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From climate knowledge to collective action: the case for integrating sustainability science and strategic communication as a catalyst for change

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The sustainability value-action gap remains a critical challenge. In this perspective, we argue that, without structural institutional change, current scientific communication methods will fail to drive systemic transformation at the necessary scale and speed. We therefore advocate for the integration of strategic communications, drawing insights from marketing and advertising to enhance the effectiveness of sustainability messaging. We outline three principles for this shift: fostering emotionally resonant and value-aligned associations, balancing long-term messaging with short-term appeals, and tailoring messages to the lived experiences of target audiences. Real-world examples, ranging from climate adaptation in King County to narrative campaigns in New York, demonstrate the potential of these approaches. We conclude by advocating for building strategic communication capacity, the development of boundary spanning professionals, and a call for greater institutional recognition of communication as a professional practice essential to sustainability transformation.

KEYWORDS

sustainability, strategic communication, environmental communication, sustainability transformation, marketing

Introduction

The scientific community is one that often treats knowledge as an artifact, constructed through an objective lens, then communicated as an instrumental object from sender to receiver. But to ignore the relational breakdown and re-constitution of that knowledge through the institutional structures of society poses a significant risk. For proof, we need look no further than the lack of urgency with which systems transformation is treated—despite the risk that inaction poses to both nature and human wellbeing.

It is hardly controversial to say that the growing climate and biodiversity crises are hard to ignore. Yet in the years since the IPCC Sixth Assessment Report sounded the most recent global alarm, human-induced climate change has continued to accelerate at a startling rate (Forster et al., 2023). Over this same period, our collective scientific understanding of the risks that radiative forcing, ocean warming, extreme weather intensification, biodiversity collapse, and other human-induced environmental changes carry has grown exponentially.

So why then has this knowledge not been translated into wide-scale action at a rate that can adequately keep pace? The answer, perhaps, lies in the embeddedness of science within extant global systems—and its inherent incentive to remain independent of practice.

In this perspective, we put forward the case for researchers and scientists to act as ambassadors for sustainable futures—and to do so in a way that goes beyond the simplification of complex findings. We advocate for climate and sustainability scientists and the academic institutions that support them to borrow from the principles of marketing practice and develop strategic communications that catalyze collective action.

Beyond science and environmental communication

Sustainability scientists today face the same ethical dilemma that Norton (2005) observed in the halls of the United States Environmental Protection Agency over two decades ago: to accept the atomistic position of knowledge producer from which scientific legitimacy has historically been derived, or challenge hegemonic expectations by acting as agents of change.

There are two frequently cited and distinct, although interrelated, fields that have historically been relied upon for achieving the latter: science and environmental communication.

Science communication concerns the transmission of knowledge to non-expert audiences. This field utilizes the deficit model, which suggests that increasing public knowledge will result in better decision-making. However, the efficiency and sufficiency of this model have been repeatedly questioned (Simis et al., 2016; Suldovsky, 2016). Though science communication has developed a number of techniques for simplifying complex information, Fischhoff (2013) argues that successful science communication must not only convey facts but also account for audience values, cognitive biases, and contextual understanding – suggesting a need to integrate other forms of communication. This need is compounded by Scheufele and Krause (2019) observation that there is a growing threat from misinformation and the politicization of science, particularly in climate discourse.

Environmental communication, meanwhile, typically explores how narratives, imagery, and framing affect public perception of environmental issues. Schäfer and Schlichting (2018), for example, examined media coverage of climate change and found that framing strategies, such as emphasizing economic impacts versus ecological urgency, significantly influenced public concern and behavior. This field, therefore, encourages the use of narrative storytelling, visual communication, and framing techniques that align climate messaging with audience values (Nisbet, 2009)—which can be enhanced with cognitive insight.

We posit that affecting global systems transformation requires more than an improvement in any of these individual forms of communication. Instead, it requires an integrative and strategic approach (Rödel et al., 2023), and one which leans on the principles of strategic communication. By borrowing insights from behavioral science, psychology, and marketing, an integrated view of communication is capable of shaping awareness, motivation and action.

Communications and behavior change

Individual and organizational behavior change is not a product of informational inputs. It is an actively constructed process that

connects emotional and rational motivations to action. Real-world labs, transdisciplinary research and collaborative approaches have emerged as promising academic responses to the challenges outlined here (Lindenfeld et al., 2012)—their success is still constrained by the same institutional barriers that prior paradigms have faced. Namely, a poor long-term funding outlook and slow dissemination of knowledge beyond participating actors (Bergmann et al., 2021).

While institutional reform is a crucial component, the reality is that any knowledge to action pathway which achieves the requisite speed, efficacy and breadth demanded of the current climate crisis is unlikely to arise from our current apparatus. Instead, then, it is worth what can be learnt from systems that have closed the gap between values, knowledge and action. And few social constructs have capitalized on this pathway as effectively as the free market—specifically through the mechanisms of marketing, advertising and creative communications. Far from the foundational notion that the economy is an enduring *invisible hand* that optimizes social and economic outcomes through the self-interested actions of individuals, the choices consumers make today are influenced significantly by the strategies of marketers and brand managers.

It is in this relationship that the central learning, and parallel can be found. As management scholars know well, the dynamics of competitive marketplaces are not simply studied in the pursuit of theoretical knowledge. This knowledge is routinely and contextually applied by free market actors to gain competitive advantage, or further self-interests. And it is this strategically motivated application of knowledge that bridges the action gap, influencing a targeted group of individuals to act in a particular fashion.

Logically, it follows that a similar strategic and motivated application of knowledge may help to shape the urgent, collective systems change that sustainability science indicates is necessary to avoid crossing irreversible environmental tipping points (Stavi, 2023). The following section, therefore, considers which established principles of marketing and strategic communications could be applied by researchers to accelerate sustainable systems transformation.

Principles of strategic communications for sustainability science

In the reading of the following principles, it is assumed that science and the market play a similar role—embedded and institutional constructs through which knowledge and value are, respectively, transmitted. However, an important distinction is that from the perspective of a marketer, the market is simply the playing field upon which competitive advantage is built through the application of strategic communications. It is from this perspective that marketing and advertising scholars have built a substantial pool of knowledge regarding how to drive behavioral change.

Principle #1—One of the most established theoretical principles of marketing is that purchase behavior, or more specifically the propensity of buyers to choose one brand over another, can be predicted by quantifying brand salience. Whilst precise methods of measurement vary, this metric is generally conceptualized as the quantity and quality of memory network structures held about a given

brand—which affect the likelihood it comes to mind in a contextual purchase scenario (Romaniuk and Sharp, 2004).

At a basic level, this principle highlights that action is not driven solely by awareness - instead drawing on the notion of memory as a series of linked nodes. Links between a brand and particular associations grow over time as consumers are repeatedly exposed to them in shared contexts (Keller, 1993). The quality and quantity of these associations in turn affect accessibility in memory, which combined with the distinctiveness of the brand, determine purchase likelihood (Romaniuk et al., 2007).

What this pathway clearly demonstrates is the importance of associated qualities and values in influencing action. It follows, therefore, that framing of rationality, perpetual crisis, overshoot and complex geo-political negotiation create memory structures that associate climate and the environment with those qualities. Such catastrophe-oriented stories and associations are less effective drivers of pro-environmental support and action than solution-oriented stories (Baden, 2019) – contributing to both short and long-term inaction.

Thus, to capitalize on what is already well known in brand management, and more directly impact action, climate and sustainability researchers should consider how to communicate findings in a manner that does not just build awareness but contributes to associations that are conducive to action.

An example of this in practice comes from King County in Washington State which localized climate change messaging by connecting risks to issues already salient in the minds of constituents, repeated local visuals and stories—resulting in a greater willingness to support adaptation investment (Moser and Dilling, 2007). Similarly, the success of the Chicago Climate Action Plan is, in part, attributed to the strategy of linking pro-environmental behaviors to an existing and distinctive civic identity (Carvalho and Peterson, 2012).

Principle #2—The second, complementary principle, is that action (sales in typical marketing parlance) is driven by the combination of short-term and long-term communications investment. Born out of advertising effectiveness research, with the aim of optimizing communication investment, the commonly cited 60:40 rule states that the greatest return is found by spending 60% of a budget on long-term brand building activity, and 40% on short-term activation (Binet and Field, 2013). While activities that encourage immediate purchases based on rational appeals, such as price promotions and discounts, do provide short-term sales uplift—underinvestment in long-term emotional association building leads to lower performance when measured across greater timescales.

In addition to reinforcing the importance of the first principle, the learning for climate and sustainability scientists from this research should be that there are two pathways to action. The first requires communicating rational appeals in which the incentive to act is both clear and in consonance with the requisite effort. The second involves long-term repetition of a consistent emotional appeal—which may, based on the normative constraints of academic and policy publications, require direct engagement with alternative channels.

To date, there have been a number of successful trials that demonstrate the benefits of emotional appeals in sustainability communication efforts. Notable examples include how a shift in messaging from the perils of melting glaciers to stories of

community resilience led to stronger community engagement with climate scientists (Goldberg et al., 2020), how emotionally resonant testimony helped health and policy advisors build public support for a statewide fracking ban (Fanggi et al., 2025), or how arts-based science communication techniques can shape pro-environmental behaviors (Dwyer et al., 1993; Curtis et al., 2014).

Principle #3—The final principle relates not to the process of communication, but the content itself. It is common practice for brand managers to invest substantially in research that uncovers which associations will have most impact on a particular audience. Sustainability and climate science, following in institutionally reinforced tradition, tend to communicate findings in a sterile manner—leaving policymakers, activists, journalists and others to ascribe emotional associations in ways that typically support other hegemonic agendas.

Fortunately, there is a growing body of socio-scientific research dedicated to climate messaging, and the results support the advertising and marketing consensus—that relevance to an audience matters (Soliman, 2024). It is not enough to simply provide information, discordant narratives or framings that an audience cannot relate to—strategic communication involves deliberately crafting messages that resonate with an intended group, then drive action through a specific call to action. Build the right associations through which an individual can connect their own personal experience, and then make a simple, clear request which enables them to express that. This dynamic relationship between message encoder and receiver is the core premise that great communications campaigns are built on.

Nisbet (2009) highlights the importance of such understanding, or frames, for effective public engagement—highlighting that despite positive impacts on liberal voters, scientific consensus on climate change can have a negative effect among conservative voters, and framing the same policy around national security or stewardship is more persuasive.

Of course, there is a strong case to suggest that engaging with these principals and consciously signaling a preferred course of action risks the objectivity, and ultimately perceived legitimacy, of scientists. That logic is, in all likelihood, a part of the self-reinforcing feedback loop that has led to the failure of science to address the current sustainability value-action gap. Thus, it is important to also recognize that a lack of engagement with strategic engagement may not represent a lack of will.

Compounding this is the simple fact that researchers employed by universities, governments, and other institutions often lack the frameworks that support effective communication. Such work is typically undervalued, sidelined in favor of metrics like publication count and citation rates. This points to a broader problem. The overreliance on individual agency in a system that underfunds and deprioritizes strategic engagement. Fischhoff (2013) suggests communication must be recognized as a collective professional discipline—one requiring dedicated training, infrastructure, and cross-disciplinary support.

Without such structural change, an alternative is to consider building and nurturing networks capable of doing so. As Dr. Cundill Kemp suggested in a plenary address the 2024 PECS-III Pathways to Sustainability conference, invest in *knowledge brokers*. Ranging from

infomediaries with persuasive platforms to innovators who develop solutions (Cash et al., 2003; Meyer, 2010), these are boundary spanners who can help disseminate knowledge and actively stimulate action. They are the people who can connect theory to context. They are the people who can amplify not just knowledge, but the action we sorely need.

We conclude, therefore, with a call not to accelerate the volume of knowledge produced, but build more effective, and integrative, pathways for disseminating it – drawing not only on science and environmental communications, but the wealth of knowledge that exists within the practices of marketing and advertising that already shape so much of human behavior. And for greater institutional recognition of this vital work.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

CM: Writing – original draft. HP: Writing – review & editing.

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