radically pro-climate action to climate change scepticism and even denial. The implications of these findings for climate policy and practice are also wide-ranging, pointing towards the urgent need to take seriously diverse views and practices that impact on people's collective engagement in climate action. The following section will now attend to this challenge.

7.5 Policy recommendations

7.5.1 Difference

Evidence of profound climate-cultural difference in German society clearly presents a number of challenges to policymakers engaged in climate action. Reflecting diverging power relations, different social groups reveal markedly varied, if not truly opposing propensities to act on climate change. If corporate culture rewards frequent flying, messages that inform about the climate impact of flying tend to clash with these workplace-based practices. Therefore, both less privileged and elite groups must be considered and addressed differently for climate initiatives to be relevant and effective.

At the same time, societal conflicts around climate (in)action present a real challenge for climate politics. This has so far received far too little attention. A culture- and context-sensitive social-scientific analysis is uniquely suited to present different options for addressing different climate cultures, by better grasping, analysing and presenting their idiosyncrasies. As such, it can contribute to the meaningful and, crucially, differentiated[15] integration of these insights into German climate policy (cf. Norgaard, 2011; Bulkeley, 2019). Research efforts in this direction should be better resourced in the future.

This observed diversity however also harbours significant conflict potential that points to the limitations of conventional democratic and political processes and decision-making. High levels of climate-cultural diversity identified in this study help explain why official assumptions about information provision have so far proven rather un- or even counterproductive, as a public imagined as uniform entity simply does not exist (cf. section 2.5). The assumption that the majority of the population will internalise the imperative for climate action as soon as provided information is just precise enough, catchy enough or alarming enough has proven false. This also indicates the need to develop new forms of participation, for instance by perceiving of science communication as a two-way street between the scientific community and the public(s), instead of mere information transfer from former to latter.

15 group-specific.

7.5.2 Responsibility, Efficacy, Knowing

Most types of climate-friendly consumption (e-mobility, vegan diets, slow fashion) are still niche phenomena. A lot of insecurity exists in the German population regarding individual contribution to climate action. In fact, people are acutely aware that the effects of their efforts are comparatively miniscule. It must finally be acknowledged that individual efficacy, and therefore individual responsibility, are severely limited.

What individuals can actually do for the climate, however, is refocusing on their role as political agents and contributing to climate action in their different social spheres and on local levels so this can grow into more collective change and re-install faith in democratic processes. What they can also do is behaving and talking as if climate change matters, thereby activating their relational efficacy and declaring war on socially organised denial (cf. Norgaard, 2018, p. 4, section 2.5).

Yet, importantly, it is not individual responsibility that political efforts should focus on. One must consider societal groups' climate-cultural standpoints and practices (that rest upon the concatenation between responsibility, efficacy and knowing) and address them accordingly. Different societal groups have different concepts of, for instance, what is 'the right thing to do' in the way they go about their everyday. To establish a connection to the different living realities within society, one must address this 'lived responsibility'. Only through considering how people actually defray their everyday and make meaning while doing so, climate action can be integrated into people's realities. Here, it is generally neglected that climate-friendly consumption means significant extra effort. Conceiving of consumption as a form of work (Rau, 2015; Hobson et al., 2021) would advance political approaches as this helps explain refusal of time-poor individuals to contribute to climate action and other environmental measures. Instead of focusing on information and its provision, it is vital to consider the social functions of consumption, not just on an individual level but, importantly, also in the collective – for example at the work place. This differentiation is essential for including less visible sections of society and eventually rendering climate action relevant to more people.

Here, it is particularly useful to ask where exactly these discrepancies between responsibility and efficacy lie, and how they may be reduced. This also grants opportunities for broader inclusion of different climate cultures into projects for climate action. Considering decision-makers' particular takes on responsibility and efficacy and the ways these are anchored in their own privileged realities can also ameliorate observed disengagement. Although the capital-richest people[16] represent only a small section of society, their practices are outstandingly detrimental to the climate (cf. UBA, 2021; Di Muzio, 2015, section 1.1, p. 14f.). For this reason alone, they

16 Here: in terms of *economic* capital.

urgently have to be included in climate action. Yet they may have the financial means to simply pay for both mitigation (climate-related taxes) and adaptation. These idiosyncrasies, also of the most privileged, must be considered when drafting policy measures.

Given that corporate and political agents display high levels of actual efficacy or power over societal outcomes, they should also be ascribed significant responsibility to ameliorate climate change. For this it must be differentiated between actual everyday efficacy and expected efficacy. For example, conservative politicians downplaying their own efficacy departs from the actual comparative influence they have.

By contrast, corporate agents often acknowledge their own influence, thus a promising future strategy may be to actually address them from this angle, by pointing out their power and potential for climate action. This is a much more motivating angle than addressing corporations through messages that attest them culpability for past emissions. Taking this avenue of addressing elite figures' efficacy expectations to hold them responsible whilst preventing diffusion of this responsibility has the potential to yield future progress.

The analysis of diverse climate cultures also reveals the need for dominant notions of knowledge to evolve by fusing cognitive, emotional and affective elements rooted in everyday practices and routine conduct. Knowledge itself should be thought of as less cerebral and more emotional and embodied. One avenue that productively engages people emotionally is the presentation of art. Art is also particularly suited to gain people's attention through visual means. As opposed to information provision, art is much closer to bilateral communication between artist and viewer, as here interpretation of the work is particularly salient. Ultimately, the necessity to link both cognitive and emotional aspects of knowing in the context of climate debates emerges as a key challenge to those interested in advancing climate action. Undifferentiated emotional appeals to the public (as well as efforts that focus solely on closing knowledge gaps) appear counterproductive, however.

Also, when drafting climate policy, one must consider "that often decisions are influenced by group identity" (Jackson, 2005, cited in Kenner, 2015, p. 09). When promoting climate action, these social functions are habitually overlooked: in certain social circles, possessing a private car still embodies a status symbol. For many, giving up their cars would entail precisely the kind of costly and uncomfortable retooling that Swidler and Norgaard point towards (see 2.5). Social norms and everyday practices' relative resistance as part of people's habit architecture (mobility, diet, shopping) render appeals to consume differently largely non-effective.

So far, structural conditions like experienced socialisation and practical everyday demands have inadequately been considered in research and policy – a void this study has tackled. Political decision-makers receive valuable impulses regarding how climate action can be developed into a project that is more relevant to people's lives and addresses more of society, which both significantly raises the potential

for successful implementation. It is politicians' responsibility to instigate and drive structural change towards private and, arguably much more importantly corporate (high efficacy), climate action. This should entail symbolic and financial incentives but also politically legitimised regulations and targeted prohibiting of what (most) significantly contributes to climate change.

7.5.3 Denial

The explicit recognition of climate-cultural diversity can open up new avenues for climate policy that, for the first time, is also equipped to deal with different forms of climate denial. Denial based on fear of further future financial strain through climate policy and carbon taxation must be addressed markedly differently from denial primarily linked to conservative worldviews, for instance. Justified hesitation towards the feasibility of some climate action measures also has to be approached differently than explicit denial that endorses conspiracy discourses.

Here, the identified climate cultures can be placed into three broad categories: first, climate cultures whose members are already radically pro-climate action (no/low denial), second, climate cultures whose members are undecided and may thus potentially be motivated (or deterred) to contribute, and third, climate cultures whose members reject climate change and the need to act (explicit denial).

The second type accommodates the vast majority of the population, including those that exhibit implicit denial that operates partially on subconscious levels. As shown, the third type consists of a surprisingly sizable and in any case particularly visible group of climate sceptics, some of which even explicitly deny climate science. From a policy perspective, it is urgently necessary to make sense of and address these different types of denial. From this follow a number of key insights:

groups already convinced of climate action can actually be further motivated by new information and scientific insights. Here it is vital to also engage them emotionally as well and point towards their political and relational efficacy.

Climate cultures whose members are not particularly committed to either endorsing or rejecting climate action represent the largest fraction of the public. These people are generally open to science and information, yet they are often preoccupied with demanding everyday lives.

As discussed, many from this unconvinced majority turn a blind eye to calls for climate action (implicit denial), especially when confronted with particularly threatening information. Here, increasing informational bases may prove counterproductive. Climate communicators must deliberate when this may be the case, consider people's specific living situations and ask how climate action could be meaningfully integrated therein. Existing hurdles must also be eliminated. For instance, making opt-out (of climate action) the default instead of current general opt-ins would cer-

tainly help. This could concern several contexts, like energy provision, mobility and nutrition.

Caution must be taken when designing research, however: doing so based on what is considered climate-friendly within the 'ivory tower' of scientific institutions pre-empts that this is also perceived as such by all of society. One example is academic literature's and policy's current emphases of green growth and sustainable consumption instead of questioning growth-fetishism (Hamilton, 2004) itself. The frequent surfacing of the 'system question' (as called in this study) in the material confirms this. More inclusive, 'participatory' or 'transformative' approaches may present a step into the right direction here. Yet, Alfred Eberhardt bemoans that "processes that accord participants some form of true participation are still hard to find" (2000, cited in Böde and Gruber, 2000, p. 9). Moreover, Annika-Kathrin Musch emphasises in this respect that practitioners must critically evaluate participatory approaches as they should by no means be seen as a sure-fire success: "'Better' participation, in my understanding, refers to a reflexive, responsible, inclusive and diverse participation, that factors in long-term societal efficacy" (2021, p. 165). Measures springing from such a 'diverse participation' that considers both, responsibility and long-term efficacy could indeed be tailored to the needs and specifics of diverse climate cultures. This then has true potential to substantially advance societal treatment of climate change.

Lastly, much potential lies in engaging people emotionally by stressing that it is not too late for climate action and providing concrete and practicable options, as this will appeal to self-efficacy.

The question of if and how to engage with those rejecting climate action remains most controversial, however. Some say that it is entirely futile to even address these social groups as this will only cause so-called boomerang or backfire effects (cf. e.g., Lewandowsky, 2021; Hornsey et al., 2018, see chapter 2). This springs from the theory that when new information challenges people's core beliefs, this threatens their identity and leads to the incorporation of new material into the already existing belief system. In other words, people will not cease to passionately defend their position (cf. Rosenberg, 1990; Norgaard, 2011, see section 2.5). However, the answer cannot be to simply give up trying to involve these groups in climate debates and actions. It is in fact essential to engage with them and make sense of their life realities and the corresponding specific sources of their explicit denial. If these particularly fervent groups remain excluded, they are left to boil in their (somewhat understandable)[17] resentment which can then easily exacerbate their radicalisation. As their dis-

17 As they are in fact being actively excluded. Yet, one could argue that once people propose the exclusion of others, they thereby disqualify (exclude) themselves, an argument that I find increasingly convincing.

courses often reject science whilst being emotionally engaging instead, they may actually outpace climate communicators in swaying the undecided majority. This is why it is so dangerous to exclude these groups from public discourse.

Several factors let them appear to represent a larger share of the public than they actually are: sceptics often think that much more people share their conviction than is actually the case ('false consensus effect'; Ross et al., 1977). An Australian survey found this effect in all the groups they questioned (cf. Leviston et al., 2013). Believing they have much support, sceptics will less likely reconsider their views. This also makes this small but loud minority seem disproportionately large to the rest of society, which can in turn induce doubt on the scientific establishment of anthropogenic climate change. In combination with so-called 'balance of bias' (Boykoff and Boykoff, 2004) – the media's tendency to give equal attention to both sides of the human cause question (even despite the IPCC-consensus) – this becomes particularly problematic.

How to engage with sceptical and denialist groups then? As Sauer et al. have found in their research aptly titled: "People, not facts, alter students' perceptions on climate change" (2021), employing well-established public figures who certain groups identify with may help: "Our data suggest that [this] may allow for a broadening of cultural identity to include acceptance of climate change" (p. 5800). This strategy was especially effective in increasing more sceptical conservatives' willingness to engage in climate action. Focusing on the local instead of communicating abstract and distant consequences of climate change also furthers engagement of these groups in particular (cf. Hart and Nisbet, 2012).

Inoculation or *prebunking*[18] can also be beneficial: this "involves two elements: first, an explicit warning of an impending disinformation attempt and, second, a refutation of an anticipated argument that exposes its fallacy" (Lewandowsky, 2021)[19]. Inoculation rests upon increasing the addressees' defences or 'immune system' vis-à-vis misinformation by presenting an 'example fallacy' and subsequently explaining how this can easily be debunked. This then stops misinformation from spreading – like a vaccine.

The human tendency to rely on anecdotal and immediately perceivable local evidence (instead of representative results) also plays a role here: challenging 'fake experts' with questionable credentials or credentials relating to a completely different

18 It is granted that this strategy also relies on the provision of (factual) information, which in this particular instance may however prove a useful strategy.

19 To illustrate, one study "applied inoculation to climate change by presenting participants with (a) a warning that political operatives often attempt to cast doubt on the scientific consensus and (b) a detailed explanation of the dissenting fake experts technique that is used to feign a lack of scientific consensus" (Lewandowsky, 2021, p. 11).

field can also be conducive to inoculation (cf. e.g., Van Der Linden, 2020). Questioning frequent employment of so-called ad-hominem argumentation (accusing opponents imperfectly practicing climate action of *hypocrisy*) could serve as such pre-emption. However, exposing cases of ecological fallacy and other limitations to sound scientific argumentation must always be done in a particularly rigorous and reliable manner to avoid equipping sceptics with any further ammunition.

Moreso, particularly resilient myths should be debunked with science communication that is equally, if not more, 'sticky' as Chip Heath and Dan Heath have argued (2007). Ideas that resonate particularly well are those that are surprisingly counter-intuitive (as this engages people) and employ emotional messages, stories, metaphors or analogies.

Measures to effectively address and engage more sceptical societal segments are urgently needed to advance climate action, particularly as these groups have hitherto been notoriously difficult to reach. Communication that does not threaten their worldview may also help through mitigating aforementioned backfire effects (see section 2.4). Promoting climate action by concomitantly endorsing health motivations (encouraging cycling or eating fresh produce) may also work when climate action is an unpopular subject. Similarly, the conversations with the craftsmen and farmers uncovered their respective appreciation of regional produce. This was not based on climate motives but on their connections to their occupation or to the countryside. Besides, principal reasons for scepticism may not actually be climate-related, people may instead hold at their core other rationales like for instance a free-market ideology. Here Dixon et al. (2017) have found that when measures focused on the market's role, conservative groups were more inclined to accept climate science.

This relates to the question of how inherently individualistic information-centrist economic theories (e.g., nudging) have become so hegemonic in modern life. To answer this, it must be asked where power is concentrated and where decisions are made. Here, Norgaard refers to Brulle and Dunlap: "Social science disciplines such as economics and psychology are better able to fit into the scientific models not only because they use individuals as the unit of analysis, but more importantly because they are compatible with existing political and economic paradigms" (2015, cited in Norgaard 2018, p. 4). Recognising this is a necessary precondition to understand phenomena like socially organised denial and how it manifests differently, depending on climate-cultural location.

In response to the hegemony of market economics as bases for policy making, it thus pays to consider the question of *economic literacy*. This came up in two of the focus group discussions (farmers and teachers). One of the teachers stated for instance that it lies in educators' responsibility to teach economics in ways that are more conducive to the collective common good instead of solely those that are based on self-interest. This points to the problematic that in modern society, current performance- and competition-based economic logics have deeply infiltrated almost

all areas of daily life, forming the basis of people's sense-making of their socio-economic world surroundings. This facilitates denial of one's own responsibility to protect the climate (professionally and privately), when one is repeatedly told that the market will fix things.

Policymakers, economic scientists, and corporate agents should consider alternative economic theories that go beyond, firstly, the self-interested individual, and secondly, the premises of growth, profit maximisation, efficiency, consumption, and the invisible hand. These unquestioned ideas about how to navigate current economic systems are being communicated already to school children, rendering profound structural change unlikely. When so much emphasis is put on the individual, as shown in this study, and market efficiency, it becomes increasingly improbable that people perceive of themselves as part of a collective they want and need to take responsibility for. This maintains the status quo of "growth-fetishism" (Hamilton, 2004), putting even more strain on the climate in the future.

7.6 Outlook

Future research that therefore looks into the effects of orthodox economic theories within education and their effects on students' worldviews and the resulting (in)compatibility with successful future climate action could bring some much-needed answers.

Research that endorses a new, more encompassing concept of knowledge would also be extremely valuable to the social advancement of climate action. Knowledge itself should be thought of as less cerebral or cognitive and instead as more emotional and embodied. Such a knowledge concept would need to fuse cognitive, emotional, and affective elements and should be rooted in everyday practices and routine conduct.

As shown in this study, thinking of climate cultures as manifestations of climate habitus integrates socio-economic with cultural aspects, which represents a promising avenue for future research. Therefore, investigating climate-cultural leanings in other contemporary societies and how they resemble or depart from the findings gained in this study would also afford further valuable insights.