

The Role of Publics and Deliberation

at the environmental
science-policy interface

Discussion Paper
The Agile Initiative
June 2024

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Suggested citation: Wright-Arora, G., James, M., Troiano, M., Sidwell, N., Boyle, J., Barbrook-Johnson, P., Hirons, M. (2024). The role of publics and deliberation at the environmental science-policy interface. *Agile Initiative*, University of Oxford, UK. Available online.

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Abstract

This discussion paper reviews the role of publics and deliberation at the environmental science-policy interface. We highlight two dominant ways to think of public(s), as either a homogenous whole, or as multiple and emerging around particular issues. The way we conceptualise public(s) will shape how and why public participation might be used. Environmental researchers and decision makers may choose to engage in public participation to steer environmental research towards more “democratic” outcomes, or to co-create new knowledge alongside publics. Deliberative democracy is one way of engaging the public through informed dialogue, reflection, and consideration of the conflicting ideas and values which are embedded in environmental challenges.

We describe the foundations of deliberative democracy and some core complexities and considerations of deliberation, while assessing the role of different sources of knowledge in these processes. Public deliberation is no panacea for complex environmental challenges. It comes with risks including perpetuating a depoliticised image of global challenges as “solvable” through expert knowledge, rational conversation, and technological solutions. We attempt to articulate a path through these challenges towards a public participation which is reflexive and contextualised, and can contribute to building effective and just environmental knowledge and policy. We hope that the material in this discussion paper provides a constructive basis for precipitating reflections and discussions amongst researchers and other people involved in the production and use environmental research about their role in engaging with publics.



Discussion questions

Here, we outline a set of discussion and provocation questions which are intended to help readers engage and reflect with the themes covered in this report.

For funders, policy makers, and practitioners

1. What is the role of publics and deliberation at the science-policy interface?
2. What types of decision could benefit from the involvement of the public and why?
3. If we accept that an informed public is a necessary precursor for effective deliberation, how can environmental science, and wider research, help to inform publics for effective participation?

For researchers

1. Can the public be a valid contributor to environmental knowledge? If so, how?
2. How, and in what ways, could public deliberation be integrated into environmental research?
3. Can environmental knowledge production ever be separated from its sociopolitical and public contexts?

For the Agile Initiative

1. What are the implicit understandings of the public in the Agile sprints?
2. Are there risks of prioritising policy communities in Agile, and if so, what are they? Is there a risk of perpetuating a 'techno-managerial' approach to environmental issues, where environmental issues are framed as needing technological problem-solving without sociopolitical contextualisation?
3. (How) does Agile affect or include the public? Which publics are emerging around Agile?

Contents

Introduction: Why think about public participation?	6
What are publics, and how do they form?	7
Why engage the public?	8
The interplay of science and politics in public participation	9
The rise of deliberative processes in environmental decision-making	11
Deliberative democracy and environmental challenges	12
Core considerations within deliberative processes	14
Types and examples of deliberative methods	15
Box 1: UK public engagement with geoengineering	16
Box 2. UK Climate Assembly	17
Sources of knowledge(s) in public deliberation	18
Interdisciplinarity	20
Situating participatory knowledge	22
Conclusion: Moving towards effective public participation	23
Key takeaways for effective public participation	24
What next? Practical questions for planning participatory research	25
References	26



Introduction: Why think about public participation?

Environmental knowledge, policy, and publics have always been entwined with one another, in a relationship that constitutes a central part of democracy(1). In the face of salient global challenges such as the climate and biodiversity crises, the production of environmental knowledge is becoming an ever more public affair. For example, the production of knowledge about multiple possible future earth system scenarios, or how local communities experience the impacts of climate change, have been characterised as ‘collective experiment[s] [that have] overspilled the strict confines of a laboratory’(2). Laboratories, it has been argued, have been turned ‘inside out’ and morphed into a ‘world wide lab’(3). It has been argued that this requires novel forms of environmental knowledge, that are more situated, reflexive, and interdisciplinary(4). Engaging the public in participatory processes has been suggested as a core tenet of this new kind of environmental knowledge production, because it can “democratise” science, helping to manage implicit uncertainties(5).

This discussion paper, building on scholarship from science and technology studies (STS) and political theory, critically reviews the production and role of publics in what has been termed the ‘environmental science-policy interface’(6). This term refers to the social connections, processes and knowledge exchanges that happen between environmental science and policy(7). In focusing on this, we do not exclude other kinds of environmental research or knowledge production, and this paper also seeks to highlight the significance of interdisciplinary environmental research in public participation. We use the terms science, (the production of) knowledge, and academic research distinctly and not interchangeably, but at points focus on the science-policy interface due to its ubiquity in environmental knowledge and decision-making(8).

Firstly, the review looks to how we define the public, how publics form, reasons why it might be useful to engage the public in environmental knowledge and decision making, and the risks involved. Secondly, we review deliberative democratic processes, examining some core considerations of deliberation, and the relationship with environmental challenges. We interrogate claims that deliberation can be employed as potential means for producing environmental knowledge that reflects and responds to the uncertain nature of contemporary global challenges. Finally, different sources of knowledge in public deliberation are explored, focusing on the role of expertise, interdisciplinarity, and situated knowledges. This paper concludes by reflecting on key takeaways for moving towards effective public participation, highlighting that public participation is neither a panacea nor an unnecessary burden on organisers and participants but one tool that can be used to evaluate and construct forms of environmental research and policy.



What are publics, and how do they form?

The public can be defined as either:

a collection of individuals, a “homogenous whole” or a group that comes into existence in response to a particular issue, multiple and “emergent”

An awareness of these two different ways of defining the public(s) is central to how participation is approached([9](#)). Political theorists and STS scholars have highlighted the different implications of these two definitions. For example, it has been argued that a homogenous idea of the public, the dominant perspective in decision-making processes and literature, can foreclose diversity and difference. It has been suggested that perceiving the public as one singular group removes the inherent differences implicit within publics, and furthermore, is an inaccurate representation of how publics actually form([10,11](#)).

Scholars have argued that the idea of emergent and multiple publics is a more realistic representation of how publics come into being. Multiple publics exist, they argue, because publics emerge in direct or indirect consequence of an event, out of a need to have those consequences tended to([12](#)). For example, in the same city, the public that emerges in relation to biodiversity decline in a local nature reserve could be different to that which emerges in relation to local flooding, traffic control measures (such as Low Traffic Neighbourhoods), or worsening air pollution. The publics who are invested in, or impacted by, different issues depend on a myriad of factors including socioeconomic status, profession, habit, and lifestyle. To assume there is one “public” whose views can be represented through participatory process can neglect this reality of different publics emerging depending on the issues at hand.

Researchers who employ participatory methods can often be unaware that there are different approaches to understanding what public(s) are([13](#)). However, it is important to consider this because how the public is understood impacts all aspects of participatory processes. For example, when the public is seen as one homogenous group, the aim of participatory processes often becomes informed agreement or consensus, after measured and informed conversation (deliberation)([14](#)). This is because this consensus is thought to be a democratic representation of the (singular) public. However, if publics are seen as multiple, as groups that form around particular issues, the aim of public participation can become facilitating disagreement, to learn about the full spectrum of viewpoints on a particular issue, or to co-produce new knowledge with publics who are affected by these issues([15](#)). There is not a right or wrong way to understand publics in environmental participatory research, but it is important to make conscious how publics are implicitly being defined, as the aims of the process change depending on this.



Why engage the public?

There are two common reasons for engaging publics in environmental science([16](#)):

Reason 1: To direct science-policy decisions towards more ethical decisions that better reflect public wishes

Reason 2: To co-produce new knowledge with participants

Reason 1 sees public participation as form of direct democracy. Under this argument, public participation helps to regulate science-policy decisions, functioning as a kind of “check and balance” service for scientists and policy makers, that leads to more democratic decisions. Reason 2 can seem counterintuitive. How can publics, who can be non-experts, produce valid knowledge that can contribute to addressing global environmental challenges? Reason 2 considers scientific knowledge, produced through rigorous empirical methods, as only one of many different kinds of knowledge. The justification for public participation in Reason 2 is that publics have different kinds of expertise, from diverse experiences, and that researchers are not the only people with valid or useful knowledge that could inform environmental decision-making.

Thinking about the connections between democracy and the environmental science-policy interface does not devalue the precision and reliability of the scientific method([17](#)). Rather, it highlights that the importance of involving the public in environmental research can help to democratise the process, ideally leading to research that both reflects the wishes of publics (Reason 1), and can create new environmental knowledge that takes into account many different kinds of expertise, acknowledging that academics are not the only valid producers of knowledge (Reason 2)([18](#)). Thus, an overarching reason to support public participation in the science-policy interface is that it gives the public more representation and a greater say in what happens with scientific knowledge and policy([19](#)).

The involvement of publics can help to situate environmental science and highlight its inherent partiality. While scientists can often feel their work does not have the desired impact in policy communities, social scientists argue that the idea of “objective” science is also something put on a pedestal in environmental policy making([20](#)). However, despite its rigorous practices, science can never be completely removed from the partiality of language, presentation, and politics([21](#)). Decisions about what scientists research and what knowledge they produce are influenced by many factors, including funding([22](#)). Even the manner in which science is presented in academic papers and policy briefs is attested to be a “view from somewhere”(23). Thus, although the idea of “objective” science persists, it can never be completely removed from the wider societal context.



The interplay of science and politics in public participation

Public participation is no panacea for the complex relationships between science, democracy, and the public, and participatory processes come with inherent risks and complexities. Public participation can, in theory, help to mitigate situations where science is operationalised for what has been called ‘anti-political’ ends(24). An example of this kind of anti-political use of science was during the Trump administration, where scholars have argued that Trump’s environmental legislation was presented as having been drawn from objective, evidence-based science(25). This presentation of objective science served Trump’s (actually highly political) environmental aims to delegitimise the idea of environmental regulation(26). In some cases, public participation can ameliorate an antipoliticisation of science. It can democratise scientific research in line with public wishes, or by create knowledge alongside researchers, both of which can highlight the sociopolitical context of environmental knowledge.

On the other hand, public participation can also be used as a tool to create distance between governments and decisions, allowing governments to absolve themselves of responsibility for decisions and create tensions between researchers, publics, and policymakers(27,28). One way this can be done is through the idea of “expert” knowledge, which can be perceived as conclusive or definitive to the non-scientist in participatory processes(29). Publics sometimes feel they have to defer to the scientists, who are better informed than they are. This places responsibility for political decisions more on experts and participants than governments and minimizes the extent to which new knowledge can be created by participants.

Yet are environmental problems caused entirely by scientific reasons? In turn, do they have only scientific or technological solutions?

The implication that environmental challenges are caused by and “solvable” through exclusively scientific and technological expertise is called “technomanagerialism”(30,31,32). Mainstream debates around geoengineering exemplify this term. Geoengineering is ‘the deliberate and large-scale intervention in the Earth’s climatic system with the aim of reducing global warming’(33). It seeks to address a highly complex, unequal, and political issue (climate change) with predominately technological solutions. Technological solutions are an essential component of climate change mitigation and adaptation and can be usefully combined with social mandates to reduce CO2 emissions. However, if sociopolitical contexts and implications of research are overlooked, they can at best perpetuate this image of environmental challenges as apolitical issues, and at worst neglect potential ways forward. In this way, global challenges can become framed as problems to be solved through scientific and technical expertise rather than being simultaneously sociopolitical issues. If this is not adequately considered, public participation can perpetuate this dynamic and end up (often unintentionally) presenting highly uncertain, controversial, and complex issues as problems that can be “fixed” with the right combination of science and governance. Deference to scientific experts in public participation can sometimes perpetuate this kind of technomanagerial narrative surrounding environmental issues.



There is a strand of environmental social science literature that examines the implications of decision making that perceives environmental problems in this apolitical way(34). This literature sees technomanagerialism as a key risk of public participation(35) (see below for a comprehensive list of risks). In particular, it has been argued that public participation can be a means for governments or other decision makers to justify their pre-existing viewpoints or decisions(36). They see the structure of participatory process as easily co-optable by those in positions of power, noting how organizers of participatory processes can simply give publics a pre-decided list of options to discuss. In this way, publics may seem to be “supporting” a decision but only because they were given limited and bounded options in line with pre-existing political wishes (further explored in the case study in Box 1). When given due consideration, public participation can help researchers engage with sociopolitical elements of environmental challenges. However, if not, participation risks becoming a tokenistic way to “check the box” of public engagement, or even a means to reinforce an apolitical narrative surrounding environmental issues(37).

Common risks associated with public participation in research

- Reinforcing an apolitical, technomanagerial approach to environmental issues(38)
- Ticking the box of public participation, without a mandate and without it changing anything about the scientific process – “tokenism”(39,40)
- Placing a burden on participants, particularly those who are already marginalised, e.g. low-income, single parents etc(41)
- Reproducing social inequalities, e.g. those of higher social status speak over others, those better educated able to articulate themselves better and “convince” others
- Reinforcing the idea that measured discussion (deliberation) leads to a homogenous consensus, and that this is a good thing. This can remove spaces for genuine politicised action, narrowing the options for potential change(42)
- Creating distance between governments and decisions, allowing them to absolve themselves of responsibility by claiming they are what “the public” wanted(43)
- Shutting down space for new knowledge creation by reinforcing a binary between “experts” who provide knowledge, and “publics” who receive this knowledge and give their thoughts on it(44)



The rise of deliberative processes in environmental decision-making

The popularity of deliberative processes has risen in recent years. Deliberation is often perceived as a way to facilitate greater democratic participation in response to complex environmental and societal problems. As a form of direct democracy, deliberative processes facilitate and prompt discussion, reflection, and consideration of the conflicting ideas and values which are embedded in environmental challenges(45). This section outlines the foundations of deliberative democracy, its potential for addressing environmental challenges, and ways researchers can use these processes.

What is deliberative democracy?

Deliberative democracy is a theory and practice which emphasises dialogue and discursive participation over other elements of democracy, such as voting, interest aggregation or rights(46). Through deliberation, citizens are able to discuss varying positions on issues, and participate in collective reflection on decision-making, sometimes making concrete policy suggestions. A central idea in deliberative processes is that participants are open to having their preferences transformed during discussions(47). There are various types of deliberative processes, but at their core they allow a wide range of actors to be informed, deliberate, reflect, and produce outcomes on the issue at stake. An onus on greater participation and communication is thought to produce more legitimate, just, and rational outcomes(48). In theory, greater rationality is gained through discussions, which have the capacity to overcome tensions and incorporate negative feedback into decisions(49). Proponents view deliberation, and decisions about its conditions, as a necessity of a democratic public(50). The core tenets of deliberative democracy are inclusivity, political equality of participants, interpersonal reasoning, and unconstrained dialogue(51).

Reliable enquiry, fair argumentation, and reasoned consensus are widely seen as ideal factors for facilitating deliberation(52). Critics have noted that these ideals construct rather narrow terms for communication and generation of outcomes, placing a strong emphasis on being able to communicate your point of view through rational argumentation and reason(53). This condition could exclude some participants from being able to contribute in the manner that best suits them and prevent the kind of mass participation that proponents of deliberative processes are hoping for. For example, citizens who may be less able to articulate themselves with logic and/or confidence, for reasons such as educational privilege, confidence, or neurodiversity, could be underrepresented in this process.

As a response to this, new interpretations of deliberation have emerged, considering it as a broader category with looser conditions, to facilitate a more inclusive process. Some scholars prefer the term discursive democracy, arguing that it encapsulates intersubjectivity and openness without connotations of reason. Thus, accepting a broader definition for deliberation:

the requirement that communication induce reflection upon preferences in non-coercive fashion (54)



This could include more diverse forms of communication, such as storytelling, rhetoric, and emotion for people to express diverse viewpoints(55). Through interrogating and broadening the conceptualisations of communication and deliberation, more inclusive processes can be created which enable broader participation.

Deliberative democracy and environmental challenges

Is there a necessary, in-principle connection between ecocentric values and democracy ... ? Is it possible to incorporate the interests of the non-human community into the ground rules of democracy? (65)

The idea that it is useful to respond to environmental challenges with increased public participation and democratic engagement is growing in popularity. This is thought to have emerged as a pushback against the eco-authoritarianism of the 1960s and 1970s(57). These deliberative processes have been championed by grassroots groups, such as Extinction Rebellion(58), as central for responding to environmental change at local, regional, and national scales. However, there is, at times, an assumption that deliberative democratic processes will yield more ecological outcomes, without unpacking the validity of this claim. There is also a temporal difficulty regarding the use of deliberative processes for environmental challenges – critics question whether, given the urgency of the climate crisis, there is time to transform current systems and facilitate greater participation(59). In the UK, the most well-known examples of the use of deliberative processes for environmental challenges are the Climate Assemblies and Juries in the UK and Ireland, and more regional ones such as Oxford and Leeds(60). There is also a notable growing prominence for the use of these processes to address biodiversity loss, for example, Ireland’s 2022 Citizens Assembly on biodiversity loss(61).

The preferences and viewpoints of a diverse group of citizens can be yielded through deliberative discussion. The creation of mini-publics, which are small random, stratified samples of the public, can produce more place-based, localised, and bottom-up insights, and generate situated and local knowledge around issues(62). It is also thought that a greater emphasis on participation and reflection on multiple people’s perspectives, with different backgrounds and life experiences, encourages the interests of others to be considered, including non-humans, nature, and future generations. This could generate more eco-centric and inter-generationally beneficial outcomes(63). For example, input from traditional, agroecological farmers who have a historic, long-standing relationship with the land may bring a perspective on human-land relations to deliberation which may not have been considered by an urban citizen, and vice versa. Thus, proponents suggest that these deliberative processes can deal with uncertainty, complexity, and the multiple conflicting values that often present themselves in environmental problems(64). The rationale is that deliberation is at the centre of ecological rationality, democratic governance, and policy reasonableness(65). This is thought to increase the feasibility, legitimacy, and efficacy of policy decisions regarding complex environmental issues(66).



In theory, deliberative processes provide the space, time, and resources needed to facilitate communication and reflection across social groups, whereby participants are involved with a willingness of having their preferences transformed(67). However, in practice, this can play out very differently. The idea of preference transformation implies that all citizens will have an ability to be “detached” from environmental problems. This disregards the emotion-laden nature of people’s experiences of climate change and suggests that citizens engaged in deliberative processes could all discuss environmental issues from an objective, rational stance. However, climate change is embedded in individual lives in a myriad of ways, and is tied up with emotional connection, lived experience and, often, risk and loss. As such, it is potentially unreasonable or even inappropriate to expect “detached” and objective deliberation from citizens(68). Constructing ideals such as this privileges a certain type of “acceptable political discourse” and overlooks power differentials and the highly politicised and personal nature of environmental change. This runs the risk of depoliticising discussion around climate change. It could evacuate the space for citizens to discuss the complex, social, political, *and* scientific entanglements that contribute to climate change and potential mitigations.

Addressing environmental problems with greater collective action, such as deliberation, will not necessarily produce the outcomes decision-makers desire. In many cases, it adds greater conflict, complexity, and diverse viewpoints, and thus stagnates the process(69). Furthermore, increasing democratic participation in environmental decision-making holds no guarantees of producing ecological outcomes, and caution should be taken over assuming that greater democracy will yield more positive ecological outcomes(70). Some authors have suggested that ecological outcomes should be a condition of these processes in order to be considered democratic, i.e. embedding our responsibility towards protecting the natural environment into democracy(71). However, while the process design, the validity of the materials provided, and the selection of a demographically representative mini-public is essential, decision-makers should consider the outcomes regardless of whether they are what they expected, desired, or agree with. Not to do so would be fundamentally undemocratic, and arguably moving towards a form of eco-authoritarianism.

To reflect the conflictual and political nature of environmental issues, some scholars argue that deliberative processes should aim for achieving mutual understanding as a final objective over attempts to establish consensus, or mutual agreement, or more ‘rational’ outcomes(72). Mutual understanding may ensure that all viewpoints, including those in the minority, are accounted for, without removing diversity or disagreement. However, it can also prove difficult if policy makers are hoping for clearcut outcomes formulated into recommendations.



Core considerations within deliberative processes

Process and communication:

An onus on calm, clear, and reasoned communication can exclude and disenfranchise less conventionally “articulate” participants. A focus on rationality and reason can also overlook the conflictual, personal, and political nature of environmental issues. This can prevent the kind of participation deliberative processes seek, by excluding alternative knowledges, experiences, and means of expression(73). It is therefore important to consider the characteristics of the process and the ways of communicating deemed acceptable, for example, allowing for emotion and storytelling as valid components of deliberation.

Outcome and decision:

It is important to consider what outcomes will be defined as “success” in any deliberative project. Aiming for consensus has become a mainstream ideal of deliberation, based on the logic that consensus generates coherent and legitimate outcomes useful for decisionmakers. However, this can stifle debate and suppress minority viewpoints. Critics claim that consensus is not possible without exclusion and that there should be adequate space for conflict and diversity(74). The decision regarding when to “end” the deliberative process and make a “final decision” can also be political. This is because the idea of an “ending” is in tension with the ‘unconstrained dialogue’ ideal of deliberative processes(75). Thus, organizers of deliberative processes should determine whether enhancing ‘mutual understanding’ and representing a plurality of would be considered a ‘success’, or whether consensus is the aim, and why.

Impact and landscape:

The extent to which the “wider landscape”, or structure of the process, fosters meaningful deliberation needs to be considered. Sceptics have suggested that combining direct democracy with “traditional” governance systems may just further legitimise the status quo(76). It is also important to consider whether participants will feel that their contributions will have any impact, or whether citizens even want to deliberate on the issue. Considerations about what will happen regarding the outcomes of deliberative processes, i.e. forming recommendations or mandates, is important for the agency, visibility, and impact of participants and processes.



Types and examples of deliberative methods

The following types of deliberative processes depend on a random, stratified sample of the public to form a 'mini-public', in which: each member of the public has an equal chance of being selected, remuneration is given, and experts and facilitators provide evidence and guide the process of deliberation with opportunities for questions and clarifications([77](#)). Two case studies are then highlighted (Boxes 1 and 2) which provide more details on the use of some of these deliberative methods.

Citizens assembly: facilitation of a relatively large group (100-200 participants) with a lengthy process of learning and deliberation and a collective decision with political consequences([78](#)).

Citizen jury: a medium-sized group (12-20) of the lay public are informed about a certain issue by experts with time to discuss, ask questions, or even interrogate experts, before making recommendations for decision-making. This is similar to a citizen assembly on a much smaller scale and is guided by a facilitator before recommendations are given.

Consensus conference: a medium-sized group (10-25) of the lay public are chosen to produce the questions and decide on the experts they wish to hear from on a particular issue. These questions and expert witness statements are then presented to participants([79](#)). These processes developed as a 'check and balance' for the public to assess new technological developments([80](#)).

Deliberative mapping: citizen and expert participants are held as distinct groups to generate criteria, such as economic, social, and ethical factors([81](#)), before being integrated to discuss one another's viewpoints, experiences, and knowledge([82](#)). Participants then rate policy options against those criteria and produce a map of possible pathways.

Deliberative opinion poll: a large, demographically representative group are polled before and after a debate through which a topic is interrogated and key players are considered([83](#)). It differs from other methods in the large size of the sample([84](#)). Due to two rounds of polling, the results reflect public opinion before and after they have been given a chance to think about the issue.

Focus group: a small group (8-10) are led by a trained facilitator to discuss the issue under review. They are not required to come to a conclusion or make recommendations, but the contents of the discussion will be analysed to understand factors that drive responses([85](#)). This is typically used as a qualitative research methodology.



Box 1: UK public engagement with geoengineering

Geoengineering: ‘the deliberate and large-scale intervention in the Earth’s climatic system with the aim of reducing global warming’ (86)

Experiment Earth? was a national-level deliberation exercise run by the Natural Environment Research Council (NERC) to investigate public perceptions of geoengineering. It was designed and carried out by Ipsos MORI between Feb – May 2010. The exercise entailed three deliberative workshops (2 full discussion days over two weeks), an event day at the University of Southampton, two discussion groups, a qualitative online survey, and three open events. Participants in the exercise were presented with 9 geoengineering options and asked to discuss. They were given a small list of potential risks and benefits for each of the nine. The project aim was to:

“[I]dentify the public’s preferences around the future of research into geoengineering, in particular the moral, ethical and societal implications of funding decisions, in order to influence NERC’s strategic decision making, and the decision making of other funders and policy-makers. To contribute to knowledge and insight on public views of climate science and principles and priorities relating to geoengineering” (87)

How the study described the function of deliberation (88)

- Best used when: “issues are complex, views are disputed, there is little public knowledge”
- “Qualitative research method” to understand public perceptions on geoengineering
- Provides a snapshot of views of a “general public group” – views that are important “to the public as a whole”

Recommendations from the study (89):

- For NERC: Take the results of the study “into account” when discussing geoengineering
- Continue doing public engagement
- Continue exploring public attitudes

Role of scientists (90):

- Scientists served as the “experts”. Present at each even, sitting at roundtable discussions with participants, who could ask them questions and discuss issues as desired
- Participants were “enthusiastic to speak with scientists” and “likely to have been influenced by scientists’ views”
- Citizens tended to defer to scientists and ask them questions about what was true or not, for example:

Citizen: *Are geoengineering techniques proven methods, or just concepts?*

Scientist: *Nearly all haven’t been trialled and are at the drawing board stage.*

Box 2. UK Climate Assembly

The 2019 UK Climate Assembly came about in response to the 2019 law mandating the UK to reach net zero greenhouse gas emissions by 2050. Six select committees from the House of Commons decided to commission the assembly, as a deliberative democratic exercise where 108 people (representative of the UK public) were brought together over four weekends to discuss the question⁽⁹¹⁾:

“How should the UK meet its target of net zero greenhouse gas emissions by 2050?”

The assembly was supposed to highlight members ‘detailed and considered views on the path to net zero’⁽⁹²⁾. The study described the role of deliberation as:

“The assemblies enable decision-makers to understand people’s informed and considered preferences on issues that are complex, controversial, moral or constitutional.”

Thus, the focus of the deliberative exercise was to better understand participants preferences, views, and opinions, on the path to net zero, rather than focusing on creating any new knowledge *with* the participants. In terms of actionable insights from the resulting report, the authors wrote the following⁽⁹³⁾:

“We strongly encourage decisionmakers in government, industry and other organisations to read it in detail – and to take these views into account.”

There was no mandate for anything to be done with the findings of the assembly, only suggestions for the information garnered to be taken “into account”. The parliamentary committees who commissioned the report also said they would use the findings for “scrutinising” the role of the government in combatting climate again. Despite the vagueness of this statement, several committees actually did launch enquiries based on the recommendations of the assembly.

Regarding the role of scientific knowledge and expertise in the assembly:

- 3 University professors were “expert leads” of the assembly, hired to ensure that information given to participants was ‘balanced, accurate and comprehensive in terms of its content on climate change’⁽⁹⁴⁾
- 47 speakers spoke to the participants over the course of the assembly. Some of these were asked to be “informants”, highlighting a range of views on a topic. Others were “advocates”, sharing their own view. The public was informed about whether a speaker was an advocate or informant. Most speakers were scientists, and some were social scientists or political scientists⁽⁹⁵⁾
- The participants were given a “critical thinking” session on how to consider the knowledge provided to them by speakers⁽⁹⁶⁾

Sources of knowledge(s) in public deliberation

This section addresses the role of expert, interdisciplinary, and situated knowledges in public deliberation, with examples drawn from Boxes 1 and 2 above. The first section lays out the tensions present in a process dependent on the use of experts while seeking to generate more local and situated knowledges. The second section outlines the contribution that interdisciplinary knowledge can make to participatory processes, helping to frame environmental issues in their sociopolitical context. Finally, the third section suggests how a perspective on participation as a *performative* process can help find a balance between normative perspectives viewing participation as panacea, and critical ones which see it as tokenistic and merely legitimising current sociopolitical structures.

The role of expertise

Convening public deliberation around a particular issue requires problem identification, agenda setting, and an adequate period of informing participants on the issue at hand. This often requires experts knowledgeable on the subject to have an integral role in the process. While public deliberation seeks to emphasise the value of, and generate, more situated environmental knowledges, the act of selecting certain expertise can produce tensions between sources of public and expert knowledges. It is important that due consideration is given to the scope and complexity of the topic, the position that the expert holds in that space, and the ability for participants to deliberate independently.

Experiment Earth? was the first participatory exercise to explore public perceptions of geoengineering across the UK (Box 1), consisting of deliberative workshops where publics were given information about 9 different geoengineering technologies. It has been critiqued for its ‘narrow framing’ of geoengineering, its use of experts, and for consequently depoliticising questions surrounding climate change adaptation and mitigation([97,98,99](#)). It was claimed to be too narrow because limited information was given to participants before the process started, and what information they were given was exclusively “hard science”, explaining how different geoengineering technologies worked([100](#)). In trying to extract “the public” view of geoengineering, *Experiment Earth?* missed an opportunity to provide additional information and clarifications, such as the political and ethical issues, the extensive risks and uncertainties, and how scientists presented as “experts” might sway their opinions or conceal their own biases([101](#)). Furthermore, the experts were present during the whole process which led to the publics ‘deferring’ to an expert instead of deliberating on an issue. The final report concluded that scientists ‘revealed (consciously or unconsciously) their own opinions about the technologies under discussion’([102](#)). Therefore, citizens were less able to deliberate widely, and critique the scientists’ approaches.



The second attempt at a geoengineering public participation exercise in the UK, the “SPICE project”, managed to facilitate a more generative and open process between researchers and the public. The role of experts was distinct in this second iteration from *Experiment Earth?*, in which scientists gave technical scientific information and were present in all deliberations as a “resource”. In the SPICE workshops in comparison, scientists were trained before speaking to publics to not “give away” too much information about their personal opinions, and after presenting to participants, they left the discussions. This created more space for publics to deliberate and reflect without deferring to experts in moments of uncertainty. Minimizing the influence of the scientists allowed participants in the SPICE deliberative workshops to have more thoughtful, personal, and political conversations about geoengineering, resulting in feedback that was informative to scientists about directions in which they might steer geoengineering research. In contrast, the conversations in *Experiment Earth?* ended up circulating around clarifications of technical issues, which ultimately did not provide any new knowledge to scientists.

These case studies highlight how participatory processes are embedded with a power disparity between the “expert” academic and the public, and how this can be acknowledged and perhaps mitigated to an extent:

Training experts about how to present information to participants can help facilitate more open and generative discussion spaces

Minimizing the presence of experts when deliberation is taking place can help to mitigate the power disparity between scientists and publics

The UK Climate Assembly (Box 2) facilitated deliberation on reaching Net Zero carbon emissions by 2050 and received mixed reviews on the way it was convened. It faced criticisms for having too large a scope, for reducing public deliberation on certain topics to yes/no voting and lacking a mandate regarding the outcomes([103](#),[104](#)). The broad scope, which attempted to match up to the scale of issues related to climate change, inhibited the public’s ability to become informed enough to actively deliberate on every issue. This further impacted the co-ordination of results, the endorsement of results, and the wider impact in the policy making sphere([105](#)). However, in some ways, the assembly was governed well. The organisers provided a critical thinking workshop for participants on how to assess information given by experts which helped to mediate the power that experts had in the process. This was complemented by the experts being presented to participants as either ‘advocates’ or ‘informants’ about a climate-related issue. These factors granted participants agency to disagree and critique, rather than simply defer to the experts. An interdisciplinary range of experts including political and social scientists presented to the participants, which helped to open conversations rather than keep them in an exclusively technical sphere. Four lessons can be taken from this case study:



Training participants on how to critically assess expert information can empower publics to think more for themselves, making them less inclined to defer to expert knowledge

Clearly informing experts and publics in advance about whether experts are informing or advocating a particular “solution” can help with the critical assessment process and reduce participant biases

Encouraging a range of interdisciplinary expertise can prevent deliberative processes from staying in a technical sphere, and open up more complex discussions that consider the interrelationships between science, policy and politics

Involve publics at an earlier stage of the project, such that they are involved in the “agenda setting” of the process, providing insight into the scope, complexities, and framing of the challenges at hand

Interdisciplinarity

An emphasis on science and technology can risk perpetuating the framing of environmental problems as policy problems needing technomanagerial solutions with less onus on sociopolitical context. There has tended to be a focus on natural scientists serving as the “experts” in participatory processes, who argued to provide more “neutral” perspectives. However, similarly to the critique of deliberative “rationality” foreclosing debates over the emotive and sociopolitical nature of environmental challenges, an overemphasis on natural science at the expense of interdisciplinarity can reduce environmental problems to policy problems that need “correct” management through technoscientific solutions. Without appropriate caution, participation can become a tool for governments to evacuate genuine political discussion from an environmental issue. This form of tokenistic participation can “check” the box of public engagement by organising participatory processes, but actually frame the problem at hand in a very particular and narrow way([106,107](#)).



Bringing a wide range of interdisciplinary perspectives is argued to be one way for participatory processes to address sociopolitical issues inherent to environmental challenges([108](#)). Political scientists, policy makers, social scientists and natural scientists, for instance, all bring distinct areas of focus to environmental decision-making, with different perceptions of the core contributors and issues in the environmental challenges. The inclusion of interdisciplinary expertise can contextualise the political nature of environmental decision-making, and the value judgements and trade-offs which are implicit in this process.

The *Experiment Earth?* case study (Box 1) evidences this critique. In this kind of participatory exercise ‘citizens become consumers’, making decisions from a pre-given set of “solutions”, and their participation ‘legitimis[es]’ technological solutions to complex environmental problems([109](#)). This is exemplified in the way that participants were only allowed to discuss 9 potential geoengineering technologies. Scholars who critique this kind of participatory exercise highlight that it rarely, if ever, manages to ‘disrupt the status quo’, actually ‘naturalising’ a very particular sociopolitical situation as ‘inevitable’([110](#)).

In contrast, the UK Climate Assembly (Box 2) convened an academic panel of 12 experts. Whilst only three of these were social scientists, and only one specialised in politics, publics involved in the assembly were directly informed about the idea of trade-offs in environmental decision-making. The assembly attempted to obtain public views on key conflicts inherent in the UK reaching Net Zero, such as those embedded in energy usage and food consumption, using yes/no voting sometimes in place of longer deliberation to discuss a greater number of the ‘key options and trade-offs facing decision makers’([111](#)). However, this style of yes/no voting and focus on pre-existing policy can still undermine the value of deliberation and contribute to a:

reduction of the climate crisis to ‘policy problems to be managed by experts... in which the scope of possible outcomes is narrowly defined in advance ([112](#))

These critiques do not render public participation a pointless exercise. They simply mean that it is imperative to take seriously the way that environmental issues are framed, the information provided to publics, and the inherent power disparity in participatory processes between experts and publics. Interdisciplinary involvement throughout the design and implementation of participatory process can help to contextualise environmental challenges in their sociopolitical environment, and provide participants with a broader understanding of inherent trade-offs and conflicts.



Situating participatory knowledge

A performative approach has been argued to be a means of mitigating some of the unavoidable limitations to participatory research, and to carve out a more measured approach. It aims to encourage neither a utopian image of participatory processes as ones which can be perfected to remove implicit assumptions and framings, nor a negative image of participation as a useless task that only legitimises policy making and technical solutions. Science and technology studies literature has suggested that knowledge created in deliberative processes can be looked at as akin to a “*performance*” ([113](#), [114](#), [115](#)). Social studies of science have highlighted that:

Participation unavoidably involves (1) restrictions about who should be involved and about the space for negotiation, (2) assumptions about what the issue at stake is, and (3) expectations about what the outcome of participation should be and how the participants are expected to behave ([116](#))

In understanding that participation inherently comes with these conditions, not representing the will of the public in a neutral way but constructing emergent publics in the assumptions that it makes, participation can be seen as a performative process of co-creation. In the case of *Experiment Earth?*, for example, this means considering the findings about the “technical solution” preferences of the public in the context that scientists were omnipresent in the deliberative workshops, revealing their biases to participants, and that participants therefore often deferred to scientists rather than engaging with critical thinking. This is what is meant by participation as a performative process.

Through the lens of performativity, knowledge created in participatory processes can be perceived as useful, but with the caveat and acknowledgement that it has been created in a particular context ([117](#)). Whilst this might seem self-evident, it is imperative to make this contextualisation conscious throughout the design and write-up of participatory research. This is so that when findings of participatory research are considered, decision makers and researchers situate the knowledge in the specific context under which they emerged.



Conclusion: Moving towards effective public participation

The discussion in this paper has highlighted that public deliberative processes are neither a panacea for environmental challenges, nor a detrimental burden on publics and researchers. The knowledge produced through participatory processes is an invaluable contribution to the toolkit of researchers and other stakeholders. With an appreciation that participatory processes are performative and contextual, the final product of public participation can support self-reflection for organisers, as well as new research directions for academics, governments, and policy makers.

We considered the two dominant approaches to defining publics, either as a homogenous whole or as emerging around particular issues. We highlighted that publics can be engaged to check the validity of research, direct it towards more ethical avenues, or to co-create new knowledge with researchers. This is particularly salient in scientific research, where the presentation of science as “objective” can sometimes obscure the significant sociopolitical context of findings or ensuing policy decisions. We acknowledged the risks associated with participation, including if consensus can justify government decisions and create a technomanagerialist politics where environmental challenges are framed as problems to be “solved” with the correct technical and scientific solutions. We then homed in on deliberation as a process to yield diverse viewpoints, including more localised, bottom-up, ecocentric, and inter-generational insights. We reviewed the potential of deliberative processes to account for the multiple conflicting values present in environmental challenges, while acknowledging that these processes can add greater conflict and complexity to processes. In particular, the ideals of communication, decision-making, and the wider role of these processes must be considered.

We have highlighted the importance of training participants on how to critically engage with information they receive in participatory processes, particularly not to simply defer to researchers as those who have the greatest amount of knowledge or expertise on a topic. Relatedly, we stressed the importance of introducing “experts” as either advocates for a particular approach or informants with unbiased information. Participants, too, should be informed about whether experts are “advocating” or “informing” about a topic. Interdisciplinary expertise can also assist with broader and more diverse participatory processes and help to move research with publics away from a technomanagerial approach to environmental issues and solutions. As well as natural scientists, researchers from other disciplines including social science and political theory can contribute to the design and implementation of effective public participation. As the power disparity between researchers and publics is somewhat unavoidable, during the process itself, we highlighted that their presence can be minimised. This encourages publics to think critically and not defer to experts who are present.

This discussion document has several key takeaways for researchers, policymakers and other stakeholders considering or using public participation, which are summarised in the list below. While public participatory processes are inherently embedded with assumptions, restrictions, and expectations, with an awareness of their existence, public participation can be a useful and impactful tool to enhance environmental research and policy.



Key takeaways for effective public participation

1. Publics can be perceived as a homogenous whole or as emerging around a particular issue
2. Depending on how it is employed, public participation can either contribute to, or challenge, a technomanagerial approach to environmental decision-making where challenges are perceived as (apolitical) problems to be “solved” with the correct scientific and technological management
3. There are various processes, characteristics, and ideals of deliberation, including that different forms of communication can help or hinder discussion, reflection and inclusion
4. The markers of “success” for deliberation are important, including whether consensus or mutual understanding will be sought after. Also, choosing when to end the process can be political and risk excluding minority viewpoints
5. Assumptions, restrictions, and expectations are integral to any participatory process and should be acknowledged throughout
6. The inclusion of experts can create a power disparity between different sources of knowledge. This can be mitigated by establishing their role as “advocates” for something or to give more “unbiased” information as “informants” and minimising presence during deliberation
7. Running critical thinking sessions can help publics contextualise the information they receive from experts
8. Interdisciplinarity and the inclusion, amongst others, of social scientists and political theorists can provide sociopolitical contextualisation and provide participants with the tools to assess trade-offs and value judgements



What next? Practical questions for planning participatory research

Why are we engaging the public (“democratising” outcomes, creating more valid environmental knowledge, or to create new knowledge with publics)?

What type of public deliberation might be useful for your research (mini-publics, deliberative mapping, citizen jury, etc.)?

How might the public be engaged such that they have a say in the agenda setting and aims of the research, not just the results?

How many participants might you need, and what factors are you choosing to make this group a representative sample?

What aims do you want out of the process (diversity of viewpoints, co-creation of new knowledge, etc.)?

What style of communication might you want to encourage (storytelling, creative, factual, advocacy, etc.)?

How will experts be involved; what kind of knowledge will you share with publics and how will you manage this (how will they present, will publics be trained on how to critically assess the knowledge shared with them, will experts be interdisciplinary, etc.)?

How will you incorporate the findings of this into your work afterwards?



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Natural
Environment
Research Council

The Agile Initiative is supported by the Natural Environment Research Council as part of the Changing the Environment Programme – NERC grant reference number NE/W004976/1



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