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## **Morals and climate decision-making: insights from social and behavioural sciences**

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### **Abstract**

Decisions about climate change are inherently moral. They require making moral judgements about important values and the desired state of the present and future world. Hence there are potential benefits in explaining climate action by integrating well-established and emerging knowledge on the role of morality in decision-making. Insights from the social and behavioural sciences can help ground climate change decisions in empirical understandings of how moral values and worldviews manifest in people and societies. Here, we provide an overview of progress in research on morals in the behavioural and social sciences, with an emphasis on empirical research. We highlight the role morals play in motivating and framing climate decisions; outline work describing morals as relational, situated, and dynamic; and review how uneven power dynamics between people and groups with multiple moralities shape climate decision-making. Effective and fair climate decisions require practical understandings of how morality manifests to shape decisions and action. To this end, we aim to better connect insights from social and behavioural scholarship on morality with real-world climate change decision-making.

### **1. Introduction**

Decisions about climate change are inherently moral; the integrity of our planet and the wellbeing of its inhabitants are at stake. Climate decision-making thus requires making moral judgements about the sort of world each of us wants (Paavola and Adger, 2006; Byskov *et al.*, 2019; Pelling and Garschagen, 2019). The gamut of moral climate change decisions is wide and deep; virtually all decisions about the allocation and use of resources and labour have an impact on the carbon cycle and ultimately on human-induced climate change. Decisions on how to allocate resources in the face of climate change affect people and the non-human world differentially, highlighting priorities and values at risk. As such, climate decisions include all ‘decisions leading to actions that have consequences for climate change, particularly through mitigation and adaptation’ (Orlove *et al.*, 2020, p. 2). Thus, climate decisions span geographical, administrative and epistemological scales from individual consumption, to national strategies, to binding global commitments.

The moral dimensions of climate change decisions are twofold. First, there are substantive dilemmas about burdens of responsibility for mitigation and widely uneven climate impacts on current and future generations. This normative dimension has traditionally been the remit of climate ethics, that has mapped the contours of moral arguments about the distribution of rights, duties, responsibilities, costs and consequences of reducing greenhouse gas emissions (Müller, 2001; Roberts and Parks, 2006; Mattoo and Subramanian, 2012). These insights further highlight moral imperatives to minimize risk and impacts of weather extremes on marginalized and vulnerable populations (Pearce *et al.*, 2010; Watts *et al.*, 2015). Climate ethics outlines principles of corrective or restorative justice (Grasso, Marco; Vladimirova, 2020; Robinson and Carlson, 2021), and demonstrate issues around the limits of representation—how non-present human actors such as the powerless or yet un-born, or the natural world are taken into account (Antadze, 2019; Tschakert, 2020). Climate ethics hence offers theoretically guided, normative principles, such as the precautionary principle, to guide decisions.

Second, climate decisions require actors—including individuals, policymakers, societies and higher governance bodies—to navigate everyday moral worldviews that shape the context, character and limits of decision-making itself. Decisions take place within, and often seek to change, existing moral norms, intuitions, and values. The social and behavioural sciences empirically investigate how moral context, worldviews, and identities shape and constrain how decisions are made and enacted. They explore how decisions manifest in practice, and whether they lead to enduring change. Thus, findings from across the social and behavioural sciences can help adjudicate whether decisions are practical and feasible. They are particularly important at the ‘messy middle’, where decisions made at higher levels—for example, global policy—are translated and enacted on the ground (Goldberg, Gustafson and van der Linden, 2020).

Alongside engagement with substantive moral issues, effective and fair climate decisions require practical understanding of how morality manifests to shape decisions and action. Put simply, ‘if we are to succeed in bending the moral arc of history toward climate justice – to remake the world as it ought to be – we need to do a better job of working with the world as it is’ (Storey, 2019, p. 39). Indeed, there are growing calls to better include the pragmatic insights offered by empirical research in debates about climate ethics. Those who understand climate ethics as ‘normative theorizing about climate change’ (Green and Brandstedt, 2020, p. 1) are seeking to connect theory with methods that engage society (Bell, Swaffield and Peeters, 2019), and to consider the normative implications that empirical research raises for justice principles in climate ethics (Storey, 2019). Others identify a nascent and ‘as-of-yet amorphous field of multidisciplinary climate ethics’ (Grasso and Markowitz, 2015, p. 473), which builds on solid normative theorizing, but also incorporates psychological, sociological, political and economic research (Markowitz, Grasso and Jamieson, 2015). Insights from these fields contribute to real-world climate change decisions by ensuring that research is meaningful and useful given institutional and political constraints.

In this paper, we aim to contribute to an ongoing debate about how practical and empirical social and behavioural sciences can inform multidisciplinary climate ethics (Bell, Swaffield and Peeters, 2019; Green and Brandstedt, 2020) and better connect scholarship to real world climate change decision-making (Markowitz, Grasso and Jamieson, 2015). In this review, we synthesize progress in the social and behavioural sciences that is relevant—directly and indirectly—across the gamut of climate change decisions. We include research directly aimed at climate change, such as on morals as motivations to act, and research with indirect but important implications for climate change decisions, including on decision context, and the character of decision-making itself. We highlight recent insights, lessons, and gaps across three themes: 1) the role of morals in motivating and framing climate decisions; 2) morals as relational, situated, and dynamic, and; 3) the uneven power dynamics of multiple moralities.

Although these themes address moral framings and multiple moralities, they are distinct and emerge from diverse and sometimes siloed fields of research. Thus, rather than all-encompassing, or mutually exclusive, these themes serve as a heuristic for organizing key insights. The approaches in the three main sections address the topics differently at different scales. First, social and behavioural insights into motivations and framings examine processes by individuals, embedded in social contexts. The second theme examines moralities as relational, culturally-specific and embedded in societal dynamics and institutions. The third theme involves critique of moral framings in governance and focuses on processes of eliciting and deliberating between moralities at higher policy and agenda-setting scales.

## **2. Social and behavioural science insights**

### **2.1 The role of morals in motivating and framing climate decisions**

Morals may motivate and constrain climate decisions. A growing collection of empirical work on moral foundations, moral motivations and framing offers key insights for climate decisions. For instance, it is well established that people who perceive climate change to be a moral issue are more concerned about it (Grasso and Markowitz, 2015). There is, in addition, good evidence that public discourse in many world regions commonly articulates the pros and cons of climate change policies in moral terms (Adger, Butler and Walker-Springett, 2017). Psychologists highlight the connection between people’s moral stances and attitudes to climate change (Wolsko, Ariceaga and Seiden, 2016) and show how the desire to maintain a group’s moral standing extends to action on climate change (Bain and Bongiorno, 2020). As such, there is considerable

evidence that—rather than narrow economic arguments—appeals to moral principles resonate more deeply and lead to better outcomes on climate change action (Corner and Randall, 2011; Bain and Bongiorno, 2020).

Moral foundations theory, which has its origins in moral psychology, posits that people are primed to operate within a moral frame. People hold sets of distinct moral cognitive resources, termed moral foundations. These foundations include combinations of care and harm, fairness and cheating, loyalty and betrayal, authority and subversion, and sanctity and degradation (Haidt, 2012; Graham *et al.*, 2013). The combination and weight placed on a given moral foundation by an individual or society is based on culturally and historically specific institutions and technologies (Graham *et al.*, 2011). For many indigenous peoples, for example, the maintenance of moral bonds of trust and reciprocity have been shown to be essential foundations of climate justice (Whyte, 2020). Moral foundations, through intuitions, are important in shaping people's reactions, attitudes, and behaviour to climate change. For instance, moral values of compassion, fairness, and to a lesser extent, purity, are positive predictors of willingness to act on climate change in a study of lay public in the US (Dickinson *et al.*, 2016). In contrast, in Australia, the moral imperative to maintain status quo is linked to climate scepticism (Rossen, Dunlop and Lawrence, 2015).

There is growing evidence that people frame issues, including climate change, using specific moral foundations. Within a given society, ones' moral foundations thus hold sway over both private and collective actions. For instance, some moral foundations stress the maintenance of social order and economic liberty (these often align with climate denialism) (Rossen, Dunlop and Lawrence, 2015), while others prioritise the moral imperative to address climate change, based on empathy and compassion for current and future affected peoples and ecosystems (Feinberg and Willer, 2013; Brown *et al.*, 2019).

In addition, people draw on different moral foundations depending on the type of climate decision at hand. Certain frames resonate with different policy interventions, and different moral publics; 'the presence, absence, and even dominance of different moral framings have significant implications for the governance of adaptation' to climate risks (Adger, Butler and Walker-Springett, 2017, p. 385). For example, when discussing adaptation policy choices people emphasize moral arguments about needs and ability to cope, but emphasize burden-sharing when discussing mitigation (Klinsky, Dowlatabadi and Mcdaniels, 2012). In the UK, research has shown that when evaluating potential climate change adaptation options, people emphasize both moral concerns about individual vulnerability (solidarity, protection from harm, and fairness in burdens), and 'issues of responsibility, of respect for and trust in authorities, and of doing the right thing by the country or for nature (sanctity, system preservation, and patriotism)' (Adger, Butler and Walker-Springett, 2017, p. 383).

Given the connection between moral foundations, motivations and types of climate decisions, how decisions are framed matters for legitimacy, individual behaviour and belief change. The moral framing of a decision shapes outcomes for people who support and advocate decisions (e.g., political groups), or make them (e.g., consumption choices). When people perceive their attitudes to be moral, they are more likely to act on them. For some, re-labelling attitudes and decisions in broad moral terms might help motivate and strengthen action (Luttrell *et al.*, 2016). Research suggests that people who link the harmful consequences of climate change with people and things that they value (termed 'objects of care'), have stronger responses to climate change, which promotes supports for climate change policy (Wang *et al.*, 2018; Leviston and Walker, 2020). As such, framing climate change problems and impacts in ways that emphasize close 'objects of care' directly connected to individuals may help overcome moral disengagement with climate change (Leviston and Walker, 2020). Emotions and empathy, including care, are the foundations of 'moral judgments and principles that guide action' (Jax *et al.*, 2018, p. 23; see also McCaffree, 2019). Framing climate decisions as part of cultivating empathy and care thus may generate the moral impetus for action by 'embed[ding] the environment and pro-environmental behaviour in place-oriented norms and institutions' (Brown *et al.*, 2019, p. 16).

Reframing climate change decisions to align with an audience's moral foundations is also a promising avenue for climate change decision-making. Research in psychology and climate communication suggests that climate decisions that are communicated in ways that align with people's moral foundations shift behaviours, including when messages go against people's political beliefs. For example, framings emphasize the way individuals treat one another, including fairness versus cheating and care versus harm. Framing can also intensify the environmentalism of people no matter their pre-existing environmental attitudes (Milfont, Davies and Wilson, 2019). Studies have found that moral reframing can change political groups' pro-environmental behaviour (Feinberg and Willer, 2013; Sweetman and Whitmarsh, 2016), recycling habits (Kidwell, Farmer and

Hardesty, 2013), and climate change beliefs (Wolsko, Ariceaga and Seiden, 2016). Appealing to moral foundations associated with right-wing political leanings (including loyalty, authority, and sanctity) offers an avenue for making climate change morally relevant to a broader portion of society (Vainio and Makiniemi, 2016; Storey, 2019).

Research on moral foundations and framing has accelerated and is opening up a number of research gaps and directions of particular relevance to climate change decision-making. First, there is only limited evidence on 'which types of messages resonate in light of motivations and particular prior beliefs, values and identities' (Druckman and McGrath, 2019, p. 117). Further research on how to effectively frame or translate climate change decisions to speak to more traditional and conservative moral worldviews, could help provide tools for diverse groups (from activists, and community leaders, to policymakers) to better communicate and encourage change. In concert, we need research on whether and how moral values motivate consistent moral behaviour and what internal and external barriers shape this (Nielsen and Hofmann, 2021). Finally, much work on moral motivations extends from moral psychology and moral neuroscience. Integrating this work into broader social sciences studies of moral identity and worldviews could provide novel insights for climate decision-making (Stets and Carter, 2012; Shadnam, 2020). The following section explores this contextual, relational view of morals in more detail.

## **2.2 Morals as relational, situated, and dynamic**

A second key thread of research describes moral worldviews as relational and contextual. Broadly, research in this vein charts the ways that moral and ethical practices bound climate change decisions across all areas. A recent resurgence of interest in morality in sociology (Stets and Carter, 2012; Bargheer and Wilson, 2018; Bykov, 2019), anthropology (Mattingly and Throop, 2018), and geography (Barnett, 2013; Olson, 2015b, 2018) provides a number of insights relevant to climate decisions. These disciplines understand morality as culturally specific, embedded and embodied in the skills, habits, and institutions of daily life, and reinforced through practice (Barnett, 2013, p. 153). They examine how moral judgements, norms, and emotions manifest in everyday life (Cresswell, 2007; Hitlin and Vaisey, 2013; Olson, 2015b; Appel, 2019).

Insights on the socially embedded nature of morality emphasize that moralities and institutions are co-constituted. For example, sociologists link inequalities in societies with socialized patterns of moral judgements; 'morality binds societies together, forming the core of what it means to be part of a shared culture' (Hitlin and Harkness, 2017, p. 5). People's moral (or normative) worldviews on climate change mirror their position within class structures. For example, in Belgium, views on whether climate change can be solved through everyone cooperating (egalitarian), individuals acting responsibly (entrepreneurial), by governments and institutions (institutional) or as ultimately uncontrollable (fatalistic), map both to moral worldviews about other issues and onto social class (in this case defined as financial and cultural capital) (De Keere, 2020).

Research on the connection between moral identity and self-worth points to the potential dangers of climate decisions (particularly about consumption) becoming overly and narrowly moralized. A relational approach to morals suggests that 'moral views [are] simultaneously status markers and attempts to achieve self-worth' (De Keere, 2020). Work in environmental sociology highlights how friendships and families transmit ecological values in ways that bolster or morally excuse individuals from pursuing sustainable practices (Jamieson, 2020). Thus, conditions and relationships play a role in producing morality; the context and social relations of a decision-maker (be they individual consumers or policymakers) will shape how they judge what is moral or not. Thus, where and how climate-decisions are made, and who the subjects are, will matter for how moral judgements ensue, and will thus shape decisions. For example, strong practice-based identities around cycling, veganism (Kurz *et al.*, 2020), or producing zero waste (Bolderdijk, Brouwer and Cornelissen, 2018) may actually block broader societal shifts to sustainable practices because the 'behaviour of "do-gooders" could be interpreted as a threat to onlookers' moral self-concept' (Kurz *et al.*, 2020, p. 89). Rather than being encouraging, such "moralized minority practice identities" may stop people taking up sustainable practices (Kurz *et al.*, 2020). Thus, organizations and governments seeking to encourage climate friendly practices, could 'look to offer easy ways for people to experiment with a practice without having to first claim (or grapple with) an associated moralized identity'—for instance by advocating meat-free Mondays rather than becoming vegan (Kurz *et al.*, 2020, p. 97).

Moral worldviews and values are entwined with systems of production, consumption and markets across scales. Moral economy research provides a framework for understanding how markets are constituted and continually negotiated through moral ideas and practices across multiple economic scales, from micro (consumer's lay normativity or moral reasoning), and meso (collective customs, discourses, and institutions through which groups moralize the market) to macro (state regulation of the economy) (Wheeler, 2019). This multiscale analysis of how markets and moralities are co-constituted (e.g., Zelizer, 2011) provides important ways to understand the solution space within moral economies of consumption and production. For climate decisions involving consumption (for instance, of energy or food), this framework offers a way to deepen an understanding of 'why people choose to consume as they do and the values important to them' (Wheeler, 2019, p. 277). Climate decisions seeking to change consumption and production may attend to different points of leverage across these scales. For instance, recent anthropological studies emphasize how energy consumption, use and production, including fossil fuels and renewables are part of 'deeply held ethical worlds' (Appel, 2019, p. 188). Relegating CO<sub>2</sub> intensive industries as blanket 'bad' or immoral misses the 'rich ethical worlds that accrete around carbon-intensive energy sources' (Appel, 2019, p. 182). Recognizing these ethical worlds as legitimate—and as a source of friction against climate transformations—may be a step towards productive discussion.

Finally, research is beginning to explore how uncertainty and the prospects of irreversible loss create new types of moral judgements. Climate change creates unfamiliar situations—climate shocks, climate change-related disasters, and uncertainty (Crosweller and Tschakert, 2020)—and new experiences of grief wrought by ecological loss (Barnett *et al.*, 2016; Tschakert *et al.*, 2017; Cunsolo and Ellis, 2018). Climate change decision-makers at all scales will increasingly make decisions in and about new and uncertain situations. Sociological studies have shown that alongside moral identity (Stets and Carter, 2012; Shadnam, 2020), social relationships and changes in situations shape moral judgements and behaviour (Luft, 2020). When faced with unfamiliar situations, people do not revert to the unconscious moral intuitions used in normal day-to-day situations. Instead, 'what we believe to be good and bad gets a little fuzzier when we find ourselves in unfamiliar territory, and so we reconsider our relationships, and who and what truly matters' (Luft, 2020, p. 2). This insight suggests that moral foundations (section 2.1) may be more dynamic in the face of unfamiliar decisions.

Geographers emphasize that increasing urgency of action on climate change can serve to limit moral choices. As Olson argues 'urgency is not just a variable, but actually produces the conditions for morality' (Olson, 2015a, p. 519). For Olson, 'urgency delimits human agency, such that by the time we choose to undertake any particular action on moral grounds, we assume it to be the only choice we have' (*ibid*). Climate decisions are increasingly made in urgent situations; a critical research gap is understanding how this urgency delimits moral possibilities. Further research is warranted on how moral judgements might change depending on the context, including urgency, who they are about, and who makes them. The mode of decision-making also has an important influence on how morals might or might not be considered, and the extent to which they might be implicit or explicit.

### **2.3 Power dynamics of multiple moralities**

Understanding how climate change decisions manifest in practice is important to ensure climate decisions do not produce perverse outcomes, and that future decisions are more equitable and effective. Environmental governance research has shown how interventions that aim to be neutral, apolitical, or merely technical, are implicitly moral (Li, 2007; Blythe *et al.*, 2018; Nightingale *et al.*, 2020) and has emphasized the power that these implicit moral framings have in climate governance (Morrison *et al.*, 2017). Scholars have identified a narrow set of epistemological perspectives dominant in global climate change discourse (Castree *et al.*, 2014), the risks that arise from apolitical framings of environmental change 'problems' and 'solutions' (Blythe *et al.*, 2018), and growing mistrust of prevailing climate change framings among communities in the Global South (Mahony, 2014; Miguel, Mahony and Monteiro, 2019). There are, in effect, contested meanings in climate change policy discourse and decision-making, whereby seemingly apolitical global climate knowledge is in fact 'shaped by histories of exploration and colonialism, [...] and] messy processes of linking scientific knowledge to decision-making within different polities' (Mahony and Hulme, 2018, p. 395). By extension, what counts as worth knowing, as a viable solution to climate change, and who and what counts as a moral subject (e.g.,

whose losses are considered when making decisions) are embroiled in complex power relations across scales from individuals to global negotiations (Castree *et al.*, 2014; Tschakert *et al.*, 2017, p. 10).

Significant injustices are wrought by market-based tools and frameworks available and used in climate decisions and policies. As such, research in this area charts the boundaries of a pragmatic and fair climate solution space. Much critical discussion in environmental governance currently falls under the rubric of 'environmentality'—building on Foucault's original concept of 'governmentality'—referring to the subtle ways that environmental behaviour is regulated through the development of new subjectivities, or new environmental values and moralities (Agrawal, 2005). There are a variety of environmentalities (Fletcher, 2017; Asiyanbi, Ogar and Akintoye, 2019; Fletcher and Cortes-Vazquez, 2020), including the ways that local communities resist or adapt to new forms of environmental governance (Morrison *et al.*, 2019). For instance, empirical work has critiqued the market-based focus of many climate tools and conceptual frameworks, such as REDD+, ecological modernization and carbon trading and offsetting (Knox-Hayes, 2015; Watt, 2018; Song *et al.*, 2021), resonating with literature that explicitly critiques their morality (Caney, 2010). Knox-Hayes (2015), for example, shows how neoliberal approaches to environmental governance (including climate) ultimately reduce all values—including those of morality—to exchange value, ignoring their spatial and temporal characteristics.

Alongside the opportunities moral framing holds for climate decisions (section 2.1), navigating multiple moral framings also holds challenges for governance. Multiple publics generate multiple moralities; it is often not possible to reconcile different frames. For instance, global mitigation actions, led by wealthier nations and privileged groups, can violate indigenous values of consent, trust, accountability, and reciprocity (Whyte, 2020). Indeed, pursuing a unitary 'public morality' risks obscuring diversity, and can be used to glibly rationalise certain climate policy choices (Hulme, 2020). Rather, because moral frames vary, 'public morality' must primarily be a procedural rather than substantive concept, where multiple moral publics are accounted for by ensuring the articulation of diverse values and interests in climate policy (Asen, 2003; Lane and Morrison, 2006).

This emphasis on multiple rationalities has highlighted the interactions between environmental and climate governance strategies and the subjects of those strategies (e.g. McGregor *et al.*, 2015; Malier, 2019), and has helped to investigate and interpret the gaps between the visions of climate decision-makers and the implementation of decisions on the ground (Collins, 2020; Fletcher and Cortes-Vazquez, 2020). In their discussion of REDD+ in Nigeria, for example, Asiyanbi *et al.*, (2019) describe how it aimed to normalise particular moral values about forest protection but were countered by local discourses of morality centred around entitlements to forests. Others have shown how framings of climate solutions, for instance individualising moral narratives that situate climate change as the responsibility of individuals and consumer behaviour, deliberately shift the burden of response from states to citizens and thus justify minimal government action (Blythe *et al.*, 2018; Jamieson, 2020).

The mode of decision-making has an important influence on how morals might or might not be considered, and the extent to which they might be implicit or explicit. Given people's diverse moralities, climate decision-making procedures should not aim to reach a certain moral 'truth' or underlying principle, but rather to encourage and facilitate democracy and incorporate multiple forms of knowledge and truth (Rorty, 1989; Hulme, 2020; Hulme *et al.*, 2020). Deliberative decision-making invites consideration of plural moralities, and has been used to address controversial issues hitherto deeply morally divisive (Dryzek and Niemeyer, 2019). A Citizen's Assembly has recently been convened in UK to advise the government on how it should develop policy to meet its (legally binding) zero net emissions by 2050 target (<https://www.climateassembly.uk>). Other opportunities to incorporate morals into climate decision-making at different scales include participatory scenarios and futuring exercises (O'Neill *et al.*, 2014)—which have long been used by the private sector, and are becoming increasingly popular in public sphere—alongside the use of morally grounded tools to guide transformation processes (Grasso and Tàbara, 2019).

Framings of problems and solutions can shut down parts of the 'solution space' for decision-makers, namely what is politically feasible if a certain approach is outside a frame. For example, an analysis of press releases from organizations across the United States found that climate change was predominantly positioned as best handled through the expertise of scientific, political and economic institutions (Wetts, 2019, p. 25). This post-political framing that 'neutralizes social and political power dynamics' (Wetts, 2019, p. 1) can even dominated

the rhetoric of advocacy organizations. These findings highlight the implications of framing beyond targeting and aligning to individual moral foundations (section 2.1); moral frames may limit decision-maker's ability to interrogate interlinked causes of climate issues, and thereby narrow the range of possible solutions. For instance, leaders who are able to expand their remit of acceptable approaches to governing to include ethical elements like compassion and care, will be more successful in navigating transformation after disaster (Crosweller and Tschakert, 2020). Understanding the factors that impede decision-makers' abilities to act on their moral duties to constituents, and how framings of climate change at higher governance scale limit climate change options are important areas of future research.

Empirical explorations of the gaps between intention and outcome in climate governance suggest that static typologies for climate change decision-making downplay the complexity of lived moral values and the power struggles of whose perspectives matter (Tschakert *et al.*, 2017). Uncovering these implicit moral framings within climate change governance can thus help cultivate new, more socially and ecologically equitable forms of climate governance (Asiyanbi, Ogar and Akintoye, 2019). Such approaches include placing values and normative commitments from diverse backgrounds at the centre of climate change analysis and action (Castree *et al.*, 2014; Nightingale *et al.*, 2020), alongside a relational approach that allows local, dynamic values to be incorporated into climate decision-making (Tschakert *et al.*, 2017). In sum, the morality of climate decisions must be openly discussed and form part of the decision-making process itself.

### 3. Conclusion

Climate decisions concern many aspects of everyday life, and many moral junctures. Hulme argues that 'wise governance of climate... emerges best when rooted in larger and thicker stories about human purpose, identity, duty, and responsibility' (Hulme, 2020, p. 311). We contend that morality insights from social and behavioural sciences are key 'thickening' ingredients for climate change decision-makers. In this review, we have highlighted the role morals play in framing and motivating climate decisions, explored findings about morals as relational, situated, and dynamic, and reviewed how uneven power dynamics of multiple moralities shape climate decision-making. Our aim is to encourage climate decision-makers, and climate scholars broadly, to engage more closely with emerging insights from this scholarship. More broadly, this review serves as a first step to bringing sometimes inaccessible theoretical debates into conversation with what is possible and pragmatic given the social nature of climate change decision-making (Markowitz, Grasso and Jamieson, 2015). This effort to synthesise insights relevant to a cohering—but nebulous—body of work in climate morality (Grasso and Markowitz, 2015) has inevitably skimmed over recent and relevant work. However, the studies gathered here serve to orient those engaged with climate decision-making and behaviour change, those working on the normative dimensions of climate problems, and those seeking to guide and influence climate decision-making as a field of research connected to real world problems.

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Caney, S. (2010) 'Markets, morality and climate change: What, if anything, is wrong with emissions trading?', *New Political Economy*, 15(2), pp. 197–224. doi: 10.1080/13563460903586202.

\*\*Castree, N. et al. (2014) 'Changing the intellectual climate', *Nature Climate Change*, 4, pp. 763–768. doi: 10.1038/nclimate2339.

This highly cited paper calls for greater interdisciplinary dialogue that incorporates insights from the humanities and social sciences to ensure decisions are guided by 'plural representations of Earth's present and future that are reflective of divergent human values and aspirations', including moral interdependencies.

Collins, Y. A. (2020) 'How REDD+ governs: Multiple forest environmentalities in Guyana and Suriname', *Environment and Planning E: Nature and Space*, 3(2), pp. 323–345. doi: 10.1177/2514848619860748.

Corner, A. and Randall, A. (2011) 'Selling climate change? The limitations of social marketing as a strategy for climate change public engagement', *Global Environmental Change*, 21(3), pp. 1005–1014. doi: 10.1016/j.gloenvcha.2011.05.002.

Cresswell, T. (2007) 'Moral geographies', in Atkinson, D. et al. (eds) *Cultural Geography: A Critical Dictionary of Ideas*. London: I.B Tauris, pp. 128–134.

\*Crosweiler, M. and Tschakert, P. (2020) 'Climate change and disasters: The ethics of leadership', *Wiley Interdisciplinary Reviews: Climate Change*, 11(2), pp. 1–18. doi: 10.1002/wcc.624.

This review synthesizes literature on the challenges and opportunities for ethical leadership in the context of how modern societies engage with and construct risk. The authors posit that additional leadership qualities will be necessary as disasters increase in intensity, and draw on a wide range of literature to explore what these additional qualities might entail.

Cunsolo, A. and Ellis, N. R. (2018) 'Ecological grief as a mental health response to climate change-related loss',



*Nature Climate Change*. Springer US, 8(4), pp. 275–281. doi: 10.1038/s41558-018-0092-2.

Dickinson, J. L. *et al.* (2016) 'Which moral foundations predict willingness to make lifestyle changes to avert climate change in the USA?', *PLoS ONE*, 11(10), pp. 1–11. doi: 10.1371/journal.pone.0163852.

\*\*Druckman, J. N. and McGrath, M. C. (2019) 'The evidence for motivated reasoning in climate change preference formation', *Nature Climate Change*, 9(2), pp. 111–119. doi: 10.1038/s41558-018-0360-1.

This review examines evidence for motivated reasoning in how people form climate change preferences. It clarifies uses of different terms in psychology including bias, and outlines different types of motivated reasoning and implications for climate change preference formation. The authors proposes a new research agenda on climate change preference formation that will assist communicators understand and better target messages.

Dryzek, J. S. and Niemeyer, S. (2019) 'Deliberative democracy and climate governance', *Nature Human Behaviour*, 3(5), pp. 411–413. doi: 10.1038/s41562-019-0591-9.

Feinberg, M. and Willer, R. (2013) 'The Moral Roots of Environmental Attitudes', *Psychological Science*, 24(1), pp. 56–62. doi: 10.1177/0956797612449177.

Fletcher, R. (2017) 'Environmentality unbound: Multiple governmentalities in environmental politics', *Geoforum*, 85, pp. 311–315. doi: 10.1016/j.geoforum.2017.06.009.

Fletcher, R. and Cortes-Vazquez, J. A. (2020) 'Beyond the green panopticon: New directions in research exploring environmental governmentality', *Environment and Planning E: Nature and Space*, 3(2), pp. 289–299. doi: 10.1177/2514848620920743.

Goldberg, M. H., Gustafson, A. and van der Linden, S. (2020) 'Leveraging Social Science to Generate Lasting Engagement with Climate Change Solutions', *One Earth*. Elsevier Inc., 3(3), pp. 314–324. doi: 10.1016/j.oneear.2020.08.011.

Graham, J. *et al.* (2011) 'Mapping the Moral Domain', *Journal of Personality and Social Psychology*, 101(2), pp. 366–385. doi: <https://doi.org/10.1037/a0021847>.

Graham, J. *et al.* (2013) 'Moral Foundations Theory: The Pragmatic Validity of Moral Pluralism', *Advances in Experimental Social Psychology*. 1st edn, 47, pp. 55–130. doi: 10.1016/B978-0-12-407236-7.00002-4.

Grasso, Marco; Vladimirova, K. (2020) 'A Moral Analysis of Carbon Majors' Role in Climate Change', *Environmental Values*, 29(2), pp. 175–195.

\*Grasso, M. and Markowitz, E. M. (2015) 'The moral complexity of climate change and the need for a multidisciplinary perspective on climate ethics', 130, pp. 327–334. doi: 10.1007/s10584-014-1323-9.

This paper outlines the need for morally-grounded approaches to transformations and presents a normative tool, or 'moral compass' to help confront the moral challenges and dilemmas in climate change governance.

Grasso, M. and Tàbara, D. (2019) 'Towards a Moral Compass to Guide Sustainability Transformations in a High-End Climate Change World', *Sustainability*, 11(2971), pp. 1–16. doi: doi:10.3390/su11102971.

Green, F. and Brandstedt, E. (2020) 'Engaged Climate Ethics\*', *Journal of Political Philosophy*, 0(0), pp. 1–25. doi: 10.1111/jopp.12237.

Haidt, J. (2012) *The righteous mind: why good people are divided by politics and religion*. London: Penguin.

Hitlin, S. and Harkness, S. (2017) *Unequal Foundations: Inequality, Morality, and Emotions Across Cultures*. Oxford: Oxford University Press.

Hitlin, S. and Vaisey, S. (2013) 'The New Sociology of Morality', *Annual Review of Sociology*, 39(1), pp. 51–68. doi: 10.1146/annurev-soc-071312-145628.

Hulme, M. (2020) 'One Earth, Many Futures, No Destination', *One Earth*, 2, pp. 309–311. doi: doi.org/10.1016/j.oneear.2020.03.005.

Hulme, M. *et al.* (2020) 'Social scientific knowledge in times of crisis: What climate change can learn from coronavirus (and vice versa)', *Wiley Interdisciplinary Reviews: Climate Change*, 11(4), pp. 1–5. doi: 10.1002/wcc.656.

Jamieson, L. (2020) 'Sociologies of Personal Relationships and the Challenge of Climate Change', *Sociology*, 54(2), pp. 219–236. doi: 10.1177/0038038519882599.

Jax, K. *et al.* (2018) 'Caring for nature matters: a relational approach for understanding nature's contributions to human well-being', *Current Opinion in Environmental Sustainability*, 35, pp. 22–29. doi: 10.1016/j.cosust.2018.10.009.

\*De Keere, K. (2020) 'Finding the moral space: Rethinking morality, social class and worldviews', *Poetics*. 79, p. 101415. doi: 10.1016/j.poetic.2019.101415.

This paper examines moral positions on a range of public and private issues including, for example, job conflict (private) and responsibility for climate change (public). It then explores how moral positions establish self-

worth and act as class markers (or 'classed moralities') consistently across these issues.

Kidwell, B., Farmer, A. and Hardesty, D. M. (2013) 'Getting liberals and conservatives to go green: Political ideology and congruent appeals', *Journal of Consumer Research*, 40(2), pp. 350–367. doi: 10.1086/670610.

Klinsky, S., Dowlatabadi, H. and Mcdaniels, T. (2012) 'Comparing public rationales for justice trade-offs in mitigation and adaptation climate policy dilemmas', *Global Environmental Change*, 22(4), pp. 862–876. doi: 10.1016/j.gloenvcha.2012.05.008.

Knox-Hayes, J. (2015) 'Towards a moral socio-environmental economy: A reconsideration of values', *Geoforum*, 65, pp. 297–300. doi: 10.1016/j.geoforum.2015.07.028.

\*Kurz, T. et al. (2020) 'Could Vegans and Lycra Cyclists be Bad for the Planet? Theorizing the Role of Moralized Minority Practice Identities in Processes of Societal-Level Change', *Journal of Social Issues*, 76(1), pp. 86–100. doi: 10.1111/josi.12366.

This theoretical paper contends that practices (such as veganism) that lead to moralized social identities (being vegan), may hamper shifts towards sustainability by threatening the moral selfconcept in those in broader society who do not pursue the practice. The authors offer policy approaches that support sustainable practices without connecting them to moralized identities.

Lane, M. B. and Morrison, T. H. (2006) 'Public interest or private agenda? A mediation on the role of NGOs in environmental policy and management in Australia', *Journal of Rural Studies*, 22(2), pp. 232–242. doi: 10.1016/j.jrurstud.2005.11.009.

Leviston, Z. and Walker, I. (2020) 'Influence of moral disengagement on responses to climate change', *Asian Journal of Social Psychology*, 2090. doi: 10.1111/ajsp.12423.

Li, T. (2007) *The will to improve: Governmentality, development, and the practice of politics*. Durham & London: Duke University Press.

\*Luft, A. (2020) 'Theorizing Moral Cognition: Culture in Action, Situations, and Relationships', *Socius: Sociological Research for a Dynamic World*, 6, pp. 1–15. doi: 10.1177/2378023120916125.

This paper takes a sociological lens to approaches to moral judgement predominant in moral psychology, and argues that there has been insufficient attention to social categorization (or who the subjects are in a given moral judgement), and in what social situation the judgement is made – both important in shaping people's moral judgements when a situation is unfamiliar.

Luttrell, A. et al. (2016) 'Making it moral: Merely labeling an attitude as moral increases its strength', *Journal of Experimental Social Psychology*. Elsevier Inc., 65, pp. 82–93. doi: 10.1016/j.jesp.2016.04.003.

Mahony, M. (2014) 'The predictive state: Science, territory and the future of the Indian climate', *Social Studies of Science*, 44(1), pp. 109–133. doi: 10.1177/0306312713501407.

\*Mahony, M. and Hulme, M. (2018) 'Epistemic geographies of climate change: Science, space and politics', *Progress in Human Geography*, 42(3), pp. 395–424. doi: 10.1177/0309132516681485.

This paper examines the politics of knowledge in climate change, focusing on the situated co-production of climate change knowledge by drawing on theories of the spatialities of scientific knowledge from geography.

Malier, H. (2019) 'Greening the poor: the trap of moralization', *British Journal of Sociology*, 70(5), pp. 1661–1680. doi: 10.1111/1468-4446.12672.

\*\*Markowitz, E. M., Grasso, M. and Jamieson, D. (2015) 'Climate ethics at a multidisciplinary crossroads: four directions for future scholarship', *Climatic Change*, 130(3), pp. 465–474. doi: 10.1007/s10584-015-1404-4.

This highly cited, influential article synthesizes evidence that people do not intuit climate change in the same way as other moral imperatives, and thus are not motivated to act. The authors present six reasons climate change challenges people's moral judgement systems, and suggest six strategies for communicators to navigate these challenges.

\*Mattingly, C. and Throop, J. (2018) 'Annual review of anthropology: The anthropology of ethics and morality', *Annual Review of Anthropology*, 47, pp. 475–492. doi: 10.1146/annurev-anthro-102317-050129.

This review charts the resurgence of studies of morality in anthropology and outlines key themes.

Mattoo, A. and Subramanian, A. (2012) 'Equity in Climate Change: An Analytical Review', *World Development*, 40(6), pp. 1083–1097. doi: 10.1016/J.WORLDDEV.2011.11.007.

McCaffree, K. (2019) 'Towards an integrative sociological theory of empathy', *European Journal of Social Theory*, 23(4), pp. 550–570. doi: 10.1177/1368431019890494.

McGregor, A. *et al.* (2015) 'Beyond carbon, more than forest? REDD+ governmentality in Indonesia', *Environment and Planning A*, 47(1), pp. 138–155. doi: 10.1068/a140054p.

Miguel, J. C. H., Mahony, M. and Monteiro, M. S. A. (2019) "'Infrastructural geopolitics" of climate knowledge: The Brazilian Earth System Model and the North-South knowledge', *Sociologias*, 21(51), pp. 44–75. doi: 10.1590/15174522-0215102.

\*Milfont, T. L., Davies, C. L. and Wilson, M. S. (2019) 'The Moral Foundations of Environmentalism: Care- and Fairness-Based Morality Interact With Political Liberalism to Predict Pro-Environmental Actions', *Social Psychological Bulletin*, 14(2). doi: 10.32872/spb.v14i2.32633.

This paper presents two studies that draw on moral foundations theory to examine the relationship between political ideology, moral concerns and environmentalism in New Zealand.

Morrison, T. H. *et al.* (2017) 'Mitigation and adaptation in polycentric systems: sources of power in the pursuit of collective goals', *WIREs Climate Change*, 8, pp. 1–16. doi: 10.1002/wcc.479.

Morrison, T. H. *et al.* (2019) 'The black box of power in polycentric environmental governance', *Global Environmental Change*, 57(101934), pp. 1–15. doi: 10.1016/j.gloenvcha.2019.101934.

Müller, B. (2001) 'Variety of Distributive Justice in Climate Change - An Editorial Comment', *Climate Change*, 48, pp. 273–288. doi: 10.1177/107769900107800401.

Nielsen, K. S. and Hofmann, W. (2021) 'Motivating sustainability through morality: A daily diary study on the link between moral self-control and clothing consumption', *Journal of Environmental Psychology*, p. 101551. doi: 10.1016/j.jenvp.2021.101551.

\*\*Nightingale, A. J. *et al.* (2020) 'Beyond Technical Fixes: climate solutions and the great derangement', *Climate and Development*, 12(4), pp. 343–352. doi: 10.1080/17565529.2019.1624495.

This multi-authored paper argues that much current research into climate change is based on established ways of understanding society, climate, and the environment, specifically in relation to adaptation, mitigation and risk. Drawing on concepts from the humanities and social sciences that are less influential in climate change research, they highlight the need for ontological plurality and the need to see knowledge about climate as intertwined with values and society.

O'Neill, B. C. *et al.* (2014) 'A new scenario framework for climate change research: The concept of shared socioeconomic pathways', *Climatic Change*, 122(3), pp. 387–400. doi: 10.1007/s10584-013-0905-2.

Olson, E. (2015a) 'Geography and ethics I: Waiting and urgency', *Progress in Human Geography*, 39(4), pp. 517–526. doi: 10.1177/0309132515595758.

Olson, E. (2015b) 'Geography and ethics II : Emotions and morality', *Progress in Human Geography*, 40(6), pp. 830–838. doi: 10.1177/0309132515601766.

\*Olson, E. (2018) 'Geography and ethics III: Whither the next moral turn?', *Progress in Human Geography*, 42(6), pp. 937–948. doi: 10.1177/0309132517732174.

This paper, (the last in a series of three examining progress in ethics and moral in geography) outlines how moral geography and moral economy approaches contribute to understanding issues of exclusion and justice, and calls for greater attention to moral agency and moral status.

\*Orlove, B. *et al.* (2020) 'Climate Decision-Making', *Annual Review of Environment and Resources*, 45, pp. 1–33. doi: doi.org/10.1146/annurev-enviro-012320-085130.

This article provides an authoritative review of climate change decision-making, particularly from the perspective of decision science. Concepts of framing, urgency and temporality of decision-making are highlighted. It summarizes advances in the study of cognitive systems within individuals and demonstrate its importance for organizational decisions.

Paavola, J. and Adger, W. N. (2006) 'Fair adaptation to climate change', *Ecological Economics*, 56(4), pp. 594–609. doi: 10.1016/j.ecolecon.2005.03.015.

Pearce, J. R. *et al.* (2010) 'Environmental justice and health: The implications of the socio-spatial distribution of multiple environmental deprivation for health inequalities in the United Kingdom', *Transactions of the Institute of British Geographers*, 35(4), pp. 522–539. doi: 10.1111/j.1475-5661.2010.00399.x.

Pelling, M. and Garschagen, M. (2019) 'Put equity first in climate adaptation', *Nature*, 569, pp. 7–9.

Roberts, J. and Parks, B. (2006) *A climate of injustice: Global inequality, north-south politics, and climate policy*. Cambridge, Massachusetts: MIT press.

Robinson, S. and Carlson, D. A. (2021) 'A just alternative to litigation: applying restorative justice to climate-related loss and damage to climate-related loss and damage', *Third World Quarterly*. Routledge, 0(0), pp. 1–12.

doi: 10.1080/01436597.2021.1877128.

Rorty, R. (1989) *Contingency, irony, and solidarity*. Cambridge: Cambridge University Press.

Rossen, I. L., Dunlop, P. D. and Lawrence, C. M. (2015) 'The desire to maintain the social order and the right to economic freedom: Two distinct moral pathways to climate change scepticism', *Journal of Environmental Psychology*, 42, pp. 42–47. doi: 10.1016/j.jenvp.2015.01.006.

Shadnam, M. (2020) 'Choosing whom to be: Theorizing the scene of moral reflexivity', *Journal of Business Research*, 110, pp. 12–23. doi: 10.1016/j.jbusres.2019.12.042.

Song, A. M. et al. (2021) 'From conversion to conservation to carbon: The changing policy discourse on mangrove governance and use in the Philippines', *Journal of Rural Studies*, 82, pp. 184–195. doi: 10.1016/j.jrurstud.2021.01.008.

Stets, J. E. and Carter, M. J. (2012) 'A theory of the self for the sociology of morality', *American Sociological Review*, 77(1), pp. 120–140. doi: 10.1177/0003122411433762.

\*Storey, D. E. (2019) 'The world as it is: a vision for a social science (and policy) turn in climate justice', in Harris, P. (ed.) *A Research Agenda for Climate Justice*. Massachusetts: Edward Elgar, pp. 38–51. doi: 10.4337/9781788118170.00009.

This book chapter argues for greater attention to social science contributions to climate justice, particularly for communicating and framing climate actions to those with more traditional moral worldviews.

Tschakert, P. et al. (2017) 'Climate change and loss, as if people mattered: values, places, and experiences', *Wiley Interdisciplinary Reviews: Climate Change*, 8(5), pp. 1–19. doi: 10.1002/wcc.476.

Tschakert, P. (2020) 'More-than-human solidarity and multispecies justice in the climate crisis', *Environmental Politics*, 00(00), pp. 1–20. doi: 10.1080/09644016.2020.1853448.

\*Vainio, A. and Makiniemi, J.-P. (2016) 'How Are Moral Foundations Associated with Climate Friendly Consumption?', *J Agric Environ Ethics*, 29, pp. 265–283. doi: 10.1007/s10806-016-9601-3.

This article examines whether differences in climate friendly behaviour between people with different political orientations in Finland are associated with different moral foundations.

Wang, S. et al. (2018) 'Emotions predict policy support: Why it matters how people feel about climate change', *Global Environmental Change*, pp. 25–40. doi: 10.1016/j.gloenvcha.2018.03.002.

Watt, R. (2018) 'A crash in value: Explaining the decline of the Clean Development Mechanism', in Bracking, S. et al. (eds) *Valuing Development, Environment and Conservation: Creating Values that Matter*. London & New York: Routledge.

Watts, N. et al. (2015) 'Health and climate change: Policy responses to protect public health', *The Lancet*, 14(6), pp. 466–468. doi: 10.1016/S0140-6736(15)60854-6.

\*Wetts, R. (2019) 'Models and Morals: Elite-Oriented and Value-Neutral Discourse Dominates American Organizations' Framings of Climate Change', *Social Forces*, 98(3), pp.1339–1369. doi: 10.1093/sf/soz027.

This paper presents a discourse analysis of climate change press releases from a range of American organizations between 1985 and 2013. The author finds that the climate change discourse has become expert-oriented and technocratic.

\*Wheeler, K. (2019) 'Moral economies of consumption', *Journal of Consumer Culture*, 19(2), pp. 271–288. doi: 10.1177/1469540517729007.

This article provides a framework for examining the moral economies of consumption by connecting individual, social and institutional scales.

Whyte, K. (2020) 'Too late for indigenous climate justice: Ecological and relational tipping points', *Wiley Interdisciplinary Reviews: Climate Change*, 11(1), pp. 1–7. doi: 10.1002/wcc.603.

Wolsko, C., Ariceaga, H. and Seiden, J. (2016) 'Red, white, and blue enough to be green: Effects of moral framing on climate change attitudes and conservation behaviors', *Journal of Experimental Social Psychology*, 65, pp. 7–19. doi: 10.1016/j.jesp.2016.02.005.

Zelizer, V. (2011) *Economic Lives: How culture shapes the economy*. Princeton: Princeton University Press.