



Perceptions, behavior and communication of climate change

CHANGING MINDS AND OPINIONS, BUILDING GRASSROOTS MOVEMENTS

We face only one truly existential threat: that is climate change, the great moral imperative of our era. We have a duty, a responsibility, to play our part in changing minds, opinions, and policies. We have a clear message. We want nothing less than to build a grassroots movement for change, now.

Ban Ki-Moon, January 2009

As climate change has become an increasingly salient public issue, with active policy debates, the ways in which climate change is represented, communicated, perceived, and responded to by different sections of society and across different regions have become important for several reasons.

From the perspective of policy, effective and democratic climate change governance involves societal engagement. Public support for climate change policy is a key concern of political organizations and world leaders, all the more so during international negotiations associated with the 2009 Conference of the Parties (COP15). Some leaders are going further than just seeking public support for policy, suggesting a more active role for the public in creating change. Recently, the UK's Secretary of State for Energy and Climate Change, Ed Miliband, called for the creation of a global 'popular mobilization' campaign to pressure world leaders into tackling climate change, and the UN Secretary-General Ban Ki-moon, announced the formation of a global Climate Change Communication Initiative to 'build a grassroots movement for change.'¹

In many cases this interest in societal engagement by policy-makers goes beyond building public support (or demand) for policy, to encouraging individual behavior change—both in terms of energy use (mitigation) and living with climate change impacts (adaptation). Technological solutions alone are insufficient to address climate change; and even assuming technology could 'save us,' clearly an understanding of technology choice and use, and of reactions to new technologies or energy generation siting proposals, is crucial to ensure low-carbon technologies and resilient infrastructures are not only accepted but exploited to

their full benefit (for both environment and society). And, of course, mitigation and adaptation behavior extends beyond adopting new technologies. It encompasses a range of energy conservation activities and risk responses at the individual level (in domestic, transport, shopping, workplace and other contexts), as well as engagement in community and political action to change broader societal structures in order to create more resilient, adaptable, and low-carbon societies.

More fundamentally, most Western governments have an interest in engaging the public in debate about the type of society they want to live in, and empowering communities to bring about change to that effect. Here, the focus is on public participation in policy-making, community decision-making, and grassroots innovation. Climate change offers new ways and new vocabularies for challenging assumptions about quality of life, economic development, and consumption, and is as much a cultural issue as a scientific one.² Contestation—which often reflects divergent beliefs, values, and interests—over climate change and attendant social, economical, and technological responses imply a role for deliberative as well as analytic input to policy.

For other groups, there may be different reasons for being interested in the public's understanding of and responses to climate change. Businesses may be involved with formal climate change communication as part of a corporate social responsibility or a product marketing agenda (and often both), and non-governmental organizations may do so because climate change intersects with their existing environmental and social concerns and interests (e.g., biodiversity loss, social justice, development, health).

However, communication is not restricted to formal communication campaigns aimed to achieve some pre-defined end. Climate change has become common parlance within print, broadcast, and new media and in everyday conversation. A range of interests, discourses, frames, and language influence how climate change is communicated and understood, and whether (and how) it is responded to; the methods and media used to communicate the issue are no less diverse than the range of communicators or audiences. The heterogeneity of audiences—or 'publics'—and of messages, media, and contexts of communication

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undermines any presumption that communicating climate change to the public is a simple task, or indeed that communication will lead to any (or predictable) outcomes in terms of understanding or behavior.

This complex interplay between perceptions, behavior, and communication reminds us that the triumvirate in our Domain title is rarely causally or linearly related. Although it is tempting to assume that 'more information' about the causes and risks of climate change will lead to behavioral changes to mitigate and adapt to it, the reality is—inconveniently—more complex. Decisions that have implications for greenhouse gas emissions and people's assessment and responses to climate-related risk are informed by a range of factors, only one of which may be scientific information. Decision-making and behavior are products of complex interactions between individuals, groups, institutions, and the physical and natural environments. There is often a mismatch between understanding or concern on the one hand, and behavior on the other (often known as the 'value–action' gap). Attitude change—'changing minds and opinions'—is certainly no guarantee of behavior change; indeed, behavior change may *precede* attitude change. This mismatch of attitudes and action indicates the central importance of structural and social factors in determining (and constraining) human behavior.³ It also highlights the importance of interdisciplinarity across the social sciences and humanities to elucidate this field.

RESEARCH ON PERCEPTIONS, BEHAVIOR AND COMMUNICATION OF CLIMATE CHANGE

Social science research is beginning to flourish in these areas and dedicated research groups and conferences are emerging. Examples include the Center for Climate Change Communication at George Mason University; the Tyndall Centre for Climate Change Research and the Centre for Climate Change Economics and Policy in the UK; the (US) annual Behavior, Energy and Climate Change conference organised by the California Institute for Energy and Environment, the Precourt Institute for Energy Efficiency at Stanford University, and the American Council for an Energy Efficient Economy; the Tyndall Centre and UK Energy Research Centre co-sponsored workshop on Engaging the Public with Climate Change and Energy in the UK in 2008. Interest in these areas has brought scholars from different disciplines to study climate change, thus contributing their expertise on other issues to this emerging and novel area.

In some ways these fields are very young. When compared with the more established natural science tradition of climate change research, work on the social dimensions of climate change is still lagging. On the other hand, there *are* very well established theories, concepts, and methods which the social sciences—including psychology, sociology, economics, anthropology, and newer, more interdisciplinary, fields such as science and technology studies, media studies, risk analysis, public health studies, and communication sciences—are bringing to bear in understanding the role individuals and institutions play in causing and responding to climate change.

From an applied (and more interdisciplinary) perspective, a number of related areas of research can offer us vital insights into understanding (and potentially influencing) people's responses to climate change. To take just two examples: the literatures on energy use and conservation developed since the energy crisis of the 1970s, and public health education targeting various risky behaviors have much to contribute to our understanding of behavior, perceptions, and communication in relation to climate change mitigation and adaptation. From a more disciplinary perspective, well-established principles and processes of human behavior, perception, learning, communication, groups, and institutions offer a rich grounding for our understanding of human–climate interactions. Outside academia, there is also a wealth of experience and practical knowledge that can inform efforts to respond to climate change.^{4,5}

Yet, although there is an overwhelming amount of relevant information to draw on to help understand climate change perceptions and behavior, there remain few opportunities to bring together these disparate strands in meaningful and systematic ways. Significantly, the traditional academic disciplines which could help inform our understanding in this respect have—on the whole—been conspicuously silent, and have left the work of extracting and applying theory and methods to interdisciplinary researchers and teams.⁶ *WIREs Climate Change* represents a first attempt to synthesize relevant disciplinary and interdisciplinary research on behavior, perceptions, and communication of climate change. As such, we consider it a hugely valuable, dynamic resource and a forum for exchange of research and opinion on this field.

At the same time, this Domain has much to offer the overall goals of the *WIREs Climate Change* journal. Whilst primarily elucidating the perceptions, communication, and behavioral dimensions of climate change, the review articles published here will

complement other Domains that apply different lenses in their examination of climate change, e.g. economics, policy, governance.

WHAT WILL WE INCLUDE IN THIS DOMAIN?

This Domain covers research about public understanding of climate change including the ways in which climate risks—near term and longer term—are perceived, both by individuals and by larger social or cultural groupings. The theory and practice of communication as it applies to climate change is addressed, embracing a variety of media: print, web, artistic, film, and other visual. Understanding the social mediation of climate risks, a function of the interplay between different actions and stations in society, is also important, as is the role that communication and diverse interventions and policies can play in educating, fostering dialogue and debate, changing behavior, and ultimately stimulating and informing societal responses to this global risk issue.

Within this broad focus, we are interested both in commonality and divergence in perceptions and behavior at both the inter-individual level and between social groups, organisations, and cultures. We are also concerned with the influences on perceptions and behavior, and how these may (and do) change over time. Finally, the articles in this Domain will reflect a range of theories, concepts, disciplines, and qualitative and quantitative research methods.

We have divided this Domain into four themes:

1. Individual and collective perceptions of climate change
2. Communicating climate change
3. Social attenuation/amplification of climate change risks
4. Behavior change and behavioural responses.

Within these themes, some of the questions we are concerned with include the following:

- How do individuals perceive and understand climate change? How do these perceptions vary across geographical and cultural boundaries or across different groups or ‘segments’ within society? How are these perceptions formed and shaped? How do individuals and different groups perceive different (and often novel and risky) technologies in relation to climate change, including nuclear power, carbon capture and storage, wind, and geo-engineering?

- What are the sources, media, modes, and messages of climate change communication? How do these sources, media, modes, and messages differ around the world? What role does politics play in climate communication? How can we effectively communicate climate change adaptation, and can (or should) this be integrated with communication about mitigation? How can climate change communication be tailored to different audiences? How is climate change communicated by diverse stakeholders, including sceptics? How is climate change ‘framed’ in different ways by different groups and in different public discourses, and how does framing influence understanding and responses to climate change? What theories can help inform our understanding of climate change language and communication?
- What theories and models are relevant to understanding how people respond to climate change as a ‘risk’ issue? How can—or might—climate scenarios be used to inform decision-making and change behavior? What are the barriers to public and stakeholder engagement with climate change risk and uncertainties? What grassroots and community-based initiatives exist for fostering behavior change in respect of climate change? What are the unintended behavioral consequences of policies and technologies intended to address climate change?

These questions encapsulate the most salient and over-arching aspects currently considered within the social sciences in relation to climate change. They embrace both individual and societal understandings of climate change and they engage with contemporary (sometimes contested) considerations. Many of these questions could already be, at least partly, answered through recent research which has explicitly aimed to tackle these issues. In some cases, the review articles commissioned will necessarily need to be more creative and interpretive, examining findings from related fields or theories which were not originally expounded with climate change in mind. Such an example is that of communicating climate change adaptation—to date little research or policy has addressed this, yet there is a wealth of information on communicating and perceiving related risks, such as flooding or storms, which can be brought to bear. In this sense, then, we are not only synthesizing existing research, but also creating new knowledge and forging an agenda for future research in this Domain.

Future research will need to respond to (sometimes rapidly) changing scientific, policy and societal contexts. Such developments may include the increasing urgency of the mitigation task, the shift in policy focus towards adaptation, changing economic conditions, as well as new research findings and concepts (e.g., how individuals perceive the future, or respond to information about rapid climate change). This changing context will be reflected in the focus of future articles we will seek to publish.

There are, of course, links from this domain to the other *WIREs Climate Change* domains, particularly to the more socially oriented Domains, such as Climate Policy and Governance and The Social Status of Climate Change Knowledge, but also to other Domains, such as Assessing the Impacts of Climate Change and Climate, Nature, Ethics. In light of this, we are co-commissioning several articles with other *WIREs Climate Change* Domain editors. We are excited about such opportunities for collaborations, for new interdisciplinary research, and for exposing different viewpoints on the complex issue of climate change, offered by *WIREs Climate Change*.

CONCLUSION

This Domain sheds light on perceptions, behaviors, and communication in relation to climate change, and the complex interplay between these. It draws together insights from across disciplinary and interdisciplinary fields, as well as practical expertise from outside academia. It responds to a call to arms from academics and world leaders to understand and mobilize society to address climate change. It not only synthesises, but also creates, knowledge. It fosters new collaborations and sets out a research agenda for this field. We hope you will find this Domain useful and timely, and we look forward to receiving your contributions or comments.

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