



CLIMATE
outreach

Communicating Environmental and Sustainability Science

*Challenges, opportunities,
and the changing political context*

Part 5 of 5

Gaps and opportunities for environmental science communication research

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Gaps and opportunities for environmental science communication research

Introduction

Environmental science communication, whilst having to confront a dynamic and at times unfavourable political atmosphere, would appear to have the benefit of a strong headwind of public support. People have a strong desire to know how science affects their daily lives. A UK survey reported 84% of respondents agreed that science is such a big part of our lives that we should all take an interest, and 72% agreed that it is important to know about it in their daily lives (IPSOS MORI 2014). However, the link between bodies of scientific evidence – such as those captured in Intergovernmental Panel on Climate Change (IPCC) reports – and people’s daily lives or the way they think about and plan for the future, is often hazy or absent altogether (Corner & van Eck, 2014). So there are both gaps and opportunities for environmental science communication research going forward.

A better understanding of how environmental science connects with diverse audience values

Earlier in this report we reviewed ongoing and important research on values, framing and narratives. However, there has been little direct research (i.e. in the field) into how groups and social contexts (e.g. social networks, group norms, group membership, social identity) influence responses to environmental science messaging (NASEM, 2017). There are ‘segmentation’ models of some populations (e.g. the Six America’s project; Leiserowitz et al., [2011]– which has also been extended to India; Leiserowitz et al., [2013]). The body representing the UK’s research councils has recently commissioned research segmenting the UK population by their attitude to academic (though not just scientific) research, and through this process identified five main categories (RCUK, 2017). Also in the UK, Climate Outreach has been working to improve understanding of how to connect scientific evidence with different sets of values and identities, for example with centre-right audiences and faith groups (see below). But there is a dearth of understanding about how environmental science connects with diverse audience values, given the importance of values, worldviews and ideological perspectives for this process.

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Two UK-based examples, led by Climate Outreach, indicate the promise of taking a values-based approach to audience research on climate change. Whitmarsh and Corner (2017) developed and tested a series of ‘narratives’ to better engage citizens with centre-right political views. The research showed that climate justice discourses, which feature prominently in the climate change debate, did not connect well with centre-right publics. Energy saving narratives focused on conservative themes of avoiding waste, and narratives which described domestic energy production in terms of building a ‘Great British Energy’ system, both resonated strongly with centre-right audiences (and were well-received across the political spectrum).

Marshall et al. (2016) explored climate change messaging with five major faith groups in the UK – Buddhism, Christianity, Hinduism, Islam and Judaism – to identify not only language that works with each of the faiths, but also language that works across all of them. The project started by consulting a team of faith experts about the messages they found had been most effective in their work, and also drew on a wide range of research, educational materials and faith-based climate change statements. From this initial research, trial narratives were constructed in the form of a speech or sermon. Discussion groups (termed ‘Narrative Workshops’) were then held within each of the five faith groups following a testing methodology refined by Climate Outreach (Shaw & Corner, 2017). The workshops discussed values, identity and attitudes to climate change, and then appraised the trial narratives, recommending ideas around restoring ‘balance’ and stewardship of the Earth as narratives that could engage across faith groups.



Narrative Workshop at St John’s Church in London, UK. Photo: Climate Outreach

This kind of ‘applied’, but carefully-designed research, is important for bridging the gap between research and practice on environmental science communication, providing evidence about how different publics make sense of the implications of environmental science, in terms familiar to their lives. But this kind of research is relatively sparse, despite the promise it holds for making progress on public engagement. Further studies in this vein – with groups from other countries and cultures targeted as a priority – would be a profitable direction for future research.

'Curiosity' about science: re-making the link between scientific literacy and public attitudes?

"Why hasn't the new 'science of science communication' achieved more?" ask Kahan and Carpenter (2017, p. 309) in a paper published at the time that this report was being written. Their answer is that too much of the research takes place in the lab, away from the real world settings where people encounter and interpret scientific evidence. There is also a tension – that surfaces regularly in debates about environmental science communication – between the notion that facts on their own are generally insufficient to engage the public effectively (i.e. the post-deficit model approach), and the undeniable centrality of facts and evidence to science communication. In a post-deficit model approach, using well-framed messages that engage diverse values, what role is there for the actual science that is, ultimately, the focus of the communication in the first place?

A reconciliatory response to these challenges is to view science not as a series of facts and figures, but as a way of understanding the world. In schools, science is taught as a series of 'answers' rather than as a method for asking questions. And, as a consequence, people seem to have different expectations about uncertainty in science, relative to 'everyday' situations where uncertainty is seen as a given (even though it is an inherent characteristic of science). One study found emphasising that 'science is a debate' as opposed to 'science is a fixed body of facts' influenced people's motivation to act on scientific messages, even if they contained uncertainty (a notorious barrier to communication – Corner & Hahn, 2009). Participants who understood that 'science is a debate' were less likely to dismiss messages containing uncertain information. So uncertainty will not always undermine the effectiveness of science communication, as long as it fits the audience's understanding of how science works. In the same way, an understanding of what science as an endeavour is may help to bridge the gap between scientific evidence and how people receive it – even in the midst of political polarisation.

One example of this is termed 'science curiosity' – an interest in science for its own sake. Research by Kahan et al. (2017) explored this concept, demonstrating that scientifically curious people tend to seek more disconfirmatory information than those low on science curiosity, and that there is less partisan polarisation on issues such as anthropogenic climate change among the science curious. Additional research (Shi et al., 2016) on scientific curiosity concluded it could be possible to improve communication about environmental science by better understanding what kinds of people are science-curious and how science curiosity related to political orientation.

Citizen science initiatives – the term for the broad sweep of activities that seek to involve members of the public directly in scientific activities (e.g. by gathering data) – may help facilitate science-curiousity and offer potential for building a more nuanced public understanding of how science arrives at answers in an ongoing process of proposing and testing hypotheses to improve prediction of real world behaviours (rather than as a static list of factual claims). A much better understanding of science-curiousity – and how to nurture it among diverse communities – would be a productive direction for future research.

Conversational approaches as a substitute for information wars

Nisbet and Markowitz (2016) note that 'efforts to debunk misinformation often have the unintended effect of backfiring, reinforcing false beliefs and fostering distrust of messengers who provide the corrections.' One possible reason the science of science communication has had limited success (Kahan & Carpenter, 2017) is that the field – natural and social science both – remains dominated by positivist philosophies that find it difficult to imagine an alternative to information transfer models.

Commenting on their reasons for not attending the March for Science (which could itself be perceived as an unrealistically simple response to a complex problem), one science communications specialist remarked “The failure of the information deficit model is a research fact but I don’t know how many times we have to repeat this to scientists and show them the research” (Stone, 2017).

Whilst the potential of peer-to-peer conversation remains underexploited (Eveland & Cooper, 2013) there is growing international interest in the power of facilitated conversations as a tool for enabling a shared curiosity about (and concern for) environmental science (e.g. Shaw & Corner, 2017). It is apparent that ‘if people are encouraged to informally discuss science and how it relates to problems like climate change, such conversations help promote more effortful processing of the information that people might encounter in the news or elsewhere, and this greater level of elaboration can lead to a deeper and more sophisticated understanding of complex issues’ (Nisbet & Markowitz 2016, p.5).

Climate Outreach have developed a ‘*Climate Conversations*’ framework for the Scottish Government (Shaw et al., 2016), where the target audience was the entire national population. Scotland has the world’s most ambitious climate change policies (Scottish Government, 2016). One route by which the Scottish Government is seeking to build awareness is through peer led dialogues facilitated by the ‘*Climate Conversations*’ framework. The Scottish Government intends the framework to be used by diverse groups to get the people of Scotland talking with their peers about climate change: there is no expectation or requirement that the conversation leads directly to behaviour change. A secondary purpose is to provide evidence to inform the development of climate policy by exploring public knowledge of, attitudes towards and engagement with: a) climate change b) policies to address climate change and c) the future transition to a sustainable low carbon society. The ‘*Climate Conversations*’ framework is unusual insofar as it provides a methodology for holding conversations about climate change that last only an hour whilst significantly reducing the level of facilitation and climate change expertise required. Importantly, it also offers a template for moving from communication to engagement at scale.

These types of initiatives suggest that investment in deepening our understanding of how narrative approaches can deliver more effective environmental science communication and engagement would be an important step towards translating the potential for dialogue-based methods into reality.

From frames to narratives

Our review of the evidence on environmental science communication points to a need for improved understanding of how to use dialogue-based approaches to build deep and sustained engagement. But there is also clearly a continued need for mediated communication, where a variety of different actors communicate about science using differently framed messages.

That means more research is needed into how messages are framed and the role of narrative structures in messaging. As one of the interviewees for this report emphasised, what members of the public conceive of as ‘environmental science’ is broad and diverse. Climate change, for example, is typically not experienced as ‘climate science’, but as choices about energy infrastructure, questions about economic development in developing nations, or decisions



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about locating new urban infrastructure in a changing climate. These are rich, varied stories about human development. Thus it follows that rich, varied narratives about these social and political themes may hold more promise as vehicles for engaging the public on environmental science than differently 'framed' messages which are in fact not so different to standard scientific communications. We argue here that research should move from simple alterations in message framing to a deeper and more systematic consideration of the role of narratives and stories as a way of building more meaningful engagement with environmental and sustainability science. This extends to enhancing our knowledge of consensus messaging and the communication of scientific uncertainty: these themes are best explored in as realistic settings as possible, to complement and extend the lab-based knowledge base that currently exists.

The international dimension

It is clear that research into science communication has to date been focused in the global North, and the wealthy high emitting anglophone countries in particular. The need to engage global populations, to have a deeper understanding of comparisons between countries, and to work at scale will become increasingly important as the effects of climate change become increasingly intense and widespread. As a field, science communication has barely scratched the surface in terms of understanding how global publics – with very different needs, competing priorities, and aspirations – relate to environmental and sustainability sciences.

As a starting point – and based on a suggestion by one of the interviewees for this report – a regular, international survey of public opinion on contemporary environmental science topics would help to benchmark understanding and engagement across the world. Although cross-national surveys are frequently conducted, they are typically very broad in their remit (e.g. the Eurobarometer polls) and therefore do not offer much depth of understanding on any particular topic or theme. Given that many of the most pressing applications of environmental science interact powerfully with the economics of rapidly industrialising nations, ensuring that the views of members of the public within these countries on environmental and sustainability science are better understood is important.

Full report sections

- Part 1** Science communication:
from information to dialogue
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a synthesis of key trends in environmental
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- Part 5** **Gaps and opportunities for
environmental science communication research**

Access the full report at
<https://climateoutreach.org/resources/communicating-environmental-sustainability-science>

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