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PERSPECTIVE

# When and how behavior change can accelerate system change (and vice versa): mapping reciprocal processes for climate change mitigation

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**Abstract**

System change and individual behavior change are often conceptualized as contrasting, mutually exclusive strategies for climate change mitigation, with system change usually considered more powerful, direct or urgent. We argue that this alleged duality is misguided and that system change and behavior change are fundamentally co-dependent: system change is often effective to the extent that it promotes individual behavior change and, vice versa, individual behavior change contributes to the critical mass that is needed to spur system change. We map four pathways that link behavior change and system change, driven by consumer activism, consumer demands, policies that address people as part of a community and the provision of collective action arrangements. Together, these pathways illustrate that system and behavior change are often interconnected and suggest promising avenues for developing climate mitigation policies that jointly promote system and behavior change.

**Keywords:** behavior change; climate policies; collective action; consumer activism; system change

## Introduction

Individual behavior change is a critical component of climate change mitigation (Goldberg *et al.*, 2020; IPCC, 2022; Nielsen *et al.*, 2021a). However, in both scientific and public discourse, climate change mitigation is often portrayed as requiring an either/or choice between investing in individual behavior change versus systemic change. Systemic change (broadly conceptualized as changes in the system of rules,

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norms and institutions; Chater and Loewenstein, 2022) is then typically considered the more powerful, direct or urgent route toward climate change mitigation. The concern is that individual behavior change is hard to achieve, not impactful enough and sometimes even comes at the cost of the needed systemic change (Shove, 2010; Mann, 2019; Meyer, 2021; Chater and Loewenstein, 2022).

Here, we argue that pessimism about the potential impact of behavior change originates from an overly narrow view of pro-environmental behavior as the personal choices that individuals make to reduce their carbon footprint (e.g., saving household energy, avoiding air travel or reducing meat consumption; Klöckner, 2013; Brownstein *et al.*, 2021). With others (Amel *et al.*, 2017; Brownstein *et al.*, 2021; Nielsen, Nielsen *et al.*, 2021a; Schill *et al.*, 2019), we posit that behavior change can be more appropriately understood as extending beyond individual contributions to decarbonization, and also comprises the role of individuals as members of communities and as citizens who have the power to influence the broader social and cultural structures they are part of. For example, individuals can influence the behaviors of groups of people, and collectively, they have the power to shape economic and political reform (Marteau *et al.*, 2021; Hampton and Whitmarsh, 2023). To be sure, the behaviors of individuals alone will likely not suffice to mitigate climate change sufficiently. However, individuals' contributions may be significant when they galvanize system changes, such as those reflected in national laws, industrial policies or international treaties. We propose that a greater emphasis on behavior change as an indispensable factor of system change may not only encourage individuals' pro-environmental commitments and actions but also spur system changes (e.g., public policies, industrial incentives) that, in turn, accommodate individuals to change their lifestyles (Cherry and Kallbekken, 2023; Steg, 2023).

While it is uncontested that both individual behavior change and broader systemic change can contribute to sustainability transitions (Grubler *et al.*, 2018; Van Vuuren *et al.*, 2018; Akenji *et al.*, 2019), our understanding of their potential for mutual or synergistic contribution is only beginning to develop (Brownstein *et al.*, 2021; Whitmarsh *et al.*, 2021; Steg, 2023). We challenge the 'disputable duality' (Bandura, 2000, p. 77) that pits individual behavior against institutional structures as if they are siloed entities or even detract from each other (Chater and Loewenstein, 2022). Instead, we build on emerging literature and aim to demonstrate how individual and systemic changes toward climate mitigation are fundamentally co-dependent and have the potential to reinforce each other – both in a bottom-up (from individual to system) and a top-down (from system to individual) fashion (Brownstein *et al.*, 2021; Nielsen *et al.*, 2021b; Newell *et al.*, 2023; Steg, 2023). Specifically, we draw on the literature and distinguish four key pathways that explain how individual behavior change and system change are intertwined and may support each other. We do not argue that these pathways are orthogonal or mutually exclusive. Rather, while we acknowledge conceptual overlap, we discuss the pathways separately for the sake of clarity.

The first pathway emphasizes how consumer activism (e.g., voting, lobbying, participating in social movements) can foster policy actions for system change, as one illustration of how individuals' behavior may directly impact the system. A second pathway emphasizes possibilities for system change resulting from shifting consumer values and demands, thus illustrating how individuals' behavior may indirectly impact the system. The third pathway emphasizes that engaging people as a group, rather than

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as isolated individuals, may increase their commitment to climate change mitigation. This perspective focuses on the idea that participating in groups enhances individuals' experience that they are part of (rather than separate from) the system. Finally, the fourth pathway emphasizes that the system can facilitate opportunities for individual contributions by creating policy arrangements that support people in their efforts to adopt sustainable lifestyles.

Importantly, the pathways of influence that we distinguish are not necessarily one-directional (i.e., top-down or bottom-up). If we accept that individual and systemic changes are co-dependent and can influence each other, as we argue, this opens up the possibility that climate change mitigation initiatives have the potential to set in motion a chain of events that contribute to sustainability transitions through a reciprocal process of mutual (i.e., top-down *and* bottom-up) influence. Such reciprocal processes are potentially powerful, to the extent that they may cause sustainable change to spiral and spread through society, potentially allowing large-scale sustainability transitions to unfold. These reciprocal processes are not just hypothetical – although still rare, they are happening right now, triggered by both bottom-up and top-down initiatives, as we will detail in our review.

## Pathway 1: Impact of climate activism on system change

Climate activism is one way in which citizens can influence communities, governments, or industries to take responsibility and foster sustainable change. While climate activism can take various forms, its intended outcomes are typically to promote climate awareness, behavior change and policy support among the public, or to pressure political and industry leaders to bring about sustainable change. A distinction can be made between forms of climate activism that have direct versus indirect effects on greenhouse gas emissions (Fisher and Nasrin, 2021). Activism with direct effects promotes sustainable consumer behavior in groups of individuals (and aligns with notions central to Pathways 2 and 3). For example, this type of activism advances the establishment of green energy communities (e.g., Boulanger *et al.*, 2021), initiates car-sharing plans (e.g., Böcker and Meelen, 2017) or develops strategies to encourage groups of individuals to reduce their meat consumption (e.g., Phua *et al.*, 2020) or avoid fast fashion (e.g., Johnstone and Lindh, 2022).

Other forms of activism do not aim to directly impact greenhouse gas emissions, but they do so indirectly by galvanizing change at the level of governments or industries. One route for such activism is via litigation. Across the world, citizens and climate advocacy groups have started legal procedures to demand from governments and industries that they adhere to climate responsibilities (Peel and Osofsky, 2020). For example, in the Netherlands, the NGO *Urgenda* has won a landmark court case that forced the Dutch government to cut its greenhouse gas emissions, resulting in a drastic capacity reduction of the country's coal-fired power stations (Wewerinke-Singh and McCoach, 2021). Another route for such activism is by targeting industries, such as via shareholder activism (i.e., shareholders pushing companies to adopt sustainable changes) or by pressuring investors to abandon their holdings of stocks in polluting businesses (Glomsrød and Wei, 2018). Yet another route is to influence the political

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process, such as by lobbying governmental officials over climate policy (Meng and Rode, 2019) or supporting election campaigns of green parties.

Arguably, the most visible form of activism with indirect effects on greenhouse emissions are climate strikes and related forms of public protest. Since 2018, the *Extinction Rebellion* (XR) and *Fridays For Future* (FFF) movements, in particular, have managed to grasp the attention of the general public and political leaders (De Moor *et al.*, 2021). XR's acts of nonviolent civil disobedience and disruptive protest (e.g., blocking roads, gluing oneself to entrances of public buildings) have been covered widely in the media, and the same is true for FFF's climate strikes, which mobilized a historically large number of young people. Although their tactics and ideological emphases differ somewhat, both movements have held governments responsible for sustainable action and encouraged political leaders to rally behind climate science (De Moor *et al.*, 2021). Some commentators have expressed concern that forms of activism that frustrate the interests of other individuals (e.g., blocking roads) create unnecessary division and undermine the large-scale solidarity that is needed to bring about change (e.g., Spicer, 2019). That said, emerging evidence suggests that XR and FFF have been effective at reaching at least some of their goals. For example, their actions have increased climate awareness and pro-environmental motivation and behavior among the general public (Fritz *et al.*, 2023; Kountouris and Williams, 2023), caused climate activism to spread around the world (Gardner *et al.*, 2022), boosted voting for green political parties (Fabel *et al.*, 2023) and benefited the value of green firms in stock markets (Schuster *et al.*, 2023).

The power of climate protest is that it can set in motion a reciprocal process of mutual (i.e., top-down *and* bottom-up) influence. FFF, for example, started bottom-up: a few committed individuals stepped outside the norm and, with the help of efficient communication networks (Eide and Kunelius, 2021), sparked a highly visible movement supported by masses of young people. As such, FFF not only heightened public attention to the climate crisis but also raised political urgency and facilitated systemic change. Although it is hard to prove the causal effects of social movements, various industries targeting young people have begun to adopt sustainability initiatives over the past few years. Fast fashion leaders such as H&M, for example, have made efforts to improve the sustainability of their supply chain management to align with their sustainable branding (Wren, 2022). Similarly, in response to growing demand among young consumers, fast-food chains increasingly offer plant-based menus or use climate impact menu labels (Ye and Mattila, 2021; Wolfson *et al.*, 2022). Importantly, fast-fashion and fast-food chains do not just follow changing norms – rather, they have the power to amplify or accelerate changing norms as well, as illustrated by a study showing that doubling the proportion of vegetarian meals on offer in cafeterias increased vegetarian sales by more than 40% (Garnett *et al.*, 2019; cf., Raghoebar *et al.*, 2020). As these examples illustrate, climate activism can set off chains of events that let sustainable change spiral through society (Figure 1).

### Pathway 2: Impact of consumption behavior on system change

Another way for individuals to influence system change lies in their consumption behavior, such as the energy they use, the food they eat or the ways in which they

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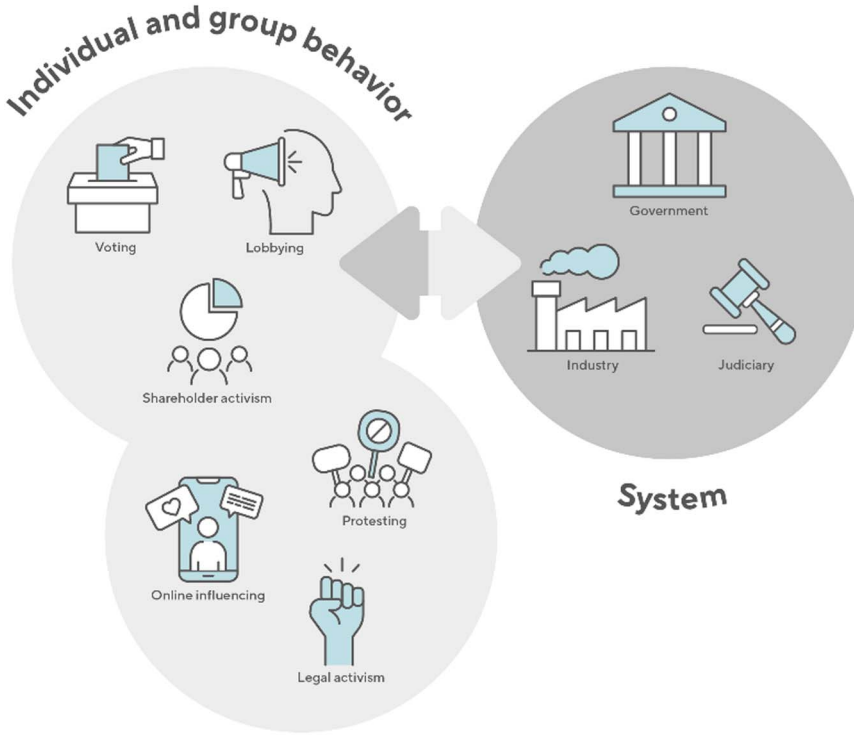



**Figure 1.** Climate activism impacts system changes.

commute. Such 'household consumption' is estimated to be responsible for about two-thirds of global greenhouse gas emissions (mainly due to home energy use, food and mobility; Hertwich and Peters, 2009). Thus, consumption behavior change offers important potential for climate change mitigation, with high-impact behaviors including shifting to plant-based diets, living car-free and reducing airplane travel (Wynes and Nicholas, 2017; Ivanova *et al.*, 2020).

Still, in recent years, some experts have become increasingly skeptical of the potential for consumer behavior to contribute to climate change mitigation. One main argument driving such skepticism is that consumer behavior is notoriously hard to change. Indeed, people are drawn to routine behaviors that provide comfort (e.g., taking long showers, eating meat; MacDiarmid *et al.*, 2016; Gössling *et al.*, 2019), are reluctant to forego personal benefits for the sake of the common good (Van Lange and Huckelba, 2021), lack discipline (Gifford, 2011), are insufficiently aware of the urgency of sustainable behavior change (Weber, 2006; Weber and Stern, 2011) or are susceptible to misleading marketing (e.g., greenwashing; Fella and Bausa, 2024). Another argument is more strategic and emphasizes that advocacy for individual contributions to climate mitigation may shift attention away from the needed climate policy support and systemic change (Mann, 2019; Palm *et al.*, 2020; Chater and Loewenstein, 2022).

While the value of consumer behavior to sustainability transitions is occasionally dismissed as 'only symbolic', we propose that this symbolic nature of consumer behav-

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ior is important to its potential for impact. First, consumer behavior can be meaningful to individuals. Even behaviors that have negligible environmental impact in and of themselves (e.g., using straws made of paper rather than plastic) can be meaningful to the extent that they activate or strengthen individuals' pro-environmental identities. Identity-concerns can serve as potentially long-standing and powerful sources of motivation for individuals to engage in pro-environmental behavior (Brick *et al.*, 2017; Fritsche *et al.*, 2018). Moreover, relatively simple acts of pro-environmental behavior can strengthen individuals' sense of efficacy or hope that one is able to make a positive difference, which may provide them with the needed motivation to adopt an enduring sustainable lifestyle (Lauren *et al.*, 2016).

Second, to the extent that pro-environmental consumption takes place in social contexts, it can serve a communicative function and has the potential to spread. Consider the example of an individual teenager deciding to eat plant-based alternatives to animal products in their school canteen. When the context is right (e.g., when their behavior is visible, when they have status within their peer group), such norm-setting can influence peers to adopt similar eating habits. As such, initial sustainable behaviors enacted by individuals have the potential to spread across social groups (Farrow *et al.*, 2017; Sparkman *et al.*, 2021).

Third, and most importantly for the present purposes, consumer behaviors can have potentially far-reaching consequences by setting off systemic change. Laws of commerce imply that if consumption-related attitudes and behaviors shift within the population (i.e., among individual consumers), then industry will follow suit. Sustainable consumption trends are no exception. For example, consumers' concern about the environmental impacts of mobility – supported by substantial government subsidies (Sierzchula *et al.*, 2014) – caused electric vehicle sales to grow (Rietmann *et al.*, 2020). Importantly, shifts in consumption patterns can quickly become widespread. Indeed, humans are sensitive to social influence and shifting social norms, which can compel large groups of individuals to change their consumption habits at relatively short notice (Alae-Carew *et al.*, 2022; Constantino *et al.*, 2022).

We acknowledge that not all individuals are equally amenable to changing their consumption. One segment of the population for whom consumption behavior change is relatively viable and consequential are young people – and especially adolescents. Adolescence is a sensitive time for learning and growth, and a time when initial commitments to certain behaviors (e.g., eating plant-based foods) can serve as gateways to more enduring lifestyles (Dahl *et al.*, 2018; Thomaes *et al.*, 2023). Moreover, adolescents tend to be early adopters: they easily notice and internalize shifting social norms, especially norms that they observe in their peers. The implication for policy is that well-designed, developmentally-informed strategies that promote change in adolescents' consumption behaviors can have sustained impacts (Thomaes *et al.*, 2023; Figure 2). Of course, people (including young people) do not always voluntarily engage in or endorse sustainable behaviors. In those cases, some form of regulation may be needed. Simple rules mandating behavior can be beneficial to the extent that they set clear behavioral standards or expectations. However, telling people how to behave may undermine their trust in institutions and impede reciprocal behavior that could otherwise occur (Ostrom and Walker, 2003; Rietz *et al.*, 2018).

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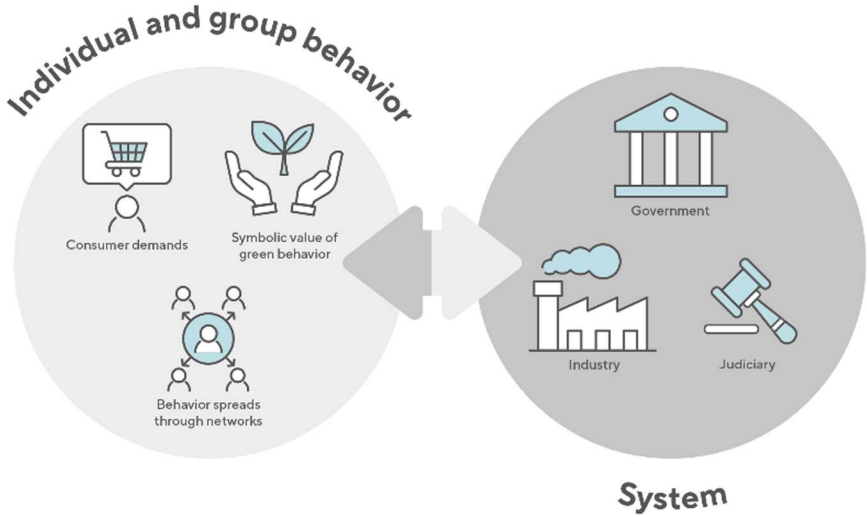



**Figure 2.** Changes in consumer behavior impacts system changes.

### Pathway 3: Involving people as a community

Behavioral science research has provided lessons that policymakers can use to help people commit to climate change mitigation, such as framing climate change as a personal risk or appealing to environmental goals that people intrinsically value (Van der Linden *et al.*, 2015; Goldberg *et al.*, 2020). These strategies mostly speak to climate mitigation as an individual effort. Our third pathway, however, proposes the potential of strategies that speak to climate mitigation as an effort of groups or 'communities' (Ballew *et al.*, 2019). People who consider themselves individual actors are at risk of experiencing helplessness or apathy, leading to inaction. Even if they consider their own pro-environmental contributions as potentially important, the anticipated inaction of others can compromise people's motivation to contribute to the collective good of climate change mitigation. While massively scaling up individual actions may lead to significant reductions in global emissions (e.g., Creutzig *et al.*, 2016; Williamson *et al.*, 2018), efforts to commit groups of people by promoting 'we-thinking' are still relatively scarce.

Yet, behavioral science distinguishes at least two opportunities for doing so. First, research on social norms has revealed that communicating what others do, or think should be done, influences people's motivation for behavior change (Cialdini, 2003; Abrahamse and Steg, 2013; Goldberg *et al.*, 2020). People feel empowered and are more inclined to adopt pro-environmental behaviors when they know that members of their own community – their friends, families and neighbors – endorse and adopt these behaviors as well (Estrada *et al.*, 2017; Constantino *et al.*, 2022). Similarly, research on dynamic norms indicates that articulating a trending social norm can encourage pro-environmental behavior change (Sparkman *et al.*, 2021), suggesting that learning about others who act against the prevailing norm may serve as an impetus for changing one's own behavior.

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And yet, the potential of group power is not optimally harnessed if we rely on norm communication only. Social norms research typically treats norms as individual perceptions (e.g., individual perceptions of the expectations and behaviors of other people). However, norms also define what other people consider 'normal' or appropriate to do, and sets expectations in social interactions. There is a lack of research on the impact of pro-environmental norms that are actively conveyed in social interactions, such as when people discuss their views on what they consider to be normative or desirable (Prentice and Levy Paluck, 2020; Whitmarsh *et al.*, 2021). This is unfortunate, given that people often underestimate how much others share their pro-environmental views if norms are not discussed openly (a phenomenon known as pluralistic ignorance; Geiger and Swim, 2016; Sparkman *et al.*, 2022).

Second, supporting individuals to participate in joint efforts and collectives is an approach that is increasingly acknowledged as a promising way forward (De Ridder *et al.*, 2023; Amel *et al.*, 2017; Fritsche *et al.*, 2018). When people's feelings of connectedness to others increase, this may lead them to view climate change mitigation as a collaborative challenge and to experience collective agency (i.e., people's shared beliefs in their joint power to produce desired results; Bandura, 2000; Fritsche and Masson, 2021). In turn, collective agency may promote personal agency (Jugert *et al.*, 2016) and increase the belief that individual actions have a substantial impact on the collective good of a sustainable society (Cojuharenco *et al.*, 2016). Traditionally, collective action research has employed a social identity approach, resting on the notion that collective action is more likely when people identify with a group (their 'in' group) which they consider to be unjustly treated by another group with whom they disagree (the 'out' group) (Hamann *et al.*, 2024). However, recent research suggests that people may not need an outgroup to be able to bond within their ingroup (De Ridder *et al.*, 2023; Fritsche and Masson, 2021). Unlocking the power of the community may be achieved by conveying what people can do together for the sake of communal benefit – with the sense of community being twofold, referring both to the process (people acting together) and the outcome (benefit for all; De Ridder, 2025). Importantly, realizing that other people acknowledge the problem of climate change and act accordingly creates a tipping point that may inspire others who were originally less inclined to change their behavior (Nyborg *et al.*, 2016). Taken together, an approach that speaks to people as members of a community opens up new avenues for engaging larger and more diverse groups of individuals who may not be pro-environmental frontrunners but have positive intentions nonetheless (Figure 3). Involving this group in collective action by providing supportive policy arrangements may critically facilitate behavioral sustainability transitions, as we will discuss as part of Pathway 4.

### Pathway 4: Creating policy arrangements for collective climate action

People getting together in collective action arrangements is an important pathway for bridging the gap between behavioral change and system change, as explained in our discussion of Pathway 3. However, only highly committed individuals may arrive at doing so without the help of supportive policy arrangements. Collectives are often initiated by minorities of people who are able and willing to organize themselves and challenge the status quo (Bolderdijk & Jans, 2021). Policy arrangements can offer

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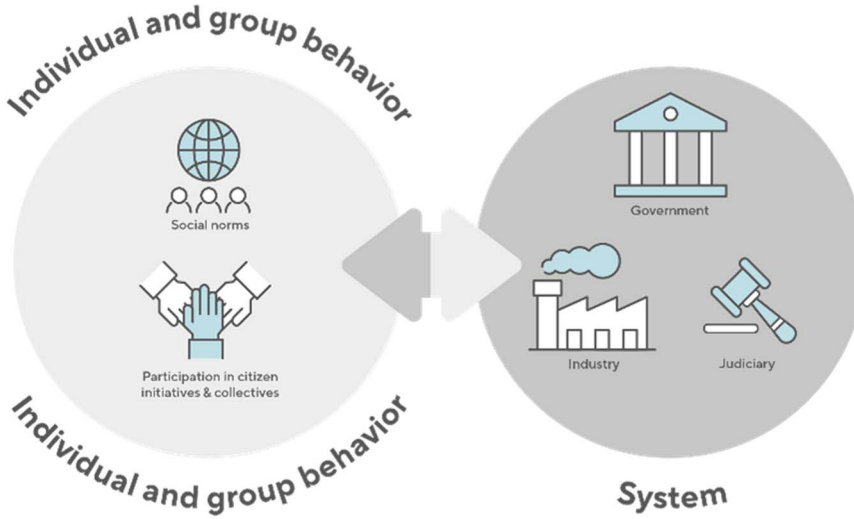



**Figure 3.** Facilitating groups to get together impacts system changes.

a larger, diverse group of people (including non-frontrunners) the opportunity to contribute by promoting self-organization across communities – indeed, widespread contributions to sustainability transitions are critical to unleashing system change. Here, we describe how such policy arrangements can promote citizen contributions to climate change mitigation (Figure 4).

Interestingly, research suggests that citizens often support more ambitious climate policies than those currently implemented by their governments (e.g., Tyson and Kennedy, 2020). Whereas most policymakers aim at finding the right mix of different types of interventions, de facto, they often choose to either mandate certain behavior or ask individuals to voluntarily adopt the behavior (Ockwell *et al.*, 2009). In doing so, they miss out on opportunities to involve large groups of people who are willing to contribute to system change but may need some guidance in adjusting their behavior. Nudging green choices, for example, may be particularly effective (e.g., Kaiser *et al.*, 2020; Carlsson *et al.*, 2021; He *et al.*, 2023). To give one example, in the United States, the Opower program was effective in reducing household energy use by sending reports to households informing them about how their energy use relates to their neighbors' use (Alcott and Rogers, 2014). Importantly, green nudges are generally appreciated by citizens (Steffel *et al.*, 2016; Wachner *et al.*, 2020), particularly when they are dissatisfied with their own behavior (Kukowski *et al.*, 2023; cf. De Ridder *et al.*, 2022). Thus, people may consider climate policies a helpful tool to realize desired behavioral changes in their own lives.

We note that such policies do not necessarily need to promote individual responsibility. For one, policymakers may explicitly communicate their own pro-environmental actions and invite others to join (Attari *et al.*, 2016), thus acting as 'norm entrepreneurs' (Sunstein, 2019) to facilitate public acceptance of climate change

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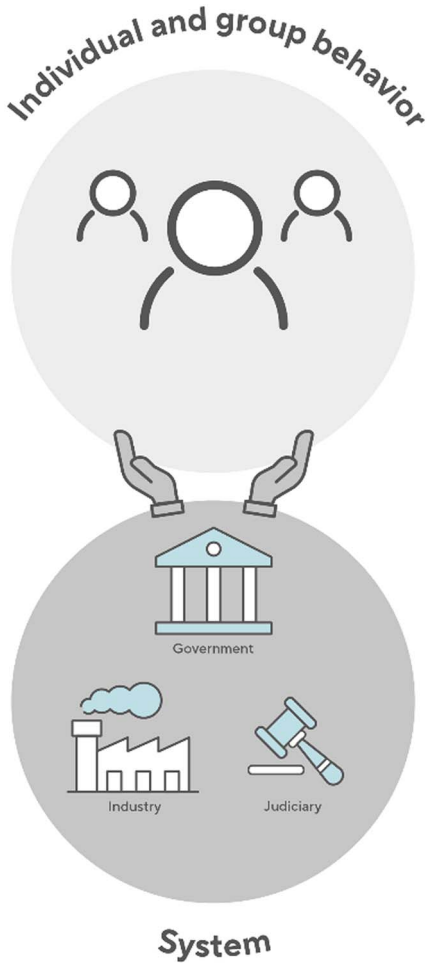



**Figure 4.** Creating policy arrangements supports (groups of) individuals.

regulation. Policymakers may also encourage citizen collectives for promoting green behavior. Citizen collectives come in wide varieties. Some of these collectives are true grassroots, bottom-up initiatives; others are neighborhood communities that are promoted and supported by local governments or other institutions; and yet others are initiated by state or national governmental bodies responsible for sustainability transitions (Jans, 2021). Despite the growing popularity of citizen collectives, it is not well understood why some of them are more successful than others. Whereas some collectives thrive, others have yielded more disappointing results – both in terms of group coherence and actual sustainable achievements (Bamberg *et al.*, 2015). The European Newcomers project on energy communities, for example, failed in its efforts to bring together people to work on their common interest in energy reduction (Blasch *et al.*, 2021).

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Capitalizing on the promise of citizen collectives in governing the energy transition requires an improved understanding of how and when people collaborate successfully on shared goals. Previous research on collective agency has emphasized how a sense of group belonging can create a willingness to act together on behalf of the common good (Sampson *et al.*, 1997). Research on 'commons' has demonstrated that people tend to choose collective benefit (over individual benefit) when they meet in self-governing collectives and cooperatives (Vriens *et al.*, 2021). In view of the growing popularity of the Ostromian perspective in political circles (Ostrom, 1998), it is important to back up this approach with quantifiable elements that lend themselves for application in group settings to accelerate the contribution of people to the sustainability transition.

Specifically, it is essential to adopt a collaborative governance approach to ensure that stakeholders from different backgrounds (e.g., the general public, public and private agencies) can experience at least some level of responsibility for the design and implementation of climate mitigation measures. In spite of reports of incidental failures in such cocreation processes, a collaborative governance approach is considered critical for citizen engagement with pressing societal challenges (e.g., Ansell and Gash, 2008; Fung, 2015) including climate change mitigation (Amel *et al.*, 2017), as well as other policy domains such as pandemic mitigation (Marston *et al.*, 2020; Mouter *et al.*, 2021) or improving food environments (Koski *et al.*, 2018; Poore and Nemecek, 2018). In the case of sustainability specifically, the Earth System Governance framework (Biermann *et al.*, 2010), for example, highlights the importance of multilayered or multilevel governance that is marked by the participation of public and private non-state actors at all levels of decision-making, ranging from networks of experts and environmentalists to social enterprises and local communities. It has also been acknowledged that an institutionalized involvement of civil society representatives in decision-making makes governance more legitimate and accountable (Biermann and Gupta, 2011). Notwithstanding these promising features, it should be recognized that the implementation of collaborative governance arrangements can also be challenging. The codesign of policies together with community stakeholders requires openness in discussion and effective procedures for consensus decision-making to achieve a shared understanding of problems and outcomes – requirements that may not naturally fit within the institutional framework in which public organizations operate (Peters, 2015; Bianchi *et al.*, 2021). Still, experiences with citizen collectives show that involving people as a group may not only accelerate system change but is, in fact, crucial to achieve system change in the first place.

## Discussion

We have mapped four pathways that illustrate how individual behavior and system change are fundamentally co-dependent drivers of climate change mitigation. Our aim was to review research demonstrating how individual behavior change can be consequential for system change, and vice versa. As such, we build on work that moves away from scientific and public discourse that has viewed behavior and system change as separate or even mutually exclusive, and that has prioritized one of both drivers as more central to sustainability transitions. As behavioral scientists, we both acknowledge the

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power of behavior change of individuals, and recognize its limitations. Indeed, individual behaviors can have major climate impacts if large groups of people would change their lifestyles (e.g., consume less meat, reduce air travel or conserve more energy). At the same time, individuals cannot be held accountable for systemic failures, such as governments failing to invest in better public transport or the food industry being slow to develop plant-based alternatives for meat. Individuals who are committed to pro-environmental behavior change should be accommodated by supporting policies from responsible parties. Yet, people are not just passive followers waiting for governments and industries to take action – they themselves can stimulate policy changes as voters and consumers. Moreover, individuals matter to the extent that their acceptance of policies is required for their effectiveness. Thus, individual and systemic change can critically reinforce each other.

Of course, people are not always able and willing to take responsibility for their own lives and contribute to the common good. Merely providing people with clear information will typically not suffice to promote behavior change. Even if many people know perfectly well what they 'ought' (or would want) to do, they may fail to act accordingly, in part because they are not always capable of deliberating their choices (Keizer *et al.*, 2019; Whitmarsh *et al.*, 2021). When designing policies, regulations and institutions, governments should appreciate that people are not interested and agentive all the time and consider supportive arrangements for creating opportunities for individuals to engage with public policies (De Ridder, 2024).

As such, the recognition of the fundamental codependency between individual behavior change and system change calls for next steps. For one, we encourage research efforts to systematically scrutinize mutual influences between individual and system change, to learn more about their potential and boundary conditions for reaching climate impact. As one example: the European Human Rights Court ruled in 2024 that the Swiss government had violated the human rights of its citizens by failing to sufficiently invest in climate change mitigation (https://www.echr.coe.int/). It would be valuable to examine how the Court's decision influences public opinion on climate change mitigation policies. Documenting such influences requires an interdisciplinary effort from scholars working in the behavioral and political sciences and law. Such collaborations can yield a well-rounded understanding of how system and individual changes coevolve. Even though interdisciplinary research on climate change mitigation is not new in itself, we call for greater attention to how system and individual behavior perspectives may boost one another.

Research on how behavior and system change are codependent in sustainability transitions should also inform policymakers working at the system level. Still, little is known about the extent to which policymakers are influenced by norms about climate policies within the population when implementing such policies. Whereas implementing these policies is part of complex political processes, it is critical to better understand at what point governments are able and willing to work together with citizens on climate mitigation, rather than initiating policies without active citizen contributions. Importantly, the codependency of individual behavior and system change may well vary across sociocultural contexts. For example, research has shown that individuals' pro-environmental engagement is predicted by personal beliefs about environmen-

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tal problems (e.g., environmental concerns) in individualistic, high-socioeconomic status (SES) or nonreligious contexts, but more strongly by social factors (e.g., perceived social norms) in collectivistic, lower-SES or religious contexts. This may be consequential for effective and culturally informed public policy, which may primarily target internal attributes (e.g., by raising awareness) in the former set of cultures, and social influence (e.g., by changing social norms) in the latter set of cultures (Eom *et al.*, 2016, 2019). In closing, behavioral scientists are well aware that behavior change is not a panacea to the complex problems posed by climate change and its mitigation. Nevertheless, a behavioral perspective is an indispensable element of climate change mitigation as it can accelerate system change as much as it depends on it.

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## References

Abrahamse, W. and L. Steg (2013), 'Social influence approaches to encourage resource conservation: a meta-analysis', *Global Environmental Change*, **23**, 1773–1785.

Akenji, L., M. Lettenmeier, R. Koide, V. Toivio, and A. Amellina (2019). 1.5-Degree lifestyles: targets and options for reducing lifestyle carbon footprints. Retrieved from https://pub.iges.or.jp/pub/15-degrees-lifestyles-2019 [3 January 2025].

Alae-Carew, C., R. Green, C. Stewart, B. Cook, A. D. Dangour and P. F. Scheelbeek (2022), 'The role of plant-based alternative foods in sustainable and healthy food systems: consumption trends in the UK', *Science of the Total Environment*, **807**, 151041.

Alcott, H. and T. Rogers (2014), 'The short-run and long-run effects of behavioral interventions: experimental evidence from energy conservation', *American Economic Review*, **104**, 3003–3037.

Amel, E., C. Manning, B. Scott and S. Koger (2017), 'Beyond the roots of human inaction: fostering collective effort toward ecosystem conservation', *Science*, **356**, 275–278.

Ansell, C. and A. Gash (2008), 'Collaborative governance in theory and practice', *Journal of Public Administration Research and Theory*, **18**, 543–571.

Attari, S. Z., D. H. Krantz and E. U. Weber (2016), 'Statements about climate researchers' carbon footprints affect their credibility and the impact of their advice', *Climatic Change*, **138**, 325–338.

Ballew, M. T., M. H. Goldbert, S. A. Rosenthal, A. Gustafson and A. Leiserowitz (2019), 'Systems thinking as a pathway to global warming beliefs and attitudes through an ecological worldview', *PNAS*, **116**, 8214–8219.

Bamberg, S., J. Rees and S. Seebauer (2015), 'Collective climate action: determinants of participation intention in community-based pro-environmental initiatives', *Journal of Environmental Psychology*, **43**, 155–165.

Bandura, A. (2000), 'Exercise of human agency through collective efficacy', *Current Directions in Psychological Science*, **9**, 75–78.

Bianchi, C., G. Nasi and W. C. Riverbark (2021), 'Implementing collaborative governance: models, experiences, and challenges', *Public Management Review*, **23**, 1581–1589.

Biermann, F., M. M. Betsill, J. Gupta, N. Kanie, L. Lebel, D. Liverman, H. Schroeder, B. Siebenhüner and R. Zondervan (2010), 'Earth system governance. A research framework', *International Environmental Agreements*, **10**, 277–288.

Biermann, F. and J. Gupta (2011), 'Accountability and legitimacy in earth system governance: a research framework', *Ecological Economics*, **70**, 1856–1864.

Blasch, J., N. M. Van der Grijp, D. Petrovic, J. Palm, N. Bocken and M. Mlinaric (2021), 'New clean energy communities in polycentric settings: four avenues for future research', *Energy Research & Social Science*, **82**, 102276.

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Böcker, L. and T. Meelen (2017), 'Sharing for people, planet or profit? Analysing motivations for intended sharing economy participation', *Environmental Innovation and Societal Transitions*, **23**, 28–39.
Bolderdijk, J. W. and L. Jans (2021), 'Minority influence in climate change mitigation', *Current Opinion in Psychology*, **45**, 25–30.
Boulanger, S. O. M., M. Massari, D. Longo, B. Turillazzi and C. A. Nucci (2021), 'Designing collaborative energy communities: a European overview', *Energies*, **14**, 8226.
Brick, C., D. K. Sherman and H. S. Kim (2017), '"Green to be seen" and "brown to keep down": visibility moderates the effect of identity on pro-environmental behavior', *Journal of Environmental Psychology*, **51**, 226–238.
Brownstein, M., D. Kelly and A. Madva (2021), 'Individualism, structuralism, and climate change', *Environmental Communication*, **16**, 269–288.
Carlsson, F., C. Gravert, O. Johansson-Stenman and V. Kurz (2021), 'The use of green nudges as an environmental policy instrument', *Review of Environmental Economics and Policy*, **15**, 2016–2037.
Chater, N. and G. Loewenstein (2022), 'The i-frame and the s-frame: how focusing on individual-level solutions has led behavioral public policy astray', *Behavioral and Brain Sciences*, 1–60. doi: 10.1017/S0140525X22002023
Cherry, T. L. and S. Kallbekken (2023), 'Use behavioral research to improve the feasibility and effectiveness of system-level policy', *Behavioral and Brain Sciences*, **46**, e153.
Cialdini, R. B. (2003), 'Crafting normative messages to protect the environment', *Current Directions in Psychological Science*, **12**, 105–109.
Cojuharenco, I., G. Cornelissen and N. Karelaia (2016), 'Yes, I can: feeling connected to others increases perceived effectiveness and socially responsible behavior', *Journal of Environmental Psychology*, **48**, 75–86.
Constantino, S. M., G. Sparkman, G. T. Kraft-Todd, C. Bicchieri, D. Centola, B. Shell-Duncan … E. U. Weber (2022), 'Scaling up change: a critical review and practical guide to harnessing social norms for climate action', *Psychological Science in the Public Interest*, **23**, 50–97.
Creutzig, F., B. Fernandez, H. Haberl, R. Khosla, Y. Mulugetta and K. C. Seto (2016), 'Beyond technology: demand-side solutions for climate change mitigation', *Annual Review of Environment and Resources*, **41**, 173–198.
Dahl, R. E., N. B. Allen, L. Wilbrecht and A. B. Suleiman (2018), 'Importance of investing in adolescence from a developmental science perspective', *Nature*, **554**(7693): 441–450.
De Moor, J., M. De Vydt, K. Uba and M. Wahlström (2021), 'New kids on the block: taking stock of the recent cycle of climate activism', *Social Movement Studies*, **20**, 619–625.
De Ridder, D. T. D. (2024), 'Getting a grip on yourself or your environment: creating opportunities for strategic self-control in behavioral public policy', *Social and Personality Psychology Compass*, **18**, 1–12.
De Ridder, D. T. D. (2025), 'Community nudges: why we need tools for turning on the we-mode to tackle problems that concern all of us', *Humanities and Social Sciences Communications*
De Ridder, D.T.D., Aarts, H., Ettema, D., Giesen, I., Leseman, P., Tummers, L., & De Wit J. (2023). Behavioral Insights on Governing Social Transitions. Utrecht University Institutions for Open Societies Think Paper Series, no. 5. doi: 10.23668/psycharchives.13228
De Ridder, D. T. D., F. M. Kroese and L. Van Gestel (2022), 'Nudgeability: mapping conditions of susceptibility to nudge influence', *Perspectives on Psychological Science*, **17**, 346–359.
Eide, E. and R. Kunelius (2021), 'Voices of a generation: the communicative power of youth activism', *Climatic Change*, **169**, 6.
Eom, K., H. S. Kim, D. K. Sherman and K. Ishii (2016), 'Cultural variability in the link between environmental concern and support for environmental action', *Psychological Science*, **27**, 1331–1339.
Eom, K., V. Papadakis, D. K. Sherman and H. Kim (2019), 'The psychology of proenvironmental support: a global problem in need of global solutions', *Current Directions in Psychological Science*, **28**, 490–495.
Estrada, M., P. W. Schultz, N. Silva-Send and M. A. Boudrias (2017), 'The role of social influences on pro-environment behaviors in the San Diego region', *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, **94**, 170–179.
Fabel, M., M. Flückiger, M. Ludwig, H. Rainer, M. Waldinger and S. Wichert (2023). The power of youth: did the "Fridays for Future" climate movement trickle-up to influence voters, politicians, and the media? CESifo Working Papers *9742*.
Farrow, K., G. Grolleau and L. Ibanez (2017), 'Social norms and pro-environmental behavior: a review of the evidence', *Ecological Economics*, **140**, 1–13.

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Fella, S. and E. Bausa (2024), 'Green or greenwashed? Examining consumers' ability to identify greenwashing', *Journal of Environmental Psychology*, **95**, 102281.
Fisher, D. R. and S. Nasrin (2021), 'Climate activism and its effects', *Wire's Climate Change*, **12**, e683.
Fritsche, I., M. Barth, P. Jugert, T. Masson and G. Reese (2018), 'A social identity model of pro-environmental action (SIMPEA)', *Psychological Review*, **125**, 245–269.
Fritsche, I. and T. Masson (2021), 'Collective climate action: when do people turn into collective environmental agents?', *Current Opinion in Psychology*, **42**, 114–119.
Fritz, L., R. Hansmann, B. Dalimier and C. R. Binder (2023), 'Perceived impacts of the Fridays for Future climate movement on environmental concern and behaviour in Switzerland', *Sustainability Science*, **18**, 2219–2244.
Fung, A. (2015), 'Putting the public back into governance: the challenges of citizen participation and its future', *Public Administration Review*, **75**, 513–522.
Gardner, P., T. Carvalho and M. Valenstain (2022), 'Spreading rebellion?: the rise of extinction rebellion chapters across the world', *Environmental Sociology*, **8**, 424–435.
Garnett, E. E., A. Balmford, C. Sandbrook and T. M. Marteau (2019), 'Impact of increasing vegetarian availability on meal selection and sales in cafeterias', *PNAS*, **116**, 20923–20929.
Geiger, N. and J. K. Swim (2016), 'Climate of silence: pluralistic ignorance as a barrier to climate change discussion', *Journal of Environmental Psychology*, **47**, 79–90.
Gifford, R. (2011), 'The dragons of inaction: psychological barriers that limit climate change mitigation and adaptation', *American Psychologist*, **66**, 290–302.
Glomsrød, S. and T. Wei (2018), 'Business as unusual: the implications of fossil divestment and green bonds for financial flows, economic growth and energy market', *Energy for Sustainable Development*, **44**, 1–10.
Goldberg, M. H., A. Gustafson and S. Van der Linden (2020), 'Leveraging social science to generate lasting engagement with climate change solutions', *One Earth*, **3**, 314–324.
Gössling, S., P. Hanna, J. Higham, S. Cohen and D. Hopkins (2019), 'Can we fly less? Evaluating the 'necessity' of air travel', *Journal of Air Transport Management*, **81**, 101722.
Grubler, A., C. Wilson, N. Bento, B. Boza-Kiss, V. Krey, D. L. McCollum … H. Valin (2018), 'A low energy demand scenario for meeting the 1.5 °C target and sustainable development goals without negative emission technologies', *Nature Energy*, **3**, 515.
Hamann, K. R. S., M. Wullenkord, G. Reese and M. Van Zomeren (2024), 'Believing that we can change our world for the better: a Triple-A (Agent-Action-Aim) framework of self-efficacy beliefs in the context of collective social and ecological aims', *Personality and Social Psychology Review*, **28**, 11–53.
Hampton, S. and L. Whitmarsh (2023), 'Choices for climate action: a review of the multiple roles individuals play', *One Earth*, **6**, 1157–1172.
He, G., Y. Pan, A. Park, Y. Sawada and E. S. Tan (2023), 'Reducing single-use cutlery with green nudges: evidence from China's food-delivery industry', *Science*, **381**, 6662.
Hertwich, E. G. and G. P. Peters (2009), 'Carbon footprint of nations: a global, trade-linked analysis', *Environmental Science Technology*, **43**, 6414–6420.
Intergovernmental Panel on Climate Change (2022). *Mitigation of climate change: contribution of working group III to the sixth assessment report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.
Ivanova, D., J. Barrett, D. Wiedenhofer, B. Macura, M. Callaghan and F. Creutzig (2020), 'Quantifying the potential for climate change mitigation of consumption options', *Environmental Research Letters*, **15**, 093001.
Jans, L. (2021), 'Changing environmental behavior from the bottom up: the formation of pro-environmental social identities', *Journal of Environmental Psychology*, **73**, 101531.
Johnstone, L. and C. Lindh (2022), 'Sustainably sustaining (online) fashion consumption: using influencers to promote sustainable (un) planned behavior in Europe's millennials', *Journal of Retailing and Consumer Services*, **64**, 102775.
Jugert, P., Greenaway, K.H., Barth, M., Büchner, R, Eisentraut, S., & Fritsche, I. (2016), 'Collective efficacy increases pro-environmental intentions trough increasing self-efficacy' *Journal of Environmental Psychology*, **48**, 12-23.
Kaiser, M., M. Bernauer, C. R. Sunstein and L. A. Reisch (2020), 'The power of green defaults: the impact of regional variation of opt-out tariffs on green energy demand in Germany', *Ecological Economics*, **174**, 106685.

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Keizer, A., W. Tiemeijer, and M. Bovens (2019), '*Why Knowing What to Do Is Not Enough. A Realistic Perspective on Self-reliance*', https://link.springer.com/book/10.1007/978-94-024-1725-8 [14 December 2024].

Klöckner, C. A. (2013), 'A comprehensive model of the psychology of environmental behaviour: a meta-analysis', *Global Environmental Change*, **23**, 1028–1038.

Koski, C., S. Siddiki, A. A. Sadiq and J. Carboni (2018), 'Representation in collaborative governance: a case study of a food policy council', *The American Review of Public Administration*, **48**, 359–373.

Kountouris, Y. and E. Williams (2023), 'Do protests influence environmental attitudes? Evidence from Extinction Rebellion', *Environmental Research Communications*, **5**, 011003.

Kukowski, C. A., K. Bernecker, K. S. Nielsen, W. Hofmann and V. Brandstatter (2023), 'Regulate me! Self-control dissatisfaction in meat reduction success relates to stronger support for behavior-regulating policy', *Journal of Environmental Psychology*, **85**, 101922.

Lauren, N., K. S. Fielding, L. Smith and W. R. Louis (2016), 'You did, so you can and you will: self-efficacy as a mediator of spillover from easy to more difficult pro-environmental behaviour', *Journal of Environmental Psychology*, **48**, 191–199.

MacDiarmid, J. I., F. Douglas and J. Campbell (2016), 'Eating like there's no tomorrow: public awareness of the environmental impact of food and reluctance to eat less meat as part of a sustainable diet', *Appetite*, **96**, 487–493.

Mann, M. E. (2019). *Lifestyles changes aren't enough to save the planet. Here's what could*. https://time.com/5669071/lifestyle-changes-climate-change/ [4 November 2024].

Marston, C., A. Renedo and S. Miles (2020), 'Community participation is crucial in a pandemic', *Lancet*, **395**, 1676–1678.

Marteau, T. M., N. Chater and E. Garnett (2021), 'Changing behaviour for net zero 2050', *BMJ*, **375**, n2293.

Meng, K. C. and A. Rode (2019), 'The social cost of lobbying over climate policy', *Nature Climate Change*, **9**, 472–476.

Meyer, R. (2021). How the U.S. made progress on climate change without ever passing. *The Atlantic*, June 16. https://www.theatlantic.com/science/archive/2021/06/climate-change-green-vortex-america/619228/ [5 January 2025].

Mouter, N., J. I. Hernandez and A. V. Itten (2021), 'Public participation in crisis policymaking. How 30,000 Dutch citizens advised their government on relaxing COVID-19 lockdown measures', *PLoS ONE*, **16**, e0250614.

Newell, P., F. Daley, O. Mikheeva and I. Peša (2023), 'Mind the gap: the global governance of just transitions', *Global Policy*, **14**, 425–437.

Nielsen, K. S., S. Clayton, P. C. Stern, T. Dietz, S. Capstick and L. Whitmarsh (2021a), 'How psychology can help limit climate change', *American Psychologist*, **76**, 130–144.

Nielsen, K. S., K. A. Nicholas, F. Creutzig, T. Dietz and P. C. Stern (2021b), 'The role of high-socioeconomic-status people in locking in or rapidly reducing energy-driven greenhouse gas emissions', *Nature Energy*, **4**, 145–153.

Nyborg, K., J. M. Anderies, A. Dannenberg, T. Lindahl, C. Schill and A. De Zeeuw (2016), 'Social norms as solutions', *Science*, **354**, 6308.

Ockwell, D., L. Whitmarsh and S. O'Neill (2009), 'Reorienting climate change communication for effective mitigation: forcing people to be green or fostering grass-roots engagement?', *Science Communication*, **30**, 305–327.

Ostrom, E. (1998), 'A behavioral approach to the rational choice theory of collective action: Presidential Address', American Political Science Association 1997 *American Political Science Review*, vol. *92* 1–22

Ostrom, E. and J. Walker (2003), '*Trust and Reciprocity: Interdisciplinary Lessons for Experimental Research*', New York: Russell Sage Foundation

Palm, R., T. Bolsen and J. T. Kingsland (2020), '"Don't tell me what to do": resistance to climate change messages suggesting behavior changes', *Weather, Climate, and Society*, **12**, 827–835.

Peel, J. and H. M. Osofsky (2020), 'Climate change litigation', *Annual Review of Law and Social Science*, **16**, 21–38.

Peters, B. G. (2015), '*Pursuing Horizontal Management: The Politics of Coordination*', Lawrence: University Press of Kansas

Phua, J., S. V. Jin and J. Kim (2020), 'The roles of celebrity endorsers' and consumers' vegan identity in marketing communication about veganism', *Journal of Marketing Communications*, **26**, 813–835.

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Poore, J. and T. Nemecek (2018), 'Reducing food's environmental impacts through producers and consumers', *Science*, **360**, 987–992.
Prentice, D. and E. Levy Paluck (2020), 'Engineering social change using social norms: lessons from the study of collective action', *Current Opinion in Psychology*, **35**, 138–142.
Raghoebar, S., E. Van Kleef and E. De Vet (2020), 'Increasing the proportion of plant-based foods available to shift social consumption norms and food choice among non-vegetarians', *Sustainability*, **12**, 5371.
Rietmann, N., B. Hügler and T. Lieven (2020), 'Forecasting the trajectory of electric vehicle sales and the consequences for worldwide CO2 emissions', *Journal of Cleaner Production*, **261**, 121038.
Rietz, T. A., E. Schniter, R. M. Sheremeta and T. W. Shield (2018), 'Trust, reciprocity, and rules', *Economic Inquiry*, **56**, 1526–1542.
Sampson, R. J., S. W. Raudenbush and F. Earls (1997), 'Neighborhoods and violent crime: a multilevel study of collective efficacy', *Science*, **277**(5328): 918–924.
Schill, C., J. M. Anderies, T. Lindahl, C. Folke, S. Polasky, J. C. Cárdenas, A. Crépin, M. A. Janssen, J. Norberg and M. Schlüter (2019), 'A more dynamic understanding of human behaviour for the Anthropocene', *Nature Sustainability*, **2**, 1075–1082.
Schuster, M., S. C. Bornhöft, R. Lueg and Y. D. Bouzzine (2023), 'Stock price reactions to the climate activism by Fridays for Future: the roles of public attention and environmental performance', *Journal of Environmental Management*, **344**, 118608.
Shove, E. (2010), 'Beyond the ABC: climate change policy and theories of social change', *Environment and Planning A*, **42**, 1273–1285.
Sierzchula, W., S. Bakker, K. Maat and B. Van Wee (2014), 'The influence of financial incentives and other socio-economic factors on electric vehicle adoption', *Energy Policy*, **68**, 183–194.
Sparkman, G., N. Geiger and E. U. Weber (2022), '"Americans experience a false social reality by underestimating popular climate policy support by nearly half"', *Nature Communications*, **13**, 4779.
Sparkman, G., L. Howe and G. Walton (2021), 'How social norms are often a barrier to addressing climate change but can be part of the solution', *Behavioral Public Policy*, **5**, 528–555.
Spicer, A. (2019). *The Extinction Rebels have got their tactics badly wrong. Here's why. The Guardian*. https://www.theguardian.com/commentisfree/2019/apr/19/extinction-rebellion-climate-change-protests-london [14 December 2024].
Steffel, M., E. F. Williams and R. Pogacar (2016), 'Ethically deployed defaults: transparency and consumer protection through disclosure and preference articulation', *Journal of Marketing Research*, **53**, 865–880.
Steg, L. (2023), 'Psychology of climate change', *Annual Review of Psychology*, **74**, 391–421.
Sunstein, C. R. (2019), '*How Change Happens*', Cambridge, Mass: MIT Press.
Thomaes, S., S. Grapsas, J. Van de Wetering, J. Spitzer and A. Poorthuis (2023), 'Green teens: understanding and promoting adolescents' sustainable engagement', *One Earth*, **6**, 352–361.
Tyson, A., and B. Kennedy (2020). Two-thirds of Americans think government should do more on climate. www.pewresearch.org [10 January 2025].
Van der Linden, S., E. Maibach and A. Leiserowitz (2015), 'Improving public engagement with climate change: five "Best Practice" insights from psychological science', *Perspectives on Psychological Science*, **10**, 758–763.
Van Lange, P. A. and A. L. Huckelba (2021), 'Psychological distance: how to make climate change less abstract and closer to the self', *Current Opinion in Psychology*, **42**, 49–53.
Van Vuuren, D. P., E. Stehfest, D. E. H. J. Gernaat, M. Van den Berg, D. L. Bijl, H. S. De Boer, M. A. E. Van Sluisveld (2018), 'Alternative pathways to the 1.5 °C target reduce the need for negative emission technologies', *Nature Climate Change*, **8**, 391.
Vriens, E., V. Buskens and T. De Moor (2021), 'Networks and new mutualism: how embeddedness influences commitment and trust in small mutuals', *Socio-Economic Review*, **19**, 1149–1170.
Wachner, J., M. A. Adriaanse, and D. T. D. De Ridder (2020), 'The influence of nudge transparency on the experience of autonomy', *Comprehensive Results in Social Psychology*, **5**, 1–15.
Weber, E. U. (2006), 'Evidence-based and description-based perceptions of long-term risk: why global warming does not scare us (yet)', *Climatic Change*, **77**, 103–120.
Weber, E. U. and P. C. Stern (2011), 'Public understanding of climate change in the United States', *American Psychologist*, **66**, 315–328.
Wewerinke-Singh, M. and A. McCoach (2021), 'The State of the Netherlands v Urgenda Foundation: distilling best practice and lessons learnt for future rights-based climate litigation', *Reciel*, **30**, 275–283.

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Whitmarsh, L., W. Poortinga and S. Capstick (2021), 'Behaviour change to address climate change', *Current Opinion in Psychology*, **42**, 76–81.

Williamson, K., A. Satre-Meloy, K. Velasco and K. Green (2018), '*Climate Change Needs Behavior Change: Making the Case for Behavioral Solutions to Reduce Global Warming*', Arlington, VA: Rare

Wolfson, J. A., A. A. Musicus, C. W. Leung, A. N. Gearhardt and J. Falbe (2022), 'Effect of climate change impact menu labels on fast food ordering choices among US adults: a randomized clinical trial', *JAMA Network Open*, **5**, e2248320.

Wren, B. (2022), 'Sustainable supply chain management in the fast fashion Industry: a comparative study of current efforts and best practices to address the climate crisis', *Cleaner Logistics and Supply Chain*, **4**, 100032.

Wynes, S. and K. A. Nicholas (2017), 'The climate mitigation gap: education and government recommendations miss the most effective individual actions', *Environmental Research Letters*, **12**, 074024.

Ye, T. and A. S. Mattila (2021), 'The effect of ad appeals and message framing on consumer responses to plant-based menu items', *International Journal of Hospitality Management*, **95**, 102917.

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