, especially among Republicans.[109] **Highlighting potential**



"So yes, Dan and Kathy, as you can see it looks like it'll be up and down until 2109, but you're certainly going to want to think about abandoning the planet after that…"

solutions that involve relatively little uncertainty should also be a goal of climate communicators. The 2014 National Climate Assessment and the Intergovernmental Panel on Climate Change's Fifth Assessment Report (AR5) provide detailed guidance about what is known with relative certainty and which prevention and preparedness approaches are viable as solutions pathways.[110] See **TABLE 2: Climate Solutions and Mechanisms to Facilitate Them** for more information about solutions.

Uncover How Your Audience Responds to Uncertainty

Communicators should assume that every audience they interact with is uncomfortable with uncertainty. If communicators are presenting to a live audience, they can ask a few questions to test people's understanding of uncertainty by show of hands. For example, communicators may ask a question like, "Does a 30 percent chance of rain tomorrow mean that it will rain in 30 percent of the area, that it will rain 30 percent of the time, or that it normally rains on 30 percent of days with these conditions?" Communicators may also wish to ask questions like, "Would you base any decisions on a 50/50 chance of something occurring?" and "How likely do you think it is that an earthquake will occur in New York City in the next twenty years?" **Recognizing how an audience approaches probability, statistics, and uncertainty can help communicators tailor their communication strategies accordingly.**

Determine Which Uncertainties Matter

It is important to recognize that there are multiple sources and types of uncertainty surrounding climate change. People do not respond to all of these

SIDEBAR 21

Helping People Imagine the Future

Research from various fields is converging on a key insight for climate communicators: helping people imagine a range of possible future scenarios can support engagement. In one recent study, researchers presented participants with one of three messages about future sea level rise:

- Scientists' best estimate is 3 feet of sea level rise by 2100.
- Scientists' best estimate is 3 feet of sea level rise by 2100, but it could be as much as 6 feet.
- Scientists' best estimate is 3 feet of sea level rise by 2100, but it could be as much as 6 feet or as little as 1 foot.

In all cases, estimates of sea level rise were accompanied with a projection of how many millions of Americans would be displaced from their homes and businesses by a given level of change. Strikingly, audiences' level of support for adaptation policies was strongest when they got the message with the full range of future impacts (best guess, worst case, best case).[112] Moreover, people who received the third message also showed the biggest increases in trust in scientists, a critical predictor of belief about the reality and seriousness of climate change.[113] **This and other research points to the importance of providing audiences with a range of "alternative futures," as doing so can both increase trust in communicators and make various trade-offs and decisions more concrete.**

uncertainties in the same way. For example, there is uncertainty about the severity and timing of future negative impacts from climate change (such as storms, droughts, or extreme temperatures), scientists are not sure just what volume of greenhouse gases can be emitted before the planet reaches a "tipping point," and there is always uncertainty regarding what exactly humans will decide to do about the problem (and when they'll take action).

Columbia University researchers Scott Barrett and Astrid Dannenberg have found that people working in groups find it very difficult to coordinate their actions to avoid bad outcomes (for example, incurring financial losses) when there is too much uncertainty about exactly how much up-front action the group must take to reduce the risk. When uncertainty around such "thresholds" is too high, people stop cooperating, leading to worse group outcomes. On the other hand, Barrett and Dannenberg have also found that groups are less strongly influenced by uncertainty regarding the severity of the impact, which is good news for climate communicators.[111]

SIDEBAR 22

Strategies for Communicating Uncertainty

Practitioners can do a number of things to communicate uncertain information more effectively and meaningfully, including:

- Encourage group discussion about climate information. Work by CRED researchers in Africa and elsewhere has found that people are better able to use information involving probabilities and likelihoods to inform decision making when they process that information in a group setting rather than as individuals.[116]
- Communicate scientific information using multiple labels. People have an easier time understanding and using information when communicators use both numerical ("90 percent") and verbal ("very likely") labels and avoid negatively worded terms such as "unlikely."[117] Using only verbal labels, as is often the case both in technical (for example, the Intergovernmental Panel on Climate Change) and media discussions of climate change, leads to confusion and produces a gap between experts' understanding of uncertainty and the public's perceptions.[118]
- Whenever possible, provide clear visualizations to show data and to illustrate what is known and what is less certain. For example, graphics that use icon-based representations can quickly and easily convey degrees of consensus, uncertainty, and relationships between variables.
- When referring to uncertain events such as future storms, focus on what will happen when the next climate change–related event occurs, not on the probability of it occurring this month or this year. Doing so will motivate people to consider all future possibilities and how they want to respond, despite uncertainty around the exact timing of events.

TIPS Acknowledge Uncertainty, but Show What You Know

Given that uncertainty will always be present in climate change, communicators need to find effective ways to confront uncertainties head-on. Although communicators may worry that talking openly about uncertainty will allow audiences to slip into wishful thinking about the severity of the problem, research on the communication of uncertainty tells a different story. A growing body of empirical evidence points to the benefits of highlighting certain types of uncertainty while guiding people toward factually correct explanations where they exist. When thinking about how to communicate uncertainty, consider the following questions:

- What scientific uncertainties has your audience likely heard about?
- Are you using multiple presentation formats (for example, numerical, verbal, and visual) to communicate any given piece of scientific information?
- Are you using short, simple statements or pie charts to show that the overwhelming majority of scientists believe that climate change is real and human-caused?
- How can you highlight the opportunities that uncertainty presents to shape the future?
- Are you providing enough context when communicating uncertainty to avoid causing feelings of hopelessness, despair, fatalism, and inefficacy?
- Are you using group discussion settings where possible to help your audience engage productively with the uncertainties that exist?
- Are you using the precautionary principle (“better safe than sorry”) when appropriate?

9 Approach Skepticism Carefully

"But I heard…"

One of the biggest challenges for climate communicators is correcting misinformation about the causes and existence of climate change. Just as people's preexisting mental models must be taken into account when designing communication strategies, so too must communicators know how to respond to climate change skepticism and guide people toward personally meaningful and readily usable information. People are skeptical of climate change and the need for action for a variety of reasons. This section explains why some people are skeptical about climate change, describes how to distinguish between different types and sources of skepticism, and shows how to guide people toward solutions.

In some cases, individuals' denial of climate change is also a result of more basic psychological processes that shape how people engage with information about climate change.

Why Do Some People Doubt Climate Change?

There are several types of climate change skepticism. Skepticism that stems from learning about the scientific uncertainties that truly exist in the context of the climate system is valid and an important part of the dialogue to address climate change. In contrast, skepticism that is the result of highly organized efforts by some individuals and organizations to intentionally mislead the public and policy makers (to derail efforts to confront climate change) does not play a productive role in shaping a collective response to climate change and must be addressed by communicators. In some cases, individuals' denial of climate change is also a result of more basic psychological processes that shape how people engage with information about climate change. These three main types of skepticism are described here in more detail:

Skepticism That's Part of the Scientific Process: Scientists use the scientific method to prove or disprove scientific theories and claims about how the world works. Such scientific skepticism is conducted in good faith and is a key component of the climate change research process because it allows scientists to talk about the uncertainties that still exist (for example, the exact timing or severity of future impacts) and ways to research them. Sometimes the public mistakenly takes scientific uncertainty to mean that the core principles of climate change are not settled or that no action can be taken to address it (neither of which is true). Communicators should reinforce that this type of good-faith skepticism is healthy and an important part of the scientific dialogue, at the

same time reiterating that the core science about climate change is settled and agreed upon by the vast majority of climate scientists.

Skepticism Based on Misinformation: Particularly in the United States, some groups have worked to instill doubt and climate change denial among both high-level decision makers and the general public. This has been accomplished in part by producing and distributing incorrect information about the existence and causes of climate change, supporting and promoting scientists who deny observational data about the current climate system (such as global average temperatures), and undermining mainstream climate scientists' reputations. Some of this incorrect information has been passed along to the public through the media. This false information typically frames climate change as "uncertain" and uses the uncertainty to justify delays in action. The uncertainty is emphasized by questioning isolated pieces of evidence, emphasizing the need to delay action until the science is definitive, and stating that the fixes for climate change are expensive. Bringing awareness to these types of denial efforts and their characteristics can help audiences recognize when they are being exposed to good-faith skepticism or false information.

Skepticism Due to Underlying Psychological Processes: Most people prefer to avoid negative emotions when possible. Yet the scope of climate change (and the messages climate communicators have often used) can easily lead people to feelings of sadness, fear, guilt, and hopelessness. This is particularly the case if people perceive themselves and their communities as unable to meaningfully confront the problem. One response is to avert these feelings altogether by denying the existence or downplaying the severity of climate change.[119] Through a set of mostly unconscious processes that social scientists call ***motivated reasoning***, many people perform

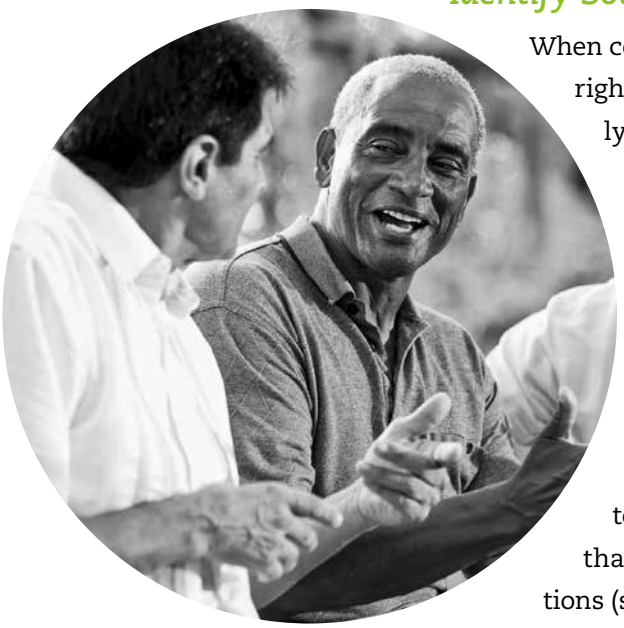
"mental acrobatics" to avoid believing that climate change is a problem or that it requires a large-scale response. Being skeptical about climate change is one way to avoid negative feelings about the issue as well as to justify inaction, and it is particularly likely to occur when proposed solutions (such as greater governmental regulation of the energy sector) are perceived as affronts to one's core identities, worldviews, and values.[120]

These mechanisms are not mutually exclusive. To some extent, they are all relevant because people have been exposed to information that highlights scientific uncertainties and disagreements among experts (real or not), as well as the cost and difficulty of responding to the issue.

Crucial to all discussions of climate change is therefore trust in scientists. Because most people are neither climate scientists nor highly science literate, people must rely on scientists and others for information about climate change.[121] Thus beliefs about an abstract scientific issue such as climate change are influenced by the extent to which people trust scientists and science to accurately and

honestly report what's happening in the world. That said, climate scientists are generally a highly trusted source of information for Americans.[122] It is important for scientists to gain the trust of the audience when acting as climate communicators. One way to do this is by showing that they too are community members, with similar concerns and life challenges as audience members. If the communicator is a non-scientist, it is important for him or her to reinforce that information about the existence and nature of climate change comes from trusted science.

Identify Sources of Doubt



When communicators encounter skepticism, doubt, or outright denial, it is important that they identify the underlying sources and mechanisms at play. **Someone who questions climate change because he or she has been exposed to false information may need to be made aware that false information campaigns are going on and that they do not represent accurate science.** In contrast, those who are skeptical about climate change because of deeper psychological processes inherent in ideology or worldview-driven motivated reasoning may need to be shown that there are solutions to the problem that are in fact in line with their deeply held convictions (see **SECTION 3: Emphasize Solutions and Benefits**) before they can accept or respond to climate change.[123]

The More Facts the Better? Not Quite

Communicators should take a multi-pronged approach to dealing with doubt and denial. The commonly held beliefs that "facts will save the day" and "the more facts people hear the better" are—as many scientists and advocates have discovered—simply not accurate. Similarly, the commonly used strategy of stating a myth (such as, "there has been no warming for the past ten years") and then refuting it with extensive evidence not only often fails to dislodge the myth but actually may reinforce it.

Climate communication researchers John Cook and Stephan Lewandowsky explain how this can happen via two effects, which they refer to as the familiarity effect and the overkill effect. The ***familiarity effect*** occurs when people hear a myth over and over again (often repeated by climate advocates in their attempts to discredit the myth), making it more familiar

SIDEBAR 23

"I Heard There's Been No Warming for Ten Years": Debunking Climate Myths

Climate change communicators often encounter the same few false claims and myths repeated over and over by climate deniers: "Climate has changed before," "There is no consensus," "It's natural," "Models are unreliable," "The temperature record is unreliable." Besides being incorrect and/or irrelevant, what these and other commonly used climate myths share is the ability to distract both honest communicators and uninformed audiences from grappling with the truly complex nature of the issue.

One claim that can be particularly confusing for audiences is the myth that there hasn't been any warming of the globe in the past ten years. This is a topic many scientists are currently studying because it involves complex research about short-term fluctuations in our climate system, but people who deny climate change often use this scientific dialogue as a blanket statement to "prove" that climate change is not real. When such claims are made (for example, in town hall meetings or other settings in which communicators can respond immediately), communicators should do the following:

1. State that the claim is a myth and therefore wrong, unequivocally, and explain in a short sentence why the talking point is false.
2. Provide some context. For example: "Organizations that deny climate change is happening cherry-pick the data and ignore information that doesn't fit their story."
3. State the core fact that you want to communicate, for example: "Climate change refers to long-term trends, and the data we have indicate an increase in global temperatures in recent decades, which is the short term."
4. Try to reinforce the core fact or takeaway with a little bit of additional detail and/or a clear graphic if possible, for example: "Using many different ways to track long-term trends, scientists have consistently found that Earth continues to warm." When possible, attribute the fact to a reputable source that the audience is likely to trust.
5. If appropriate, show people why responding to climate change makes sense, even if climate change were not human-caused. In other words, help the audience question why people would make a lose-lose wager when they can have a win-win by moving to clean energy sources that will have other positive effects in addition to climate change mitigation. For example, climate communicators may want to use a message such as, "We can gamble that our changing weather patterns are just a natural cycle that we can't do anything about. But why play Russian roulette with our kids' future when the alternative is to invest in new clean energy technologies like wind and solar power that will rebuild our manufacturing base, create jobs, and get our economy growing again?" [128]

and thus easier to believe as truth. The ***overkill effect*** occurs when communicators try to provide too many counterarguments to refute a myth, making it harder for people to cognitively grasp the complex truth relative to the simplistic myth.[124]

To avoid these negative outcomes, **communicators should lead with the core concept they want people to grasp and use only a *few* of the clearest, most important facts**, preferably from trusted and reputable sources. Contrary to some scientists' and communicators' beliefs about the public, **people *are* often open to considering new evidence and information. However, this is more likely to happen and to be effective when messages:**

- Contain one or two powerful facts or quotes from a trusted and credible source (see **SIDEBAR 15: Examples of Powerful Facts from Trusted Messengers**)
- Are presented in a compelling way (often using visualizations, pie charts, infographics, or animation)
- Start with the correct information and discuss the myth or misinformation only later on
- Connect the new fact directly to things people already care about (as discussed in **SECTION 1: Put Yourself in Your Audience's Shoes** and **SECTION 5: Connect Climate Change to Issues That Matter to Your Audience**)

- Avoid raising people's defenses, which happens when information contradicts worldviews and identities, causes negative emotions, or makes people feel that the problem is too big to solve
- Provide alternative explanations that fill in gaps in people's understanding when a belief is exposed as myth
- Announce to people in advance whenever false information is going to be discussed and debunked

Focus on Solutions, Not Just the Problem

Replacing myths and misinformation with evidence-based information and facts may help shift public opinion on climate change. Yet doing so is likely to be ineffective unless communicators also (1) address people's feelings that they are powerless to do anything about the issue and (2) acknowledge other underlying emotions about the issue.[125] In fact, a sense of paralysis and inability to confront the issue may *increase* as people better understand and appreciate the scope of the problem (often as the result of communication efforts).[126] To avoid these problems, **communicators should focus heavily on what can and already is being done to limit the impacts of climate change (for example, through climate solutions), both by individuals and collectively, as discussed in SECTION 3: Emphasize Solutions and Benefits. Strategies that fail to do so are likely to be counterproductive in the long term because they encourage people to avoid thinking and talking about the issue.**[127]

TIPS Approach Skepticism Carefully

Climate change is hard enough for most people to understand without the presence of misinformation about the issue. Consider the following questions when confronting myths, misinformation, and skepticism:

- Have you identified the sources of doubt or types of skepticism expressed by your audience?
- When addressing a myth, have you included all three of the following components: core facts, explicit warnings, and alternative explanations?
- Do you know which myths or pieces of misinformation are important to address and which ones are less critical to accomplishing your communication and engagement goals?
- Are you focusing on solutions, not just the problem?
- Are you avoiding the tendency to lead with the myth rather than with new, personally relevant information?

TAKING IT TO THE NEXT LEVEL:
Creating the Conditions for Change

TAKING IT TO THE NEXT LEVEL: CREATING THE CONDITIONS FOR CHANGE

By now, communicators should have a solid understanding of how to craft climate change messages that will improve audiences' understanding of and engagement with the issue. For communicators who want to take it to the next level, however, this section provides information, tips, and recommendations about a related challenge: translating understanding and concern about the issue into actual action. This section outlines some of the primary tools that can help communicators create meaningful and lasting behavior change.

When people set specific goals for action, and when they make these goals public, they are more likely to follow through and take action.

10 Make Behavior Change Easy

"It's too hard to do anything about climate change."

The ultimate aim of many climate change communication efforts is to encourage decision making that will help prevent further climate change and help communities prepare for climate impacts. Such changes can be achieved through multiple routes, including increasing public support for new policies and regulation, directly persuading people to change their behavior, and changing the decision-making environment to make positive action easier and more automatic. Many climate change communicators focus on the first two approaches, but the third can also offer promising opportunities. This section reviews a variety of behavioral science strategies from a range of fields (such as behavioral economics and social psychology) that climate communicators and other individuals can use to enhance audience members' likelihood of making climate-friendly choices in their everyday lives, from household energy use to transportation decisions.

Enable People to Set Specific Targets for Their Behavior

The short- and long-term goals that people set for themselves shape the information they seek out and the behavior they engage in. When people set specific goals for action, *and* when they make these goals public, they are more likely to follow through and take action. Goal setting is often

used to encourage energy conservation, such as by giving households energy-savings targets to strive for. A goal can be set by an individual or by an external entity; research suggests that both can be effective in reducing energy use.[129] **Thus communicators should provide people with opportunities to publicly set targets for their behavior or publicly commit to following existing targets, whether around household energy use, food choices, or transportation choices.**

Make Climate-Friendly Choices the Default Option

The ***default effect*** refers to people's tendency to stick with the option, choice, or behavior that is preselected for them or selected automatically. Defaults are omnipresent in modern life, which means there are many opportunities to promote positive behavior change by optimizing opt-in an opt-out choices. **Communicators can make climate-friendly behavior easier for people by presenting the climate-friendly option as the default.** For example, when people are automatically enrolled in their electric utility's "green energy" program, they are more likely to stick with the cleaner energy source than if they have to actively opt in to the green program.[130] When communicators are in a position to present people with information about various options (such as energy-saving activities or environmental policies), presenting more sustainable choices as the default can increase the likelihood that people will make the climate-friendly choice. For more information on using defaults to encourage climate-friendly behavior, see **SIDEBAR 24: Encouraging Climate-Friendly Diets through Defaults**.

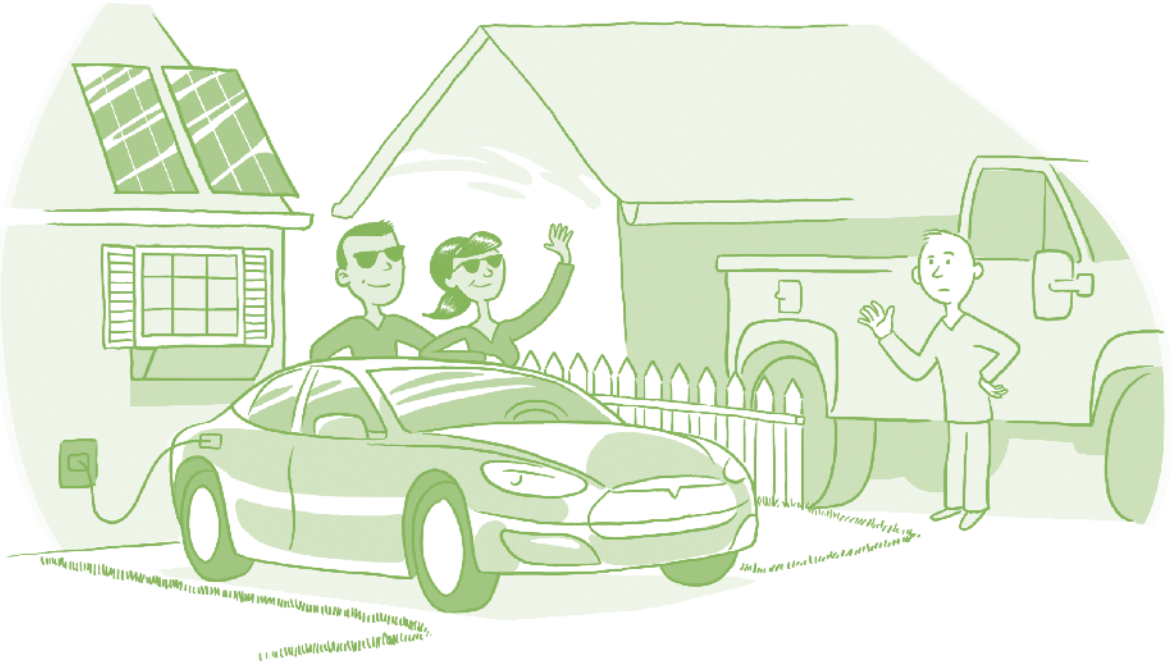
Highlight the "Green Joneses"

Humans are highly social creatures, which is why shared identities and social goals can be such powerful sources of engagement, as discussed in **SECTION 2: Channel the Power of Groups**. Another

SIDEBAR 24

Encouraging Climate-Friendly Diets through Defaults

Small changes in people's eating habits can have a significant effect on greenhouse gas emissions. Replacing meat consumption with vegetarian options can reduce individuals' contribution to climate change. However, attempts to persuade people directly to eat less meat are often unsuccessful. Setting vegetarian meals as the default option, on the other hand, can be an effective way to shift behavior. Researchers did just this in a recent study. Working with the organizers of the Behavior, Energy and Climate Change conference, researcher Karen Ehrhardt-Martinez and her colleagues noticed that the default meal choice for conference participants had always been meat-based. Participants could order a vegetarian meal if they wanted to but had to make an extra effort to do so (namely, asking for a meat-free exception on the conference registration form). For the 2009 conference, Ehrhardt-Martinez simply changed the default to the vegetarian meal (and asked carnivores to indicate they preferred meat instead, by checking a box at the time of registration). With that simple flip, consumption of vegetarian meals went from the usual 20 percent to 80 percent, which reduced carbon emissions while maintaining participants' freedom to choose the meals they wanted.[137]



by-product of humans' innate social tendencies is the influence of ***social norms*** on people's behavior. When people are made aware of what is customary behavior in a group, they often change their own behavior to match. **Communicators can help facilitate behavior change by highlighting norms surrounding climate-friendly behavior, when they exist.** The flip side is also true: communicators should be very careful *not* to play up negative social norms (for example, highlighting the large amounts of energy people are using), as doing so can actually backfire by making such behaviors seem normal and socially approved. The power of social norms to promote climate-friendly actions is described further in **SIDEBAR 25: The Power of Social Norms: Opower and Energy Bills.**

Give People Fewer Choices, Not More

Many of us are taught that the more choices people are provided, the better and the more motivated people will be. Yet research indicates that giving people more choices doesn't always lead to better outcomes. For example, in one study, grocery store shoppers visited a booth with either six jams or thirty jams on display. The results were striking. Shoppers were more likely to buy a jam when they were presented with six options rather than thirty.[131] Similar results were found in a study of employees' decisions about whether to invest in 401(k) retirement savings plans. Participation in 401(k) plans dropped when employees were offered ten or more investment options compared to participation rates in plans offering a handful

of funds. Too much choice can be paralyzing.[132] **This research suggests that communicators should limit the number of choices or options they give people to maximize the likelihood of follow-through.** For example, a home energy-savings program might provide customers with just three tips for what they can do to save energy, rather than ten or twelve, to increase the chance that customers will actually act on these tips.

Incentivize Behavior with Appropriate Rewards

Providing incentives and rewards—financial rewards, social recognition, points, or something else—is another strategy communicators can use to make behavior change easier. The key is finding the right type and magnitude of incentive for a given situation and behavior. For example, providing a financial incentive at the time a decision is made can be effective for encouraging long-term capital investments (such as purchasing energy-efficient appliances or weatherizing one's home), which often have large up-front costs and long payback periods. On the other hand, psychological research has found that monetary rewards can also have negative side effects by removing people's intrinsic motivation to act, which can decrease the likelihood of people continuing to engage in a desired behavior over time.[133]

SIDEBAR 25

The Power of Social Norms: Opower and Energy Bills

Social psychologist Robert Cialdini's groundbreaking research into the power of social norms provides a powerful tool for encouraging positive behavior change. Inspired by Cialdini's work, the energy-efficiency software company Opower teamed up in 2007 with electrical utilities in the United States to provide customers with information about how their energy consumption compared to that of their neighbors. Using simple verbal and visual messages that revealed and reinforced neighborhood social norms surrounding electricity use, Opower and its partners were able to decrease energy usage between 1.5 and 3.5 percent on average. Now working with partners worldwide, Opower continues to successfully harness the power of social norms to bring about major reductions in residential energy consumption across the world. Communicators can use the work by Cialdini, Opower, and others as a model for creating norm-reinforcing messages that shift people in a positive direction on energy savings.

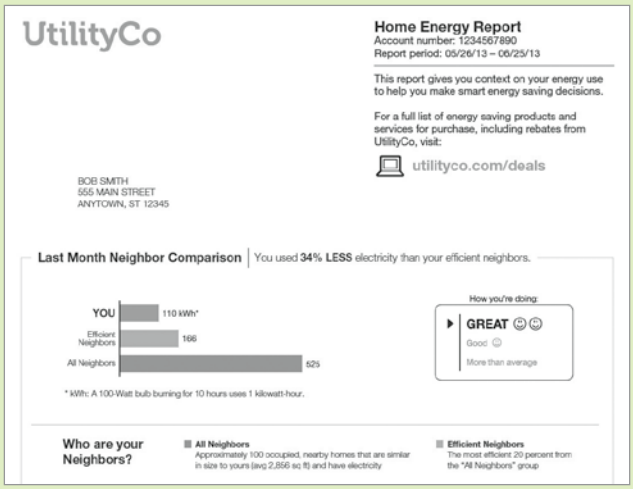


Figure 5: To yield energy-use reductions, Opower bills provide customers with information about how their energy consumption compares to that of their neighbors. Image courtesy of Opower.

SIDEBAR 26

Helping People Understand Which Actions Have the Largest Impact

Research by CRED researcher Shazheen Attari finds that communicators have an important role to play in helping people identify the behaviors that will have the biggest impact in reducing climate change. In her research with American adults, Attari found a significant gap between people's beliefs about which energy-use behaviors have the biggest impact and the actual impact of those behaviors.[138] For example, people tend to underestimate how much energy could be saved by switching to more efficient appliances and overestimate how much energy could be saved by changing to CFLs. Because people are prone to the single-action bias (feeling that they have done their part by taking a single action to confront a problem), it is critical that climate communicators work to correct misconceptions about which actions have the biggest impact in reducing climate change.[139] For example, communicators may wish to provide audience members with a list of climate-friendly choices they can make in their everyday lives, ordered from largest to smallest impact.

One alternative to providing financial rewards is to provide *social rewards* in group or public settings. This can include giving points for taking positive steps (such as reducing office energy consumption), publicly recognizing individuals' good deeds, or providing encouragement to people who take leadership roles in promoting climate-friendly actions. Another form of social reward is "gamification," which involves using game mechanics (such as incorporating rewards) to motivate people to achieve their goals. Rewards can be given online or offline and can be as simple as the posting of an individual's photo or the announcement of names of people who have made a certain commitment. **For example, when presenting to a school or community group, communicators might consider publicly sharing the names of people who have engaged in climate-friendly behaviors. This provides an immediate social incentive for action, as people are**

often highly motivated to follow the behavior of their peers, especially those they know and trust. Combining gamification with social media such as Facebook can provide additional opportunities for larger-scale sharing of one's actions and tracking progress, as well as inspiring others to join in. Mindbloom's Life Game is a good example of a game platform, combined with social media, that helps people "grow the life" they want.[134]

In addition, research conducted by CRED shows that when people are publicly given rewards for a behavior, they become more motivated to contribute to the common good. To test the combined effect of monetary versus nonmonetary (social) rewards *and* providing feedback privately versus publicly, the researchers measured and rewarded employees for contributions to their companies' energy-conservation efforts. As expected, nonmonetary (social) rewards (such as telling people they did well or that they got a higher score than average) were more motivating than receiving money for the same behavior, and employees continued their energy-saving behavior even after the incentives ended. In addition, public feedback led to more energy conservation than privately shared feedback. Most importantly, **researchers saw the greatest reduction of energy consumption when social, nonmonetary rewards were combined with public announcements. Interestingly, financial rewards in combination with private feedback didn't work at all as a motivator to save energy.**[135] **Psychologically, social rewards and receiving public feedback spur social (and pro-environmental) behavior through the activation of social norms. Additionally, public feedback may also stimulate people to communicate about their scores and may lead to more social interaction about energy conservation.**

The positive effects of social rewards and public feedback may even spill over into other parts of people's lives beyond the original behavior.[136] When promoting positive engagement through group affiliation and social identities, communicators should include social rewards for cooperative behavior and should provide rewards in such a manner that everyone in the group is aware of them (for example, by using social media platforms to share people's successes widely and in real time). ■

SIDEBAR 27

Goal Setting in Action: Reducing Residential Water Use

To reduce water usage during summer months, residents of the Durham community in Ontario, Canada, were provided with water gauges and signs to be placed over outside water faucets. The signs reminded residents to water their lawns on specific calendar days based on their house numbers and to water their lawns only when it had not rained the previous week. Critically, residents were also asked to sign commitments—which made the goals that people had set for themselves concrete and public—that they would water their lawns only on designated days and limit their watering to 1 inch per week (72 percent of residents made these commitments). Watering in the community decreased by 54 percent during the campaign relative to rates prior to the campaign.[140]

TIPS Make Behavior Change Easy

When communicators' aim is to shift individual-level behavior—whether the focus is on household energy use or civic engagement—numerous strategies can be used to make behavior change more likely. Consider the following questions as you develop your strategy to encourage behavior change:

- What positive social norms can you highlight to encourage climate-friendly behavior?
- What opportunities exist to highlight the "green Joneses" to encourage other people to engage in climate-friendly behavior?
- How can you publicly recognize individuals and groups for their climate-friendly choices?
- How can you minimize the number of choices offered to your audience to increase the likelihood that they will act?
- Are there obvious default settings that can be changed to promote climate-friendly decisions?
- What opportunities can you create for audience members to set specific targets or goals for their behavior?

CONNECTING ON CLIMATE

Quick Reference

THE BASICS: PUTTING PEOPLE FIRST

1 Put Yourself in Your Audience's Shoes

- One of the most important things climate communicators need to understand is that climate communication is not a one-size-fits-all practice.
- People's differing ***values*** (such as freedom, prosperity, or equality), ***identities*** (such as being a mother, a Democrat, or a businessperson), ***worldviews*** (such as thinking the world should be egalitarian or hierarchical), and ***personal priorities*** (such as health and finance) all shape how they respond and react to messages about climate change.
- For example, someone who values prosperity might be receptive to a message about climate change that emphasizes how clean energy solutions can unlock new economic opportunities for American families. This same person, however, would likely be frustrated by a message that emphasizes the need for sacrifice.
- ***Tip:*** *Identify the values, identities, worldviews, and personal priorities of your audience and craft communication strategies accordingly.*
- ***Tip:*** *Think about whom your audience trusts and respects and whether these people can serve as messengers.*

2 Channel the Power of Groups

- One of the most effective ways to build long-term engagement around climate change is to harness the power of social groups and networks, large and small.
- Humans are highly social creatures. They look to their groups and networks—such as church groups, company departments, parent–teacher associations, and sports clubs—for informal social norms, customs, or standards.
- When people are physically part of a group or are reminded of their membership in one, they are more likely to promote outcomes that are good for the group.
- ***Tip:*** *Weave climate change into the activities of social groups and networks, such as neighborhood associations, religious groups, clubs, or company divisions.*
- ***Tip:*** *Provide existing group leaders with climate change communication and engagement resources to activate the group's entire membership.*

CRAFTING YOUR MESSAGE: SOLUTIONS, IMPACTS, FRAMING, AND IMAGERY

3 Emphasize Solutions and Benefits

- Research indicates that it can be more effective to start with solutions rather than first giving an overview of climate change itself. This is especially true when people hear about solutions that align with their values and worldviews.
- Solutions can help reorient people toward action and opportunity and can quell feelings of hopelessness and dread.
- People's sense of personal and collective ***efficacy***—the capacity and willingness to successfully confront a challenge—is part of what drives how they respond to climate change.
- ***Tip:*** *Talk about the roles that individuals, governments (local, regional, and national), businesses, and nonprofits can all play in addressing climate change.*
- ***Tip:*** *Describe solutions that match the decision-making authority and capacity of the audience and show people the role they can play as individuals (for example, talk*

about local impacts and local solutions, not national policy and local impacts).

- ***Tip:** Highlight the personal and societal benefits that climate solutions will bring, such as improving health, jump-starting new economic opportunities, catalyzing technological innovation, and strengthening communities.*

4 Bring Climate Impacts Close to Home

- People have a hard time thinking about or acting on events that are ***psychologically distant***—events that are perceived as far in the future, physically distant, or happening to other people.
- The concept of the ***finite pool of worry*** explains that people are able to worry about only a certain number of things at a given point.
- People are much more likely to think of climate change as a relevant and urgent issue when they understand how climate change is personally affecting the lives of those immediately around them.
- ***Emotional numbing*** occurs when audiences stop responding emotionally to a message. This can happen with climate change if people are repeatedly exposed to emotionally draining messages and images.
- ***Tip:** Use messages that help people identify the locally relevant, personally experienced consequences and impacts that climate change is already causing.*
- ***Tip:** To avoid emotional numbing when communicating about the personally relevant impacts of climate change, take care to also mention solutions and actions that people can take and to focus on what impacts will occur, rather than on the exact timeline of when they will occur.*
- ***Tip:** Be aware of losses that may have come about as a result of recent climate impacts and focus on preparedness for the next event, rather than on the timing of the next event.*

5 Connect Climate to Issues That Matter to Your Audience

- Climate change is unique in that it affects almost everything, from our health to national security, the economy, transportation, and agriculture. Likewise, climate solutions offer the opportunity to transform almost every element of society.
- Communicators can help audiences make the connection between climate change and issues that climate change and climate solutions will affect through the use of message frames.
- ***Content frames*** describe the "who," "what," "why," and "how" of a climate change narrative and can be useful in connecting climate change to issues that matter to your audience. One common content frame is the public health implications of climate change.
- ***Structure frames*** emphasize "when," "where," and "how many" and can shape how an audience relates to a message. Popular structure frames include loss versus gain, present versus future, and local versus global.
- ***Tip:** Choose content frames that connect to the audience's concerns and worries.*
- ***Tip:** Choose structure frames that make the issue relevant and meaningful to the audience.*

6 Use Images and Stories to Make Climate Change Real

- Images and stories that inspire and empower audiences and that match the narrative and tone of accompanying text can improve people's understanding of climate change and bolster their willingness to engage.
- Technical images such as charts and graphs are appropriate only when designed and chosen with the audience's knowledge and skills in mind.

- Stories are among the best ways to connect with core human values and social identities and to build bonds between individuals and groups. They enhance people's capacity for empathy and shift frames of reference for emotional and cognitive processes.
- ***Tip:*** *Images that depict people, groups, faces, or common household items are more effective and more powerful than landscapes and nature scenes.*
- ***Tip:*** *Storytelling can help make climate change more vivid and can help people imagine the future and solutions to climate change.*

OVERCOMING BARRIERS: SCIENCE, SKEPTICISM, AND UNCERTAINTY

7 Make Climate Science Meaningful

- Most people have some understanding of climate change; they have a ***mental model*** of how the phenomenon works. A person's mental model of climate change can include ideas about causes, impacts, and what can be done about it.
- By understanding people's mental models, communicators can help people update their assumptions and correct misinformation.
- The ***confirmation bias*** makes people seek out information that matches their mental models, confirming what they already believe to be true.
- Most people are unfamiliar with the metrics and scales that scientists use to describe climate science. These measures are unintuitive to most people.
- ***Tip:*** *Making audience members aware of the existence of confirmation bias and encouraging them to have an open mind can help them overcome it.*
- ***Tip:*** *Present the same piece of information in multiple formats to help people understand unfamiliar numbers, metrics, and scales.*
- ***Tip:*** *Pick just a few key facts about climate change to share with an audience and put those facts into a context that audience members will understand, rather than overwhelming them with too many facts.*

8 Acknowledge Uncertainty, But Show What You Know

- No matter whom you communicate with, there will always be a few people who are uncertain about the causes of or solutions for climate change.
- Some aspects of climate change, such as the timing and extent of climate impacts and policy and technological solutions that will be available, are inherently uncertain.
- People who are skeptical about climate change often use uncertainty as an argument in favor of not taking action on the issue instead of embracing the opposite and equally plausible approach, the ***precautionary principle*** ("better safe than sorry").
- ***Tip:*** *Acknowledge the fact that there is uncertainty around elements of climate science but emphasize that uncertainty doesn't mean we shouldn't act.*
- ***Tip:*** *Use short, simple statements to highlight what is known with great certainty about climate change—that it is happening and is caused by human activities.*

9 Approach Skepticism Carefully

- There are several types of climate change skepticism.
- Skepticism that's part of the scientific process is a key component of the climate change research process because it allows scientists to talk about uncertainties that still exist.

- Skepticism based on misinformation is the result of groups that have worked to instill doubt and climate change denial among high-level decision makers and the general public.
- Skepticism due to unconscious, underlying psychological processes is called motivated reasoning. People perform mental acrobatics to avoid negative feelings, sometimes because these feelings threaten their deeply held values and beliefs.
- Countering skepticism with too many facts can backfire: hearing a myth about climate repeatedly makes it easier to believe (the ***familiarity effect***); exposure to too many arguments refuting a myth (the ***overkill effect***) makes it harder to grasp a complex truth.
- ***Tip:*** *Identify the underlying source of skepticism at play within your audience and develop a response that matches the source.*
- ***Tip:*** *Lead with the core concept that you want the audience to grasp and use only a few of the clearest and most important facts.*

TAKING IT TO THE NEXT LEVEL: CREATING THE CONDITIONS FOR CHANGE

10 Make Behavior Change Easy

- The short- and long-term goals that people set for themselves shape the information they seek out and the behavior they engage in. When people set specific goals for action and make these goals public, they are more likely to follow through *and* take action.
- When given a choice, people have a tendency to stick with the option or behavior that is preselected for them or selected automatically—the so-called ***default effect***. Defaults are omnipresent in everyday life, which means there are many opportunities to promote positive behavior change by optimizing choice settings for social and environmental benefits.
- People often adjust or change their behavior to match the behavior customary of a certain group, because humans like to comply with the ***social norms*** that govern groups they affiliate with.
- Psychologically, social rewards and receiving public feedback can spur social (and pro-environmental) behavior through the activation of social norms.
- ***Tip:*** *Presenting climate-friendly behavior as the default choice can encourage behaviors that are beneficial for the individual and the environment.*
- ***Tip:*** *Showcase positive actions that other people are taking to address climate change, especially when these people constitute a majority in a certain area or community.*
- ***Tip:*** *Highlighting climate-friendly social norms can help motivate people to undertake their own climate-friendly behavior.*

FURTHER READINGS

This list is a brief selection of relevant further reading. For a more comprehensive and up-to-date list, please visit **connectingonclimate.org**.

Focus Group and Survey Resources

Conducting Focus Groups

The Wallace Foundation compiled this workbook to provide an overview of focus groups and information about how to conduct focus group research using internal resources. *www.wallacefoundation.org/knowledge-center/after-school/collecting-and-using-data/Documents/Workbook-D-Focus-Groups.pdf*

Toolkit for Conducting Focus Groups

The Work Group for Community Health and Development at the University of Kansas developed this resource to explain the fundamentals of surveys. Specifically, the resource describes how to prepare a survey, when surveys should be conducted, how to distribute them, and how to analyze and compile results. *www.ctb.ku.edu/en/table-of-contents/assessment/assessing-community-needs-and-resources/conduct-focus-groups/main*

Survey Fundamentals: A Guide to Designing and Implementing Surveys

This guide, produced by the University of Wisconsin, describes the underlying principles of good survey design and implementation in nontechnical terms. Simple explanations lead the reader through methodology and logistics decisions, writing effective questions, and drawing conclusions from data. *www.oqi.wisc.edu/resourcelibrary/uploads/resources/Survey_Guide.pdf*

Storytelling Resources

Seeing Is Believing: A Guide to Visual Storytelling Best Practices

This best practices guide from Resource Media provides research and tools on how to incorporate visual storytelling into communication to inspire and prompt individuals to take action or change behaviors. This guide explains why images matter more than ever and how practitioners can start incorporating this reality into an effective communication strategy. *www.resource-media.org/visual-story-lab/report/*

The Story Group Climate Change Videos

The Story Group is an independent, multimedia journalism company. The organization has developed a climate change video series based on the 2014 National Climate Assessment, which explains the science behind the issue and shows how climate change is affecting real people. *www.thestorygroup.org/category/nationalclimateassessment/*

"How to Tell a Great Story"

This blog post from the Harvard Business Review provides six do's and don'ts of effective storytelling and presents two case studies to help drive these principles home. *www.blogs.hbr.org/2014/07/how-to-tell-a-great-story/*

Additional Communication Resources

The Psychology of Climate Change Communication: A Guide for Scientists, Journalists, Educators, Political Aides, and the Interested Public

This 2009 guide, published by CRED, is a companion document to this guide. It synthesizes research from across the social sciences to explain the disparity between knowledge and action on climate change. It also includes tips for presentations, lists of effective words, highlights of successful strategies, and suggestions for better communication tools. *www.guide.cred.columbia.edu/*

Communicating on Climate: 13 Steps and Guiding Principles

This guide, produced by ecoAmerica in 2013, combines the latest research on climate communication with road-tested communication best practices in an easy-to-use, practically applicable guide. *www.ecoamerica.org/research/#comm13steps*

American Climate Values 2014: Psychographic and Demographic Insights

This report summarizes top-line findings from ecoAmerica's latest round of psychographic research, which uses a sophisticated methodology to glean insights on how to effectively engage mainstream Americans on climate solutions. *www.ecoamerica.org/research/#ACV14*

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