

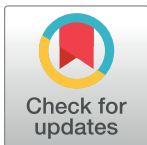
## REVIEW

## Public opinion about climate policies: A review and call for more studies of what people want

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## Abstract

Around the world, most people are aware of the problem of climate change, believe it is anthropogenic, and feel concerned about its potential consequences. What they think should be done about the problem, however, is less clear. Particularly due to widespread support among policy experts for putting a price on greenhouse gas emissions, more studies have investigated public attitudes towards carbon taxes than any other type of policy. Such studies have found substantial public opposition to carbon taxes, largely due to political distrust, though also some evidence that careful design and messaging can mitigate people's skepticism. Surprisingly few studies have investigated attitudes towards other climate policies, and there is an urgent need for more research about what—given their beliefs about the nature and severity of the problem—people would like to see their governments doing. This is especially the case for residents of lower-income and/or non-Western nations.


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## Introduction

Public opinion is shaping governments' actions, and their inaction, on the issue of climate change [1,2]. This has been most clear when initiatives for mitigation efforts have been defeated by public referenda or elections. Examples include the referenda in Washington State in 2016 and 2018, or Australians' election of a new government in 2013 that promised specifically to repeal the country's carbon tax. It is also demonstrated by instances in which a strong public backlash has led to the withdrawal of proposals for new climate policies. For example, criticism by the Yellow Vests movement led the French government to drop a proposal for an increased tax on fossil fuels [3,4]. And the power of public attitudes is further suggested by findings such as the correlation between the climate change beliefs of the residents of different U.S. states and their governments' relative policy efforts [5]. In short, public opinion matters.

This paper therefore reviews what we know about public attitudes towards climate policies; about the kinds of people who are more versus less supportive of public actions to mitigate climate change; and about the public messages and policy institutions and designs that make people more accepting of climate action. Much of the paper concerns attitudes specifically towards measures that would tax greenhouse gas emissions, given that more studies have investigated attitudes towards taxes than any other climate policy. But insofar as insights about attitudes towards other policies are available, the paper covers those as well.

Perhaps with some exceptions in terms of smaller-N and/or qualitative studies, until only a few years ago there was relatively little research on the public's preferences about climate policy, or the values and understandings underlying them [6]. To this day, far more research has examined people's *beliefs* about climate change, including whether humans are causing it and how great a risk it presents. Many studies have examined the minority of people who do not believe in the reality and/or anthropogenic character of climate change. Only a much smaller literature has investigated public attitudes towards policy responses. For that reason, further studies of public attitudes towards the problem are now, in general, less urgently needed than studies of attitudes towards solutions [7]. Skepticism about the reality and dangers of climate change is rarer than many people—including researchers—realize [8,9]. But skepticism about some potentially important solutions is not rare at all, and that is therefore what needs to be better understood.

This paper begins with a discussion of attitudes towards environmental policies generally. Then two sections discuss public beliefs about climate change, and preferences as regards climate policy—which are linked to issues of cost. Next, the paper discusses public views of carbon taxes specifically, and ways of making carbon taxes more appealing. This discussion will cover issues of (a) policy design and (b) communication over which policymakers and advocates have at least some control. A range of studies have yielded some insights into the reasons why so many people are skeptical about climate policies, particularly carbon pricing, and what strategies can make such policies more acceptable.

Drawing mostly on evidence from social surveys and survey experiments, and literature in sociology, political science, psychology, and economics, the paper synthesizes studies of public beliefs and attitudes in a diversity of national contexts. But, one major limitation of this literature (and consequently of this review) is its heavy focus on some countries far more than others. In particular, there are many studies of the United States, and to a lesser extent other high-income democracies, but few of lower-income and/or non-Western countries, including notable large emitters such as China, India, Brazil, and Russia. Americans, and anglophones generally, are atypical; for example, political orientation is unusually relevant for their climate change beliefs [10,11]. We need to better understand other populations, and we need more cross-national research setting different national populations in comparative context [12].

## Environmentalism and support for environmental protection

Around the world, most people believe that environmental problems are real and serious. They recognize the importance of clean air and water, and the value of nature, and they are broadly aware that such values are under threat from pollution and the overuse of resources. And this has been true for as long as social scientists have been studying public environmental attitudes. The early literature was centered around the concept of a New Ecological Paradigm (NEP), which encompassed strong misgivings about the environmental costs of modern technology. But even judging by the NEP's demanding definition of what environmentalism is, early environmental sociologists noted a “remarkable degree of acceptance of the NEP . . . among the general public” [13]. In other words, concerns about environmental impacts were entirely *normal*—not a fringe view—even in the 1970s. This fact is both worrying (all of the environmental harms of recent decades were possible even despite an already high level of public concern) and reassuring (laypeople are not oblivious to the risks and challenges the world faces).

A second theoretical approach to the study of environmental attitudes, particularly since the 1990s, has emphasized the concept of “postmaterialist values” [14]. This is a view of environmentalism embedded in a broader theory of social change, according to which rising

standards of living transform the values people hold [15]. This perspective predicts that environment concern should reflect societal affluence, with concern noticeably lower in poorer countries. In practice, however, whether rising standards of living or perceptions of national economic prosperity correlate with environmental concern depends on the dataset and the specific survey question, but often they do not [16–18]. Instead of being prevalent only among the affluent, environmental concern is quite high worldwide, and so must have multiple foundations—not just rising living standards [19].

But the literature has not always recognized that there can be only a weak link between concerns about environmental problems and support for potential solutions. Many studies have even defined “environmental concern” as: “the degree to which people are aware of problems regarding the environment and support efforts to solve them and/or indicate a willingness to contribute personally to their solution” [20]. In other words, they have taken environmental values, beliefs, and policy preferences to be, more or less, all of a kind, with no conceptual distinction between positive perceptions of environmental problems and normative support for actions to deal with them. Yet, as I will explain further below, the literature shows that believing in environmental problems and believing in possible solutions are not the same thing. For example, participants in the Yellow Vest protests in France overwhelmingly rejected arguments for higher fuel tax, particularly on fairness grounds, but did not deny climate change or the need to address it [3,4]. And harmonized surveys in 32 countries found the most common response to a question measuring environmental concern was 4 (the second-highest value on a scale from 1 to 5), while the most common answer to a question about willingness to pay higher taxes for protecting the environment was 1—the lowest option [21]. These studies show how environmental concern may not translate into support for environmental solutions.

## Climate change beliefs

Like environmental problems more generally, most people accept that climate change is happening, that it is anthropogenic, and that it is dangerous [22,23]. Contrary to widespread impressions, even most Americans accept climate change is real [24,25]. That some may find this surprising is not surprising in light of the finding by [8] that many people (including scholars) overestimate the prevalence of climate skepticism—especially, though not only, if they are themselves climate skeptics. While doubts remain specifically about whether climate change is anthropogenic [26], even in countries where skepticism is relatively prevalent, such as the U.S., fewer than one in five people are strongly skeptical [27].

At the same time, there are certainly still skeptics about climate change in many countries. Many studies emphasize political or ideological gradients with respect to climate change beliefs, with clear divides in many countries between individuals on the left and right [28,29]. Political conservatives in the U.S., and to a lesser extent other countries, are seemingly the most hostile to climate science [30]. While political researchers speak in terms of the ideological spectrum, psychologists tend to discuss this divide in terms of values and worldviews [31]. People with more hierarchical or individualistic, versus egalitarian or “communitarian” worldviews, tend to be less accepting of the established science of climate change [32].

There is a risk of extrapolating from the well-studied case of the United States. The connection between ideology and climate skepticism is stronger in the U.S. than in 24 other nations investigated in a recent paper by [33]. In other countries, there is less correlation between ideology and climate beliefs [10,11], and the association with political ideology varies cross-nationally—especially for people’s willingness to pay an economic price for the sake of better reducing environmental harms [21].

How it is that people can so thoroughly disregard such a well-established body of science? How can people with different political preferences subscribe to different propositions about the nature of physical reality? Climate scepticism is largely due to a coordinated climate change denial movement [34], and harmful misinformation campaigns casting doubt on climate scientists and science [30]. Though this is a larger topic warranting a separate review, the ideological or partisan bias in climate denial is no doubt related to what psychologists call *motivated reasoning*. That is, people disbelieve climate science because they dislike what they understand to be its practical implications for public policy [35]. For many people, accepting the reality of climate change would imply the need for state regulatory actions, and their preference is for limited government instead.

The socio-economic context is also certainly strongly shaping skepticism. Within Canada, for example, belief in climate change is substantially lower in areas home to fossil fuel industries [25,36]. Workers in such industries, according to a unique study by [37] with Norwegian data, are more hostile towards climate policies that impose costs on their industry specifically. This is consistent with the even more general pattern that people tend to become skeptical about environmental facts when those facts are inconvenient, implying upheavals or disruptions to their lifestyles or livelihoods.

Will increasing confrontations with the realities of climate change—its tangible impacts—change people's views? It is possible that over time droughts, heatwaves, floods, wildfires, and other concrete manifestations of climate change will convince more people. Presumably at some point they have to. But in the short term it is not clear they will make a large difference, and for now it remains an open question whether objective climatic conditions and experiences of climate change have had any impact on people's perceptions of it [5,38,39]. According to one study, residents of countries that have been relatively more exposed to climate-related natural disasters are if anything less rather than more concerned about global warming [23]. In general, people tend to see climate change as more of a threat to others than to themselves [40].

In sum, like environmental problems generally, there are clear predictors of variable levels of concern about the issue of climate change. In general, though, public concern is high. Many studies have examined the vocal minority who doubt climate change, perhaps out of exasperation and bewilderment. But that minority has received more attention than its modest size perhaps warrants.

## Climate policy support and people's willingness to pay

Given that most people believe in anthropogenic climate change, what do they want done about it? If asked about their support for climate change initiatives in the absence of any reference to cost, people tend to be supportive [41]. In principle, then, they support taking action. But this is a low bar, and people's willingness to support action is often not matched by their willingness to pay for it. And the very reason environmental problems exist is because—at least given the existing technology, laws, and institutions—individuals benefit more than they pay for engaging in polluting behaviors. Voluntarily refraining from engaging in such behaviors would entail some self-denial.

Internationally, people favor unilateral action—contrary to a collective action (or conditional cooperator) logic [42,43]. If people are willing to take action at some personal cost, the collective action impediments to action on climate change may not be so serious. This is surprising, as climate change is a global problem, and the logic of collective action suggests that countries will pay a price for taking action without coordination. Yet many countries are nonetheless making efforts. And laypeople are surprisingly supportive of proposals for their country

to take unilateral action on climate change—irrespective of whatever other countries do [44,45].

From a psychological perspective, which focuses on individuals' voluntary, altruistic actions, private environmental behaviors are influenced by people's values. Values can be defined or conceived in a variety of ways, but are generally "assumed to be relatively stable dimensions of individuals' personalities and behavior" [31]. In this respect, altruism has figured large. In a sense, as articulated long ago by [46], "because environmental quality is a public good, altruistic motives are a necessary for an individual to contribute to it in a significant way" [47]. Psychological approaches tend to emphasize individuals' pro-environmental behaviors as acts of altruism—and so tends to understand environmental action in terms of individual personality characteristics. But fundamental values are mediated by specific beliefs and worldviews. (That it is easy to ask questions about voluntary actions is probably one reason such questions are popular in survey research. By definition, these are concrete choices that people confront regularly.) Moreover, a willingness to sacrifice for the benefit of future generations appears to have more to do with people's institutional trust—a topic to which I return below—than their concern for future generations per se [48].

When it comes to public support for climate policies, measurement can be quite challenging. Scholars have been put off by the obvious problems of soliciting opinions about policies that laypeople may not have opinions about. One possible response to this problem is to give respondents a brief description of a hypothetical policy—what the policy is, how it would work, and/or what it would entail. But such explanations risk being long-winded and beyond the ability of many respondents to absorb in the moment [5]. This is very much the case, for example, with respect to cap-and-trade/emissions trading systems, with which few laypeople are familiar. Crucially, it may not be at all obvious to consumers that such systems will raise the price they have to pay for many goods and services.

Still, a few prior studies have compared attitudes towards different climate or environmental policies [49,50]. The range of policies considered has often been narrow and/or the survey samples have been limited (only a single country, or even part of one country). In one study [51], found people most supportive of reducing subsidies for fossil fuels and directing them towards sustainable energy sources instead. Another also found strong support for policies aimed at energy efficiency, such as in buildings [49]. On the other hand, as discussed in the next section, carbon taxation tends to be regarded much less favourably.

Cost considerations are the most common reason laypeople cite when asked to explain why they do not support climate policies [50,52]. Experiments also confirm that costs are off-putting [41]. Yet this fact presents a paradox: Given that economists regard taxation as the least costly policy per unit of pollution abatement, and costs drive people's preferences, why are taxes the *least* popular policy choice? As [53] emphasize, the *perceived* rather than actual costs of different policies are likely shaping attitudes, and the fact that "some studies investigating public opinion on climate policies do not explicitly state the personal costs of a policy . . . may result in a bias towards overly favourable responses." That may explain why "pull measures" (such as subsidies and information) are more popular than "push measures" (restrictions and taxes).

Probably the most striking fact about research of this kind, however, is how little we know about public attitudes towards policies that may prove crucial if the world is to decarbonize. Few to no surveys have asked about policies such as: phase-outs of internal combustion engines; just transition support for workers displaced by new environmental policies; investments in new infrastructure, such as charging stations; and financial support for developing countries seeking to decarbonize and/or adapt to climate change. (Even more contentious

proposals may include carbon tariffs on imported goods; new nuclear power stations; and the complete elimination of fossil fuel industries in some areas.)

## Carbon taxation

Compared to many of these policies, we know far more about people's attitudes towards carbon taxes. This is because people can generally understand the concept of a charge attached to a unit of pollution, or at least to the consumption of a unit of a good or service that is polluting. Taxes are also something that everyone must pay, meaning that survey questions about taxes convey to respondents that they are being asked about a collective rather than individual (voluntary and uncoordinated) contribution to mitigation. Survey questions about environmental taxes have consequently been asked for many years, including in general-purpose (rather than climate- or environment-specific) surveys. Since 1990, for example, the World Values Survey has asked respondents whether they "would agree to an increase in taxes if the extra money were used to prevent environmental pollution"; and since 1993, the International Social Survey Programme has periodically asked respondents how willing they would "be to pay much higher taxes in order to protect the environment." These and other major surveys have not asked similar questions about policies other than taxes, such that we know less about public attitudes towards them.

What we do know is that, at the first mention of any new taxes, public opinion tends to turn hostile—a fact which presents a serious challenge for policymakers and advocates seeking to put a price on carbon. So while people want environmental protection, most studies have concluded they do not want environmental taxes as the means to that end [54]. In studies that have presented respondents with a range of policy options for tackling climate change, taxation has invariably been the least popular [49,53,55]. That is true even though, while carbon taxes are relatively unpopular climate policies, they are relatively popular taxes [56].

Why are people's attitudes about taxation different to those about responding to the problem of climate change generically? It seems that attitudes towards carbon taxes are not just about the cost of such taxes, in themselves. Rather, much of the opposition to carbon taxes is driven by political distrust [57]. Whenever people pay their taxes, they run the risk that politicians and public administrations will steal or waste their money, and so their trust in government generally influences their support for tax policies—like any other policies entailing a risk or sacrifice [58]. Political trust influences support for CO<sub>2</sub> and environmental taxes [59–61]. People suspect their governments will use such taxes simply as a devious way of raising public revenue, not really to mitigate greenhouse gas emissions.

That said, we also have some evidence that political trust is not just related to taxes. More trusting people are more supportive of environmental protection and environmental policies generally [61–63]. They are also more willing to pay something for the sake of environmental protection [64], and trust predicts willingness to pay for environmental protection [41]. People are more likely to make efforts to address environmental problems in their private or public lives (such as by recycling or protesting, respectively) if they live in higher-trust societies [65].

People in countries with lower quality of government tend to prefer regulatory instruments, while those in countries with high quality of government prefer market-based environmental policies [66]. This may be because poor and/or corrupt public institutions undermine people's trust, leading them to expect other people not to make an effort; as such, in low-trust contexts people believe only very coercive measures can ensure cooperation. On the other hand, in high quality of government contexts (e.g., northern Europe), people have more confidence in policymaking and public administration (*ibid.*). There may also be other reasons for the difference, however, and this relationship is somewhat of an open question. One study suggests

perceptions of corruption are associated most strongly with weaker non-market policy efforts on climate change [67].

There are also other reasons for opposition to taxation, of course. People's lifestyles and circumstances matter. People who are vehicle-dependent and rural are most opposed to carbon taxes [49]. Workers in more polluting economic sectors are less likely to support international co-operation on climate change mitigation [68]. Lab experiments suggest that the temporal delay in the visibility of externalities is a barrier to support for taxes targeting the externalities; people are less accepting of taxation when the environmental problem is more distant in time [69].

## Appealing to erstwhile opponents

To this point, this paper has mostly reviewed the consequences of circumstances and factors over which policymakers have little control. The discussion has thus far not considered positive actions and strategies they might use to build more public acceptance of climate policies. In this final substantive section, then, I turn to these practical options. Given the lack of research on public responses to policies other than taxes, the research literature does not provide much guidance about how to design non-tax policies in ways that will increase their acceptability. Policymakers and climate action advocates have practical ideas of their own about how to tailor and promote such policies so as to win public and/or industry support. For taxes specifically, though, academic literature does suggest some ways of designing and/or framing them so as to make them more acceptable. This section now turns to what we know in this regard.

First, though it may seem simplistic, one very basic thing advocates of carbon taxes can do to make their proposals as unobjectionable to the public as possible is not to call them taxes [70]. People evaluate taxes more positively if nothing else changes except the tax is not called a "tax" [54,71]. Better alternatives may be "fee" or "contribution" or the like.

Second, there are benefits to be gained from learning/experience. A trial run with a new tax can win people over [72]. That is, getting a tax in place appears useful for building public acceptance—rather than hoping for a high level of acceptance first, before a tax goes into effect. We know this from the experience of Gothenburg and Stockholm congestion charges for example [73,74]. In these cases, architects of the charges offered to repeal them if the measures proved too unpopular, but—after a period of time—they grew popular enough to retain.

Third, particularly as support for carbon taxes depends on their being perceived as fair [70,75–77], it is clear that a progressive distribution of the tax burden is preferable. Burdens should fall on people with more capacity to handle and pay for them.

Fourth, in terms of policy design, what seems most certainly *not* to work is simply introducing a carbon tax without designating the revenues for a specific purpose. This appears to be what prompted the recent *gilets jaunes* protests in France [4]. The purpose can be as simple as offsetting cuts to other taxes. In that sense, earmarking is an important strategy. For example, some experimental evidence suggests that revenue-neutrality makes a large positive difference to attitudes [78]. Design principles advocated by the minority of carbon tax advocates who come from right-of-center perspectives suggest that revenue-neutrality could be a powerful means of getting more conservatives on-side. Individuals who are politically conservative in particular may be heavily swayed by adding an offsetting tax cut to a proposed increase in a carbon tax [79]. On the other hand, a study of Swiss voters concludes that a failed 2015 popular initiative would have had a better chance of passing had the revenues from a possible new tax been earmarked for spending on environmental protection, rather than simply paying for the abolishment of the VAT [75]. Earmarking could perhaps be used to good effect with taxes on

air travel [80]. The most appropriate use of the revenues from new carbon price policies will likely be contextual—with lump-sum universal transfers (“fee-and-dividend”) most effective in many but not all contexts [81].

Sixth, as discussed above, people’s political identities influence their judgements about information and policy recommendations, and currently in some countries this is a major barrier. One study with Australian data found that experimentally making people’s left-right political identities salient led conservatives to be less believing in anthropogenic climate science, and less supportive of policies to mitigate climate change [82]. In the U.S., people support or oppose policies because of the partisan identity of the proposer, holding constant the content of the proposal [22]. What then can be done? Especially for political conservatives, there are “patriotic” options for increasing people’s climate change concern and/or support for mitigation options. National identity can be an effective theme around which to build communications about climate change mitigation. Some (limited) research suggests that there are ways of appealing to nationalism (landscape, made-at-home industry). Based on online experiments with a representative UK sample [29], argue that talking about climate from a justice perspective is politically polarizing, but some alternative narratives are not, like the principle of avoiding waste, and the advantages of “Great British Energy.” Such narratives may appeal to a wide political spectrum, with support for climate policy can enhanced by arguments about the benefits to be derived by people’s own countries, rather than the globe as a whole [83]. On the other hand, it is also the case that nationalism strongly predicts disbelief in climate change and opposition to the taxation of fossil fuels [84].

Seventh, it may be helpful at least to try to correct some misinformation. For example, lay-people and even researchers tend not to realize how many other people are concerned about the issue of climate change, and at least in principle support action to mitigate it [8]. This misunderstanding may prevent action, as voters and consumers fail to recognize the potential for beneficial collective action. It also appears to be possible, though, to some degree, to correct this bias. Similarly, to build more public support for policy action of any kind, there is some evidence that it would help to educate the public about the high level of scientific consensus regarding anthropogenic climate change [85]. Many people are unaware of the consensus, but those who are aware are far more likely to accept climate science and to support policy action to address climate change [86–88]. Studies show that 90% of Americans, for example, do not know there is as high a level of scientific consensus as there is [89].

All this notwithstanding, is also important to recognize that some studies caution against too much faith in the benefits of providing people with more information. Though perceptions of carbon taxes’ effectiveness shape public support for them, it appears that giving people additional information about policies’ effectiveness does not necessarily boost people’s support [90]. And skepticism about policies’ effectiveness may be more of a consequence than a cause of public opposition to environmental taxes [91]. That is, rather than disliking environmental taxes because they believe their ineffective, people come to believe that environmental taxes are ineffective after they already dislike them. Even if people’s skepticism is alleviated, then, that does not substantially raise support.

There are potentially some ways to increase trust, especially if we recognize trust as very contextual. More publicly deliberative policymaking processes may foster trust [81], thereby contributing to better environmental policies, and it may be worth trying to increase public confidence in climate policies and build trust in the effectiveness of government programs funded with the revenues [92].



## Conclusions

There is an urgent need for more research on public attitudes towards policies for mitigating greenhouse gas emissions. We know much less about people's preferences for public actions, and their attitudes towards specific policies, than about their perceptions of the problem. For example, it remains puzzling that people are so hostile to policies for putting a price on emissions, given that most people around the world report being quite concerned about global climate change, and economists say pricing is the lowest-cost means of achieving pollution regulation.

The surprisingly small research literature on people's preferences about what to *do* about climate change, and about other environmental problems, likely reflects that the mass public is itself unsure about the most fair, effective, and cost-effective solutions. Aside from the contentious roles of adaptation and individual voluntary efforts, the policy issues are complex, and laypeople are often unaware even of policies already in place [90]. The externalities driving environmental problems are not necessarily well understood by many members of the public either. Environmentalism in general can come across to many as a sacrifice rather than a means of addressing a costly market failure harming human (and non-human) well-being. Awareness of which behaviours and measures are truly environmentally consequential is low.

The prevalence of legislative actions for climate change mitigation suggests that significant numbers of people are accepting of unilateral action in many countries. This is contrary to a logic of collective action in which it is pointless for any one jurisdiction to make efforts on its own. Judging by their attitudes towards carbon taxes specifically, on the other hand, people appear reluctant to pay a price for mitigating climate change. The values and beliefs underlying these apparently contradictory stances remain unclear. People's specific hostility to taxation suggests they are not as reluctant to pay for climate change mitigation per se as they are to pay taxes specifically. Potentially they perceive their countries as responsible and wealthy enough to have a duty to take unilateral actions, but they perceive only other residents of their countries, and not themselves, as responsible for the problem and/or able to do something about it.

Attitudes towards carbon taxation and perhaps other policies depend on political trust. How to build more such trust is not clear, especially as corruption and abuses of power are very effective in undermining it, and ridding countries of these things is difficult. Low political trust can be a justified response to the poor quality of government under which many people live. When governments and public institutions do act in trustworthy ways, however, people's trust in them tends to rise [93].

More research is urgently needed about how to appeal to people who are otherwise opposed to climate policies. Aside from the question of what types of policies laypeople prefer, there are variable features of given policies that may affect their popularity, plus different kinds of framing and messaging. A number of studies have found that earmarking the revenues of environmental taxes, for example, increases support. More studies could do well to assess what kind of earmarking works best—spending on environmental programs, offsetting cuts to other taxes, or a flat dividend paid back to every adult? More generally, the public appears to hold many misconceptions about how environmental policies work, and thus far only a few studies have tested ways of correcting those misconceptions and/or seeing what difference such corrections make.

Another useful direction for future research would be longitudinal studies of individuals over time. How (and how much) do individual people's views of policies for climate change mitigation change, such as when their life circumstances change? Thus far, only one study has exploited panel data on individuals [94]. Using U.S. data, that study found that the same demographic characteristics that predict attitudinal differences cross-sectionally also apply

longitudinally. So, for example, American conservatives were much more likely to report declining concern about climate change over time. It would be useful to know more about the life experiences or changes in the political context that lead people to change their views.

Finally, despite the difficulty of surveying people about their attitudes towards other kinds of policies—including some that may require explanation—we need to know more about public receptivity to them. Given the hostility to taxation as a policy instrument, it may be that the political costs relative to economic benefits are far inferior to flexible regulations, or “flex-reg,” such as fuel efficiency or auto fuel economy standards [95,96]. Certain kinds of technology mandates and public supports for innovation are also likely to play an important role in deep decarbonization [97], yet we know little about public opinion towards them either. We know even less about public attitudes towards just transition assistance for displaced workers, or carbon tariffs, despite policymakers’ high and rising level of interest in these policies. Social scientists have a lot of work left to do in this area.

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