

Behavioural climate policy

SANDER VAN DER LINDEN*

Department of Psychology, University of Cambridge, Cambridge, UK

ADAM R. PEARSON 

Department of Psychological Sciences, Pomona College, Claremont, CA, USA

LEAF VAN BOVEN 

Department of Psychology and Neuroscience, University of Colorado, Boulder, CO, USA

Global climate change is the largest existential threat of our time. Glaciers are retreating, sea levels are rising, extreme weather is intensifying and the last four years have been the hottest on record (NASA, 2020; World Meteorological Organization, 2020). Although climate change is already significantly impacting natural and human systems around the world, mitigating further and potentially disastrous climate change will require large-scale individual and collective action, including public support for mitigation policies, as well as the more rapid development and implementation of adaptation plans (van der Linden *et al.*, 2015; Pearson *et al.*, 2016).

Against this backdrop, the USA, one of the world's largest producers of fossil fuels, is set to withdraw from the 2015 United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement on 4 November 2020, before the next United Nations Conference of Parties (COP 26) will convene in Glasgow, Scotland. The Intergovernmental Panel on Climate Change (IPCC) is currently in its sixth assessment cycle (with a synthesis report for policy-makers scheduled for 2022, in time for the first global stocktake under the Paris Agreement). However, a 2018 special report already warned that global warming is likely to breach the 1.5°C threshold between 2030 and 2052 if warming continues at current rates (IPCC, 2018). Accordingly, global emissions must be reduced to net-zero by 2050 to meet key emissions targets; yet, only eight nations to date have instituted a national policy framework or passed legislation to help reach this target (World Economic Forum, 2019).

In this special issue, we showcase what behavioural science has to offer to help achieve large-scale behaviour change and policy support. As others

* Correspondence to: Department of Psychology, School of Biological Sciences, University of Cambridge, Cambridge CB2 3EB, UK. E-mail: sander.vanderlinden@psychol.cam.ac.uk

have noted (e.g., Levin *et al.*, 2012), climate change presents a unique challenge for policymaking for several reasons, including the relatively short window to act (and long-lag consequences for both action and inaction); the fact that those seeking to address the problem are also contributing to it; and, given the complexity and scale of climate change, the need for a truly global response. As such, traditional policy tools, such as relying on local market mechanisms to raise the price of carbon and drive technological change, may be insufficient, or they may operate on too slow of a timeframe to meet key adaptation and mitigation targets.

A few observations are crucial in motivating this special issue. The first is that although behavioural science can make significant contributions to reducing greenhouse gas emissions, creating a ‘behavioural wedge’ for larger policy changes (Dietz *et al.*, 2009), it is noteworthy that behavioural scientists (especially psychologists) have played little role in the IPCC reports until recently. Elke Weber (a contributor to this special issue) was the first psychologist to be included as a lead author in the fifth assessment report. As Baruch Fischhoff ([this issue](#)) notes, “we need to treat climate science as a behavioural endeavor.” The second is that climate change remains a highly politicized issue in major emitting countries such as the USA (Ballew *et al.*, 2019). Accordingly, research has focused on trying to understand more basic processes, such as group polarization and science denial, which pose substantial barriers to developing and enacting bipartisan climate policy (Ehret *et al.*, 2018). A consequence of this trend has been that policymakers have traditionally shied away from nudging climate policy (van der Linden, 2018), noting that climate change is going to need ‘more than a nudge’. Behavioural research that has focused on changing actual behaviour has shown some promise, for example, through climate-friendly defaults (Sunstein & Reisch, 2014; Kaiser *et al.*, 2020), but a recent meta-analysis of randomized controlled trials testing a wide variety of behavioural interventions between 1976 and 2017 concluded that average effect sizes are small, with low uptake and little evidence of sustained positive effects post-intervention (Nisa *et al.*, 2019). However, most studies included in the meta-analysis examine arguably low-impact behaviours, and the study of behavioural interventions in this area is relatively young compared to other fields, so existing studies may fail to capture the potential of behavioural interventions on a larger scale (Stern, 2020; van der Linden & Goldberg, 2020).

Accordingly, it is fair to say that there is more work to be done beyond ‘trivial interventions’ (Oliver, 2017), and that the opportunities for advancing behavioural climate policy are many and varied. This special issue seeks to advance novel insights on this front. We need behavioural scientists of all stripes to advance our knowledge of how to overcome polarization (e.g.,

Sunstein *et al.*, 2016), as people's beliefs about science and each other are intricately linked to policy support (Van Boven *et al.*, 2018; van der Linden *et al.*, 2019), but we also need research that advances our understanding of how to engage and influence policymakers, as well as how to change consumer behaviour and mobilize public support directly. The contributions in this special issue reflect each of these efforts. Together, they advance a framework for behavioural climate policy centred around three pillars: (1) removing social and partisan barriers to policy design and implementation; (2) developing, evaluating and disseminating interventions that target consumer behaviour; and (3) complementing behavioural nudges by facilitating local and deliberative decision-making. We hope that the field will benefit from organizing and strengthening the efforts of behavioural scientists in each of these areas.

Removing social and partisan barriers to policy design and implementation

The first pillar for behavioural scientists is to identify, understand and remove partisan and other social barriers to policy design and implementation. A 'top-down' perspective highlights how politicians and other political elites communicate to the broader public about the importance of enacting climate policy and its design. Rinscheid *et al.* ([this issue](#)) argue, for example, that political parties in the USA can bolster public support for specific climate policies such as phasing out fossil fuel vehicles and the deployment of carbon capture and storage, but only to the extent that people trust the parties involved. Their findings highlight the importance of trust in politicians and other experts as a moderating factor in support for climate policy.

A 'bottom-up' perspective highlights how local activists and grassroots efforts can motivate both the broader public and political elites to support climate policies. Sherman and colleagues ([this issue](#)) discuss four behaviourally 'wise' (Walton & Wilson, 2018) strategies – affirmation, social norms, legacy and immediacy – that citizen activists can use to convince policymakers to support climate policy. They summarize an exploratory study with a grassroots citizen lobbying organization, providing evidence for the resonance of these strategies and highlighting social psychological factors that influence whether and with what success grassroots activists implement these strategies in their lobbying efforts.

In addition to understanding social barriers within traditional political hierarchical structures, other papers demonstrate the importance of 'side-to-side' influence on support for climate policy. Rabb *et al.* ([this issue](#)) show that public understanding of climate change and climate policy rests largely on perceptions that individuals within one's broader community understand climate change. This 'community of knowledge' hypothesis can undergird support for

climate policy. Similarly, Goldberg and colleagues ([this issue](#)) explore public attitudes towards climate policy, finding that perceptions of injunctive social norms about climate policy – the stances and behaviours that are approved or disapproved of by one’s political in-group – are among the strongest predictors of support for climate policy in the USA, especially among Republicans. This finding may be especially important in light of recent evidence that conservative attitudes towards climate change may be less stable and more changeable than liberals’ attitudes (Jenkins-Smith *et al.*, 2020). Of course, social norms and community effects might not only influence policy support, but might also directly influence consumer behaviour.

Policy interventions for consumer behaviour

The second pillar that behavioural scientists can address is the design of policy interventions to change consumer behaviour. There is significant potential for large-scale reductions in emissions if such behavioural changes are implemented at national and international scale. For example, studies estimate that behavioural interventions can reduce up to 20% of residential emissions in the USA alone (Dietz *et al.*, 2009). Globally, human consumption and waste patterns, including food, energy and transportation use, and their indirect effects on supply chains, are estimated to account for up to 60% of global greenhouse gas emissions (Ivanova *et al.*, 2016).

One key insight from this special issue is the importance of the social context in which people make consumer decisions. For example, Sparkman *et al.* ([this issue](#)) point out that, as a social dilemma, climate change is fundamentally a problem of vicious and virtuous behaviour cycles. Critically, Sparkman and colleagues highlight that many unsustainable behaviours, such as driving and meat consumption, remain the current norm. So how can we change societal norms around unsustainable behaviours? Sparkman *et al.* suggest that people’s tendency to conform to trends (i.e., dynamic norms) and signals that others are working towards a common goal can both increase sustainable behaviour, even if that behaviour is currently counter-normative. Yet, at the same time, norm interventions must be carefully designed. As Rinscheid *et al.* note in this special issue, normative messages do not always produce the intended effect, and norms that communicate the prevalence of *non*-sustainable behaviours can *decrease* consumer support for de-carbonization policies, such as proposals to phase out fossil fuel-based cars. Together, these papers highlight that consumer behaviours are embedded in social contexts that must be carefully understood and navigated.

As Fischhoff ([this issue](#)) recommends, behavioural insights need to be translated into quantitative estimates that climate models can work with. This

involves estimating and focusing on the emissions-reduction potential of different behaviours (high- versus low-impact behaviours) and the likelihood that people who are in a position to do so will actually adopt the suggested behaviour (i.e., ‘behavioural plasticity’). It has become increasingly clear that behavioural interventions are more likely to be effective when both cognitive and contextual barriers to decision-making are reduced (Stern, 2020), which requires a more careful consideration of the social, economic and institutional contexts in which people make decisions and the need to consider behavioural insights at all stages of the policy process.

Local and deliberative decision-making

Behavioural approaches to climate policy have largely focused on what policies would be effective, for example, by increasing policy compliance at lower cost through the provision of tailored information, appeals to norms, and goal-setting (see Howlett & Rawalt, 2019). Considerably less attention has been paid to the *process* of policy design (see Fischhoff, [this issue](#)), which is an unfortunate oversight. Behavioural scientists have much expertise in how to structure group processes (e.g., Sunstein & Hastie, 2015) and negotiation (Bazerman *et al.*, 2000) to achieve desirable, stable outcomes. Applying such behavioural insights to the process of policy design – from agenda-setting and policy formulation to implementation and evaluation – is an important opportunity for behavioural scientists.

Árvai and Gregory ([this issue](#)) highlight structured decision-making as a means to identify and balance key trade-offs in climate change decision-making between different stakeholders who must balance often conflicting economic, social and environmental objectives. There has been scant research on how to make better climate risk management decisions, in contrast with the larger literature on managing risk in business contexts. Moreover, policy decisions are often based on misperceptions about what a target population needs or prefers (Schneider & Ingram, 1993). Rather than focusing on ways to remove obstacles to high-quality decisions or to simply educate people to better understand risks (Reijula *et al.*, 2018), they describe a framework to help decision-makers work with stakeholders to organize and prioritize policy aims to produce better, more defensible policy solutions. They illustrate this approach with two case examples – energy system transitions and adaptation to sea-level rise – that used structured processes to encourage deliberative decision-making. These procedures may also help to address a common concern behind choice architecture and other behavioural interventions: that stakeholder engagement is merely a façade behind which real decisions are being made (Renn *et al.*, 1993).

Scaling behavioural approaches to climate policy

The articles in this issue make some progress towards answering critical questions while exposing key knowledge gaps. How can we make climate science, including behavioural science, more relevant to policymakers? How can we balance the specificity of what policymakers need with what behavioural scientists can realistically offer?

Although behavioural interventions are promising, important questions remain about their durability and cumulative impact. For instance, it remains to be seen whether technological change – and behavioural interventions to speed such changes – leads to a growth or reduction in emissions through consumer behaviour. Renewables are currently the cheapest source of new power generation in much of the world, with utility-scale solar and wind set to outcompete existing coal plants in cost savings in 2020 (UNEP, 2019). Yet, cost savings associated with technology improvements, such as the use of more fuel-efficient cars, can sometimes lead to increased emissions and lower mitigation effort (i.e., rebound effects; Fisher-Vanden & Ho, 2010). Similarly, recent advances in new carbon removal technologies, so-called negative emissions technologies (NETs; National Academies of Sciences, Engineering, and Medicine, 2019), may be viewed as a future failsafe for deficient mitigation and adaptation planning. How policymakers – and their target audiences – understand and prioritize both the near- and long-term impacts of different climate policies remain critical questions for behavioural science.

Moreover, there is a need for testing the effectiveness of behavioural interventions at both individual and macro levels and considering the contexts in which behaviours may become more 'plastic'. A growing literature suggests that the most effective ways to use behavioural interventions to change household actions that affect emissions are not alone, but in combination with economic, regulatory and other non-behavioural interventions (Wolske & Stern, 2018). For example, life transitions, such as relocating or starting a new job, offer a unique window of opportunity to disrupt or alter habits and consumption patterns (Bamberg, 2006). Whether other large-scale social disruptions present similar opportunities for behavioural intervention, including changes in consumer behaviour and speeding the development and adoption of new climate policies, remains an important open question.

As Fischhoff ([this issue](#)) reminds us, all sciences have two subjective elements: professional judgements, which inform how we interpret data; and value judgements, which determine which issues are studied and prioritized and how cautiously results are interpreted. Behavioural science can help scientists and decision-makers navigate both elements to craft more effective and

equitable policies. Yet Fischhoff also reminds us that in order to represent public and scientific concerns, behavioural scientists need to participate in policy discussions, becoming “players in shaping policies, and not just conveyors.” The good news is that behavioural policy interventions are increasingly appreciated by policymakers (Oliver, 2017), with over a dozen national governments having integrated behavioural science in the crafting and dissemination of environmental policy (Organisation for Economic Cooperation and Development, 2017). The articles in this special issue highlight both new insights as well as untapped opportunities for leveraging behavioural science to meet one of the defining social challenges of our time. The timing is ripe for behavioural climate policy.

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