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Article

When Digital Mass Participation Meets Citizen Deliberation: Combining Mini- and Maxi-Publics in Climate Policy-Making

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Abstract: The upcoming vogue of climate assemblies and other forms of mini-publics are to give citizens a central role in climate policy-making and to break the political impasse. Yet climate mini-publics face challenges in political environments too, such as co-option, favoring expert opinions, and losing touch with the broader public. To remedy such pitfalls, recent papers have argued to combine synchronous deliberations of small groups of citizens with online participation procedures for the larger public. In this article, we report the results of a three-step combination model, where first a mini-public in the region of Súdwest-Fryslân (NL) was given a "carte blanche" to draft the content and the parameters of several related policy alternatives. Second, their proposals were fed into a digital participation tool to consult the wider public. Third, a citizens forum translated the outcomes of the maxi-public into policy recommendations, which were unanimously approved by the municipal council. In this paper, we report our findings of combining mini- and maxi-publics and how the actors involved evaluated the strengths and weaknesses of the combination of these two participatory approaches.

Keywords: public participation; digital deliberation; mini-publics; maxi-publics; climate assembly; participatory value evaluation

1. Introduction

Over the last three decades, authorities involved in climate policy-making have upheld the intention to involve citizens more closely, and significant advances have been made on the supply side of public engagement. Public hearings are required in many regulatory regimes all over the world, formal public participation methods are mandatory in many national regulations, and they are central to the European Green Deal [1,2]. Political leaders value public input because it informs their decisions, connects them to everyday people, and "tests" the strength of arguments [3].

However, the majority of climate policy-making continues to be sketched out in expert circles, and public input is requested at a later stage [4], which often refers to the legal affectedness of people, rather than their factual affectedness [5]. Interests of future generations and local communities are repeatedly not incorporated in a significant way in policy plans [6]. Lay knowledge is pretty much neglected [7], local citizens are frequently labeled as "self-interested", "uninformed", "short-term-focused", and "not able to grasp the full complexity of climate policy-making" [8], despite the fact that climate and environmental change are destabilizing social networks, interrupting social relationships, and reducing social cohesion [9].

Hence, given such findings, there have been numerous calls for new practices of public participation to resolve urgent climate change issues. Deliberative mini-publics such as climate assemblies have been designated as one promising approach. A random, small, more or less representative group of citizens is given a central role in formulating policy

recommendations through deliberating after hearing experts, quizzing of information, and exchanging their own experiences [10]. Climate assemblies have the potential to reduce polarization, build citizen capacity, produce higher quality decisions, enable thinking about future generations, and in some cases break political impasse [11,12].

Researchers therefore not only recommend citizens assemblies because they effectively align public policy with the informed opinions of citizens [13] but also since practicing environmental rights and duties can promote inter- and intra-generational justice [2]. As we will elaborate on later in this paper, besides many advantages to advancing climate action and democratic innovation, mini-publics have a number of shortcomings. One of them is how they engage with the wider public, i.e., with those impacted by its recommendations. As the authors of [14] argue, the public cannot be reasonably expected to accept the legitimacy of a climate assembly's recommendations without being involved in any way. The authors further note that there is a lack of research to alleviate this problem. At the same time, there have also been novelties in consulting larger groups of citizens, so-called maxi-publics, through online participation or e-governance [15–17]. The idea is to make the participation of citizens in policy-making more accessible, agile, visual, and less time-consuming. Here too, while maxi-publics have a number of participatory advantages, they do have disadvantages, such as remaining a superficial element in public opinion formation or being vulnerable to populistic means. A possible solution, therefore, is to blend both approaches. Combined trajectories in climate policy-making have, however, happened sparsely in the past.

The primary goal of this paper is to conceptually show the benefits of combining maxi- and mini-public approaches and how that can reduce the pitfalls of each approach. A secondary objective of this paper is to empirically display the experiences of policy-makers and participants when combining mini- and maxi-publics. To achieve this, we compare the merits of mini- and maxi-publics in the empirical literature on climate policy-making. Subsequently, we report the results of a participatory (maxi-public) and deliberative (mini-public) combination model that lasted from March until September 2020 and was held in the region of Súdwest-Fryslân, in the Netherlands. The case study displays how a mini-public of 45 citizens drafted the content and the parameters of several climate change and energy-related scenario alternatives, how their proposals were fed into a digital participation tool for the wider public called participatory value evaluation (PVE), and how the results of this maxi-public were used by a second mini-public to draft policy recommendations. Drawing from insights of qualitative data of the maxi-public, the mini-public, and the subsequent hearing of the policy recommendations in the council, we report how policy-makers of the municipality, organizers of the process, and members of the mini-public involved assessed the strengths and weaknesses of this combination approach.

The remainder of this paper is organized as follows: Section 2 is an original, in-depth overview of the strengths and weaknesses of mini- and maxi-publics in climate policy-making, which leads to the argument that there is an inherent need for a participatory design update. Section 3 sketches what combining online mass participation (maxi-publics) with mini-publics in complex climate and energy issues could look like. Section 4 presents the case study and discusses our methodology. Section 5 presents our results and Section 6 provides a conclusion and discussion.

2. Mini-Publics and Maxi-Publics: Strengths and Weaknesses

The following part of the paper will provide an overview of theoretical and empirical literature regarding climate assemblies as an illustrative form of mini-publics in climate policy-making in Section 2.1. In doing so, we mark stark differences in ideals and their application in practice in Table 1. In addition, the current use of maxi-publics in climate policy-making is described in Section 2.2. The chapter closes with a comparative summary of the major strengths and weaknesses of both mini-public and maxi-public approaches, which is depicted in Table 2.

2.1. Mini-Publics: "Catching the Wave" of Climate Assemblies

Since the last decade, the profile of deliberative mini-publics has grown in relevance for urgent climate change issues [18] and is likely to continue [19]. Well-known examples are the Irish, French, UK, Scottish, Danish, and Finnish national climate assemblies, the international World Wide Views by the UNFCCC and the Danish Board of Technology, and also numerous local versions [20,21]. While some of these climate mini-publics are having an impact, others have failed to do so [20,22]. As the authors of [23] summarize, the greatest challenge is their integration into the political system. Table 1 provides a critical examination of how key elements in climate mini-publics can manifest less than ideal in practice and discusses solutions to alleviate these issues.

Table 1. Divergence between ideals of climate assemblies and their execution in practice.

Ideal 1: Politically independent	Practice 1: Organizational flaws
Ref. [24] suggests organizing climate mini-publics by actors other than governments, industries, or activists, which have no interest in the issue itself. The Irish Climate assembly case is an example with a truly "apolitical" and "independent" status, with the Supreme Court at the center stage. The Danish Board of Technology recruited partner organizations that were "unbiased with regards to climate change" [25], and the New South Wales energy-related mini-public was triggered by a bipartisan parliamentary committee [26].	Refs. [27–29] acknowledge that mini-publics are frequently too "tightly coupled" with governmental bodies; and that their "scrutinizing role" is limited. Critics also point to the example of how the steering body of the French Climate Assembly converted into a "politicized" forum and was likely to be associated with the ideals of those who initiated them [28,30]. Furthermore, climate mini-publics may encounter opposition once they aim to take a powerful place in political decision-making e.g., in Belgium [31].
Ideal 2: Demographic representation	**Practice 2: Unequal representation**
Random selection of citizens in a climate assembly is what delivers the "mini-public" and enforces the principle of equality [10]. It is not only important to be demographically representative but also that the broadest possible range of views from society is present [32]. Barriers to participation can be removed through reimbursement or child care and more intensive guidance and support for participants. Social workers and community organizations can play a role in recruiting low-literacy and other harder-to-reach groups. Additionally, criteria such as "views on climate change" or questions on online behavior can be used to prevent the over-representation of certain groups [33].	As [34] shows, despite operating from a principle of inclusion and representation, climate assemblies can produce underrepresentation among the group with migration background, as well as among those with lower education, and in the age group 18–34, mostly who do not follow-up an invitation to participate [35]. Minors are often not allowed to participate too. Recent experience shows that the response rate by drawing by lot is between 2% and 5% [21]. Considerations have to be made regarding access and supervision (e.g., for minors or disabled) in order to reduce participation hurdles [10] or whether efforts should be made to reach out and oversample traditionally excluded communities to uphold the principle of equity. Further possibilities are reserving seats in the assembly for elected representatives or affected citizens who were not chosen by the lot.
Ideal 3: Deliberative quality	**Practice 3: One-sided problem framing**
Ideally, during the deliberative sessions members gain more knowledge about the issue partly by engaging with each other and thereby understanding different perspectives with the help of a neutral facilitator, and partly by hearing from experts and witnesses. As the authors of [10] recommend, there should be initially agreed upon guidelines on how the most suitable experts for the topic are being selected, how they present their information, and how the independence of the experts, or in the case of contested topics, how the provision of balanced information is guaranteed.	Critics caution that climate assemblies can unintentionally close down public debates. They may actually strengthen pre-existing (unconscious) biases, i.e., prejudice based on gender, ethnicity, race, or class [36]. They may frame the problems in line with the culture of the organizing body [37], or favor repeated expert statements [38], which limits the terms of citizens' engagement and public scrutiny. Ref. [30] observed tendencies in the French Climate Assembly to rely on a group of "internal experts", working for agencies, state-related institutes, and businesses. Some of these "experts" were repeatedly telling citizens what to propose. This procedural flaw was further augmented by the fact that various speakers had unequal speaking times, ranging from 50 min for a representative of the Ministry of Ecology to 5 minutes for an NGO [30].

Table 1. *Cont.*

Ideal 4: Enabling a connection with the rest of the society	Practice 4: Lack of connection to the rest of the society
Since climate assemblies are micropolitical processes that are a part of a broader political system, the authors of [10] recommend that mini-publics procedures and outputs must be at least open to public scrutiny (e.g., through live broadcasting, public sessions, etc.) and time should be set aside to connect or validate their preliminary findings with those outside the mini-public itself, i.e., to involve the maxi-public after the mini-public has come to their initial, preliminary findings. Climate assemblies may also be seen as a new channel to communicate sustainable policies to the broader population to garner public support [39].	In practice, climate mini-publics can become ingroups with their own biases. Members can come to believe that the public "will not understand the proposals because they have not spent nine months working on them" [30]. There is empirical evidence that participants from the wider public process objective information provided from a mini-public quite differently than the members of this mini-public. In some cases, it dampens their factual knowledge, but it has also been shown to positively increase people's empathy towards the other side [40]. Moreover, using climate assemblies instrumentally to garner support may lead to cherry-picking of results [29].
Ideal 5: Political uptake of the mini-publics recommendations	**Practice 5: No or low uptake of the mini-publics recommendations**
According to the authors of [41], governments that engage their citizens through deliberative processes seem to be widely supported by their residents. Moreover, many citizens engage in deliberation exactly because they are designed for those frustrated with status quo politics [42]. To minimize risks of tokenistic procedures, there is a need to transparently define at the design stage how the mini-publics proposals will be dealt with in the political system, i.e., if they are of consultative character, have a more binding status, or are submitted to a popular vote [10,13].	Refs. [29,31] provide evidence about the inherent lack of incentives for elected representatives to consider the recommendations put forward by mini-publics. In other cases, climate assemblies are disbanded before their output is utilized [43]. In the UK, the climate assembly is reported to have clashed with the parliamentary system [44]. In France, President Macron initially promised that all proposals would be forwarded to parliament "without filter". However, Macron backtracked from his promises months later. In the end, only 10% of the recommendations of the French Citizens' Assembly were adopted by the government unchanged, while 37% were modified, and 53% were rejected, stirring frustration among participants [45]. Yet, besides lobbying efforts, the low adoption rate is also attributed to missing legal and financial checks, making the proposals unfit for implementation [46].

2.2. Maxi-Publics: Making Digital Participation Work for the Many

Research has shown that a small variety of ideas is given by a majority of citizens, yet a high variety of ideas is given by a minority of citizens. These "small voices" are an important driver for digital maxi-public methods [15]. In contrast to popular social media platforms, digital "maxi-public" approaches aim to fulfill a number of civic objectives, such as facilitating two-way communication between government and citizens, increasing citizens' participation in political decision-making, enhancing the legitimacy of democratic processes, and improving the quality of policies [16]. Maxi-publics can occur in different forms and for different purposes, such as digital participatory budgeting, online discussion forums, crowdsourcing of ideas and opinions, consultations before referendums, and the like.

A digital participation method to consult maxi-publics about value trade-offs in policy-making is the participatory value evaluation (PVE) method. This method has been frequently applied to consult large numbers of citizens in climate policy-making in the Netherlands. In a PVE, citizens see what policy decisions the government must make, the specific advantages and disadvantages (or impacts) of the options the local or federal government can choose between, and the constraints that exist [47]. Imagine a government that has to decide on issue X. Policy-makers have developed several viable options A, B, C, D, and E to address this decision. The government cannot pursue all options. To compare the advantages and disadvantages of each option, the main impacts of each option are quantified as 1, 2, 3, and 4. The online tool provides the opportunity to compare and prioritize each option, as well as adding own policy ideas beyond the existing options. Participants are then asked to distribute 100 points across A, B, C, D, and E to advise the government about their preferences. PVE can be categorized between high intensity

(mini-publics; citizen assemblies, participatory budgeting, etc.) and low-intensity forms of public participation (information events, signing petitions, polls, etc.) in policy-making. Applying PVE in the Netherlands has shown that it could enable the participation of people that normally do not participate (particularly young people), reduce the time investment of civil servants, and increase the usefulness of outcomes for decision-making [48].

2.3. Maxi-Publics: Downsides Common to Maxi-Publics in Practice

There are also a number of downsides common to maxi-publics, such as new barriers to entry for the public, reluctance to participate, low activity, high drop-out rates, and an over-representation of younger, technology-savvy, and politically active citizens, as well as being at risk to populist manipulation [12,14,16,49]. Moreover, maxi-publics do not enable people to deliberate over policy alternatives [15]. Most of them study presented information individually, without the opportunity to ask questions to experts, discuss implications with other groups of people, and so forth. Social and dynamic processes that emerge during deliberation are largely absent. Hence, without the opportunity to engage in reasoned logic- and evidence-based argumentation, maxi-publics risk aggregating, or even manifesting, past and present biases in society. Table 2 summarizes the most fundamental differences between mini- and maxi-publics, independent of case-specific contexts.

Table 2. Summary of differences between mini- and maxi-publics.

	Mini-Publics (e.g., Climate Assembly)	Maxi-Publics (e.g., Online Participation)
Function	Establishing a high-quality discourse between a small group of selected representative citizens to formulate policy recommendations.	Providing access to larger groups of citizens to express ideas on policy recommendations and to aggregate preferences of the wider public.
Intensity (duration; budget)	Participant selection is time-intensive. Several days/weekends over the course of multiple months; costs vary between local (EUR 50,000–100,000) and national assemblies (EUR 2–5 million Euro) and demand an intense commitment.	Duration of process: 4–6 weeks; duration for participants: 20–40 min. Costs vary from around 25,000 to 50,000—asks medium intense commitment from both participants and organizers.
Participatory inclusion	Exclusive (20–250), randomly selected group of citizens. Every participant has the same chance to be selected. Motivated and interested citizens cannot participate. The deliberative experience stays within this mini-public.	Inclusive. All citizens can theoretically participate. Making participation relevant and easy to access is imperative, that participation is possible for all kinds of citizens.
Demographic representation	Participants are selected to match demographic quotas. Underrepresentation can still occur due to trade-offs between relative small-n (participants) and high-p (selection variables) Lower educated and those who do not like to speak in public to participate often decline invitations. Those under 18 are usually not represented.	Self-selection bias is very likely to occur. A combination with a sizable representative sample is recommended. Datasets can be reweighted so that the distributions of the demographic variables of each sample match the corresponding population distributions.
Expert information	Focus on expert and "political" knowledge in assembly hearings and support bodies of the assembly. Rigid procedures can reduce flaws in information provision and guarantee fair and balanced hearings.	No official hearings. The policy options, the range of their impacts, and constraints are predetermined by a range of relevant experts and policy-makers beforehand and/or co-created with citizens.

Table 2. *Cont.*

	Mini-Publics (e.g., Climate Assembly)	Maxi-Publics (e.g., Online Participation)
Deliberative quality	Trained moderators facilitate the deliberation and help in sorting opinions and arguments. By explaining views, asking questions, or jointly weighing considerations, deliberation increases the ability and willingness to deal with issue complexity and can reduce polarization. Deliberative mini-publics produce higher quality policy measures.	The quality of preferences that people express is lower than those expressed after deliberation. Often there is no human moderator available. Participants need to be stimulated to deliberate within themselves. Maxi-publics produce a higher quantity of awareness over the impacts of policy measures in society.
Output	Decision-making is often done by majority voting in the assembly.	Aggregated and clustered presentation of individual preferences.

3. Methodological Approach of the Study

Having compared the strengths and weaknesses of mini- and maxi-publics in climate policy-making in Table 2, in the following (Section 3.1), we provide arguments as to why we think that combining mass participation with deliberative mini-publics can be profitable for public opinion formation and policy change. We distinguish six merits that are brought forward in literature and seek to test them in an action-research study of the Dutch municipality of Súdwest-Fryslân. The municipality provided us with an ideal case context since they were willing to expand their participatory knowledge and blend different forms of democratic participation and deliberation into their crafting of future climate and energy policies. In Section 4, we present the case context and discuss the choices and selection procedures that were made in the design of the two mini-publics (Sections 4.1 and 4.3) and the maxi-public (Section 4.2). In a nutshell, participants in mini-publics are commonly selected to match demographic quotas. In the maxi-public, absent a large-enough representative control sample, we have reweighted the self-selection sample to match the results of the demographic variables and to reduce the salience of selection bias. In Sections 4.1–4.3, we discuss the analysis techniques that were used after each step in the participation trajectory.

3.1. Combining Online Mass Participation with Deliberative Mini-Publics

Proposed design features to overcome citizen-deliberation obstacles [50] remain insufficient in many climate assemblies as shown by our evidence from the empirical literature. As the authors of [20] argue, more innovation is needed to ensure that people are able to participate effectively in the proposals put forward by climate assemblies. Fusing both approaches is challenging, and sometimes not encouraged [51,52]. The more people participate in deliberation, the less feasible it is for all to have equal opportunities, to explain their views, to ask questions and receive answers in return, etc. [52]. Similarly, there are limitations to the extent how deliberative instruments such as rhetorical bridges, trust frames, and useful analogies [53] can be transferred into crowd settings. For a great part of society, intensive political deliberation is not their participatory preference [42,54]. Political theorists, therefore, point to the complementarities of the different logics of mini-publics and maxi-publics, as well as to bridge the gap between actual public opinion and well-informed public opinion [28] or to overcoming the conflict between deliberation and mass participation [55,56]. As the authors of [42] (p. 582) frame it, "If the standard forms of participation can be embedded in a more deliberative framework, then the tension between the two may well lessen." In major socio-technical transitions, the aim should be to gather as many views as possible to ensure those who make decisions are as familiar as possible with the social landscape [32]. There are two forces shaping a combination of maxi- and mini-publics. One is to replicate the transformative effects of the mini-public in the wider public sphere. The other is to integrate the public will into the deliberations of the mini-public

in ways that reflect the underlying subjective preferences of citizens [57]. We will mainly focus on the second one in our subsequent case study since the maxi-public established in our case was used to validate the options that were developed in the mini-public. To sum up the literature, we list the most relevant reasons why our combination model might have several benefits:

(1) **Participatory inclusion:** Mini- and maxi-publics combine an intensive participation procedure that is suitable for an exclusive group of citizens with a less intensive one that is preferred by a larger group in society.

(2) **Demographic representation:** Through different selection and statistical reweighting processes, both systems together can reduce shortcomings of representativeness (to make sure the participants in the mini-public and the maxi-public are a good proxy for the public at large).

(3) **Expert information:** The provision of expert information can be more balanced, not only predetermined in expert framings of problems, but rather in increasing the number of "witnesses" and "small voices" that would otherwise not be heard.

(4) **Deliberative quality:** A combination can increase the substantive quality of policy proposals, through deliberating about the pros and cons of different proposals in the mini-public, on the one hand, and with crowdsourcing additional ideas and public considerations on the other hand.

(5) **Political uptake:** Since the recommendations of the mini-public are backed by their consultation of the maxi-public, therefore, the incentives for elected representatives to consider the recommendations increase.

(6) **Acceptability:** A combination can increase the acceptability of policy recommendations by non-participants (those who were not able to participate in either a mini- or maxi-public).

In the following case study, we test the extent to which these merits really materialize and validate these findings with semi-structured expert and participant interviews and with qualitative data from the case study.

4. The Combination of Mini- and Maxi-Publics to Decide on a Future Energy Strategy

To tackle climate change, the Dutch government aims to have a carbon-free electricity system before 2050. To achieve this goal, all of the regions in the Netherlands have to propose a policy to define their contribution to this target, and municipalities within those regions have made a proposal to the region. This also holds for the municipality of Súdwest-Fryslân, the largest of all municipalities in the Netherlands in terms of square meters.

In recent years, several wind-energy projects have led to conflict between energy corporations, the municipality, and residents. To react to this discontent and to prepare their 2030 energy policies, the municipality decided in 2020 to involve the NPBO, the Dutch platform for citizen participation, the TU Delft, and the organization Public Mediation as a facilitator in this process.

The following subsections provide a descriptive and analytical presentation of the unique participation trajectory. The process began with organizing a local mini-public, which is presented in Section 4.1. The only precondition was to comply with the legal requirements of the Regional Energy Strategy. Scope or content-wise, the citizens were given a "carte blanche" to develop future energy scenarios and formulate policy recommendations. The output of this mini-public was subsequently combined with the involvement of a larger group of citizens through a participatory value evaluation, which is presented in Section 4.2. The remainder of this section presents the deliberation of the results by a citizens forum in Section 4.3 and illustrates the political uptake of the submitted recommendations by that citizens forum to the municipal council in Section 4.4.

Overall, the combined participation trajectory of Súdwest-Fryslân consisted of five steps, which are displayed in Table 3.

Table 3. Participation in five steps.

Date	Step	Stakeholder Type (Number)	Outcome
February 2020	1. Setting preconditions for the PVE consultation	Municipality Súdwest-Fryslân Council advisory committee	Preconditions for policy options to consider in step 2: hackathon
March 2020	2. First mini-public hackathon: drafting policy options	Citizens (45); Experts (7); Supervisors (7)	Six policy options and open questions for online PVE consultation
Between April and May 2020	3. Maxi-public: Online PVE consultation	Citizens (1356)	Citizens' opinions about future energy policies of Súdwest-Fryslân
Between May and June 2020	4. Second mini-public: Citizens forum	Citizens (12)	Advise about future energy policies of Súdwest-Fryslân, based on results of PVE consultation
September 2020	5. Discussion and vote on the citizens forum's advice	Municipal council of Súdwest-Fryslân (34 members)	Adoption of citizens guidelines in light of the Regional Energy Strategy

4.1. The First Mini-Public: Defining Future Policy Scenarios

The second step was to establish a mini-public that would design a number of future energy-policy scenarios under the premise to achieve 50% sustainable energy production by 2030. Those who responded to the extensive call were then randomly selected, on the basis of different regions, age, gender, and professions to have as diverse a group as possible. The 45 participants met for a "hackathon" that took place on 7 March 2020. During this hackathon, the mini-public was supported by a number of scientific and technical experts as well as seven independent moderators to develop feasible alternatives for the highly complex challenge of the energy transition. The citizens in the mini-public quizzed the experts, discussed pros and cons, and eventually drafted six possible energy scenarios (see Appendix B for an expanded description of these six options).

- "The municipality takes the lead and unburdens the public": The municipality will stay in charge and endorse what residents think is important.
- "The residents do it themselves": Residents generate their own energy and keep control of everything themselves.
- "The market decides": The municipality waits and sees what the market comes up with. Market players are obliged to involve the residents in their plans.
- "Large-scale energy generation in a small number of places": This way the municipality avoids having wind and solar parks in a lot of different places.
- "Focus on storage": Súdwest-Fryslân will become the Netherlands' battery and will ensure that the Dutch energy system is stable.
- "Become the energy provider for the Netherlands": Súdwest-Fryslân will help the rest of the Netherlands to make energy generation more sustainable.

These six options reflected the ongoing public debate and included even seemingly unpopular routes. To our understanding, value trade-offs of the municipality were well represented in the policy options, as they contain different levels of procedural and distributive fairness; landscape protection and climate action; autonomy and hierarchy. The storage option was further a scenario the municipality did not consider beforehand. The way these six options were translated into policy recommendations, how they were constraining the decision-making process, as well as how local policy-makers were guided by it politically will be discussed in the results section.

4.2. The Maxi-Public: What Does the Broader Community Think?

Together with the group of scientists, the group of citizens co-created the process of consulting the larger public after "the hackathon" through an online participatory value evaluation (PVE) (a visualization of the PVE can be reached via www.tudelft.nl/pve (accessed on 23 February 2022)). Participants in the PVE were asked to distribute 100 points among these six possibilities. The participants were able to compare these six options according to different parameters such as governance, costs, benefits, consequences, and purpose and they were able to state their arguments for or against different scenarios. The qualitative data for the maxi-public was gathered by asking participants why they have chosen a specific policy and what concerns they might have. Eventually, over 40,000 citizens had received an invitation to join the PVE between 10 April 2020 and 17 May 2020 (further details on participant recruitment can be found in Appendix A, as well as data on diversity and inclusiveness, which is often lacking in participatory research projects [58]). In total, 1,356 citizens of Súdwest-Fryslân participated in the PVE, this is 1.8% of the inhabitants that are 14 years and older. The percentage of female participants in this consultation was 26%, lower than expected. Participant numbers were sufficiently high from all regions of the municipality to conduct a representative analysis. Further socio-demographic differences are shown in Table 4.

Table 4. Differences of age and education in the maxi-public and the municipality.

Education Maxi-Public	Education in the Municipality
62% are highly educated	26% are highly educated
31% are medium-high educated	43% are medium-high educated
5% are low educated	30% are low educated
Age maxi-public	*Age in the municipality*
4% are between the age of 14 and 25	11.6% are between the age of 14 and 25
18% are between the age of 26 and 45	20.6% are between the age of 26 and 45
48% are between the age of 46 and 65	29.4% are between the age of 46 and 65
29% are between the age of 65 and older	22.1% are between the age of 65 and older

Due to their low turnout, additional low-educated people were recruited through a survey recruitment organization. Extracting the human values has been done by manually analyzing and annotating all the qualitative data input of the 1,356 participants next to the statistical analysis of the quantitative data. In Figure 1, we present a summary of the most significant results of consulting the maxi-public:

The scenario "The municipality takes the lead and unburdens" is the most preferred choice. Participants attribute an average of 31.59 points to this option and for 610 participants this is the preferred strategy. Women and older residents allocate significantly more points to this option. The second favorite option is "Residents do it themselves": 405 participants assign the most points to this. On average, they assign 23.36 points to this possibility. The options "The market determines" and "Become energy supplier of the Netherlands" are the least favorite. A total of 611 people give 0 points to "The market determines" (which scores an average of 9.93 points). Interestingly, higher educated respondents allocate significantly more points to this option. "Becoming the energy supplier of the Netherlands" is even less favored: 800 participants give no points to this option and on average participants assign 5.05 points. Despite this seemingly unpopular choice, younger respondents allocate significantly more points to this option than the rest (see Appendix C for the full regression analysis).

Participants were also asked to provide written motivations to underpin their choices. These qualitative results show that participants feel that both autonomy and cooperation are important. This means that the community itself can generate sustainable energy very effectively, as long as they have the support of the municipality. In contrast, participants were reticent about giving the market too big a role. They distrust big energy players

that are not originally from the region because in their eyes they do not always have the best intentions for the area and nature. The vast majority (except the youth) do not want Súdwest-Fryslân to be the energy provider for the Netherlands. Overall, the landscape is the most important value in considering the alternative options and any damage to it would be a cause of concern (see Appendix D for more qualitative results).
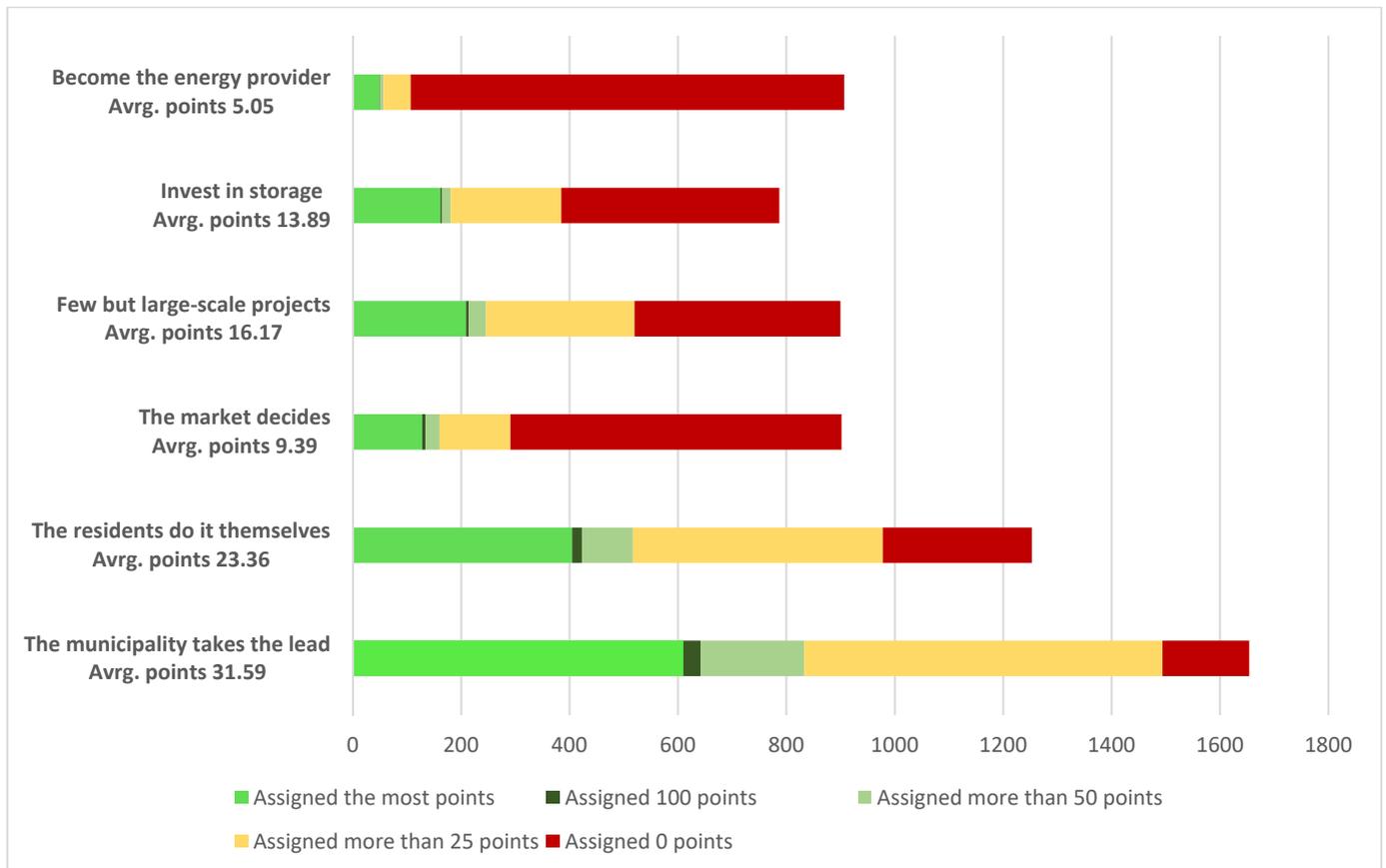

Figure 1. Policy preferences according to the distribution of points per citizen across the six options.

4.3. The Second Mini-Public: Interpreting the Results and Formulating Policy Recommendations

In the fourth step of the process, a second mini-public was formed to debate and interpret the results from the maxi-public. Differentiating from the first group, these citizens were selected from the participants of the maxi-public, but again on the basis of different areas of the municipality, age, gender, and professions to have as diverse a group as possible. The idea behind this different recruitment process was to guarantee that the second mini-public would have fresh eyes on the results and not be prejudiced by having drafted the choice options. The citizens forum for the future energy of Súdwest-Fryslân consisted eventually of 12 citizens, who met three times to deliberate, consult energy experts, and write an advice for the municipal council about the outcomes of the maxi-public consultation. They also received value maps from the maxi-public on each of the several policy scenarios (see Appendix E for examples). The forum recommended several guiding principles for the regional energy transition. For example, they recommend strengthening the local community by allowing them to participate in sustainable energy generation, especially those residents who are less fortunate. Another recommendation focused on restricting too gigantic energy plans. All plans should be connected to the local situation, with minimal interventions in the landscape. Moreover, if residents and energy cooperatives are already active in the energy transition, they should be included in energy-policy plans. The forum further advised that the costs and benefits of future energy projects must be distributed fairly within their municipality, for current residents and future

generations. Moreover, they argued that the government should install an independent body that provides knowledge and support to residents in the development of sustainable energy projects; otherwise, it risks ripping open previous cleavages.

4.4. The Political Uptake

The citizens forum handed over its advice to the municipal council in June 2020. The recommendations of the citizens forum were unanimously adopted by the municipal council in September 2020. The recommendations were adopted in the formulation of the Regional Energy Strategy, as well as to translate the advice of the citizens forum into the environmental policy of Súdwest-Fryslân. Moreover, based on the recommendations it was decided that no more windmills should be built in the IJsselmeer (a natural reserve). Moreover, the municipality decided to buy part of the existing wind park Nij Hiddum-Houw from the company Vattenfall to ensure that benefits could flow back to the community thereby ensuring a fair distribution of burdens and benefits.

One of the elected councilors described the combination model of mini- and maxi-publics as a new social contract between citizens and politics because a citizens action group that previously opposed the energy plans of the municipality rejoined the process. At the same time, a foundation is being built for a more detailed elaboration of follow-up trajectories and projects with their residents. In a subsequent interview in the journal Binnenlands Bestuur in 2020, the alderman described the process as "restoring the trust between the people and politics".

5. Experiences of Combining Mini- and Maxi-Publics in Súdwest-Fryslân

To verify the strengths and weaknesses of a participatory approach that combines mini-publics and maxi-publics we interviewed three policy-makers of the municipality, two organizers of the participatory process, and one member of the mini-public and assessed qualitative answers from the online PVE as well as the relevant council meeting (the questionnaire can be found in Appendix F). Here we report their major experiences with the participation process, broken down into the six merits.

(1) Participatory inclusion: Participants of the maxi-public stated in the debriefing questions that they valued the fact that they were being asked about their opinion as an important democratic guarantee. A number of participants mentioned that they appreciated the support with visual material (video, pictures) and that the consultation was easy to follow, regardless of education and level of knowledge. A number of well-educated participants declared other citizens' responses without knowledge about the energy transition as allegedly unqualified. This finding is in line with findings that citizens in privileged positions are less supportive of expanding citizen participation [59].

Furthermore, some participants in the maxi-public complained that they were restricted in terms of their abilities to express their preferences. There were two recurring themes: (a) disappointment not to have the option to choose to do nothing at all and (b) not all technologies were represented in the options (e.g., hydrogen or nuclear energy). Moreover, some participants complained that it was difficult to participate via mobile devices or a tablet. One of the interviewed civil servants echoed this drawback of the maxi-public stating that it would have been better if the consultation were accessible via phone or tablet but also in an offline setting. The other interviewed civil servant endorsed this and said that when there would not have been a pandemic there should be possible days when people can physically meet and be helped with the consultation. On the other hand, the same civil servant argued that the turn-out of 1376 participants in the maxi-public was surprisingly high. Earlier, they held a consultation on the strategy for spatial planning and the environment in which only 125 people participated. In addition, one of the process coordinators said that he found the process inclusive as the number of citizens involved in the process is much larger than in cases where only a mini-public is organized: "a mini-public such as a citizens forum is a great experience for the people who participate, but not for the rest of the community." The other process coordinator said that a good

thing about the maxi-public is that every citizen had the chance to participate. Finally, the alderman found the process inclusive as citizens were involved in each stage of the process—articulation of the questions asked in the first mini-public, eliciting preferences in the maxi-public, and interpretation in the second mini-public.

(2) **Demographic representation:** It is common in maxi-publics to recruit a control group from a representative sample of the population [47]. However, the municipality of Súdwest-Fryslân was too small to do this. Hence, the participants were recruited via an open consultation. As it turned out, the highly educated and males were indeed over-represented in the maxi-public and the less educated, female, and young people up to 25 years were underrepresented. The alderman also stated in his interview that one point for improvement would be a higher turnout among young people, females, and people with a low income. One of the civil servants stated that many efforts were planned to involve young people, but due to the COVID-19 pandemic, it was difficult to reach them now that schools and cafes were closed. To compensate for the non-representation of participants, the researchers assisting the maxi-public performed reweighting three times based on gender, age, and education. This meant that a higher weight to the preferences of the less educated, female, and younger was assigned up to the point that the weight of their preferences was equal in the sample and the population. These re-weightings showed that the mean values for preferences based on gender, education level, and age would not lead to huge differences [60]. At most, two percentage points difference between the average point allocations and the reweighted point allocations occurred. The alderman highlighted in his interview that the municipal council was convinced about this reweighting procedure regarding the results of the maxi-public: "the opinion in the council was that the PVE consultation was scientifically sound and representative". Both civil servants highlighted that representativeness was imperative in the sense that all stakeholders trusted that the outcomes of the participatory process accurately reflected the preferences of the population. Both of them stated that the thoroughness of the process, with two mini-publics and a maxi-public, was an important factor to achieve this objective. In their view, the representativeness of a mini-public will always be contested. For instance, as one of them stated: "when you would only do a citizens forum, you can always be accused that participants were selected in a certain non-objective way and that there are people in it with an interest other than the general interest. But when you use multiple imperfect participatory instruments you have a greater chance that these biases are corrected for." The second civil servant had a similar perception: "what you don't want in a participatory process is only engaging with the usual suspects [who follow-up an invitation], which is a risk of a citizens forum. The process that we have now undertaken means that you have more and more checks because in each stage another group of citizens is involved." Finally, one of the process coordinators said that he experienced in previous mini-publics that the representativeness of participants is not that high: "ultimately the participants in a mini-public strongly resemble the usual suspects around a particular issue." In his view, the maxi-public with around 1400 citizens guarantees that you grasp the preferences of citizens beyond the usual suspects.

(3) **Balanced expert information:** Expert information was used in two stages of the participatory process. Firstly, expert information was used to describe the characteristics of the policy options that participants evaluated in the maxi-public. Secondly, participants in the second mini-public had the opportunity to talk with experts. This particular role for experts was deliberately chosen by one of the process coordinators who widely reflected on this in his interview: "normally experts play a very decisive role in a citizens forum. But here we said that the real experts are the citizens. You could conceive the PVE consultation as a replacement of expert hearings in a citizens forum, translating what people who live there consider important. The reason why we opted for a marginal role of experts is that we had bad experiences in the past. Experts are often engineers who are very solution-oriented even when you ask them to provide only knowledge about impacts instead of solutions. Experts do not realize that their plea for a certain solution already implicitly contains a value judgment. Sometimes they have a very narrow perspective on what is best and

what is the truth. Citizens care also about honesty. Aren't companies making too much money? Experts don't bring up aspects like that. The nice thing about informing a citizens forum with a maxi-public is that you confront the citizens forum with a broad variety of perspectives that are present in the population. Different frames and different perspectives emerge side by side."

One of the civil servants said that one downside of a mini-public is that you are vulnerable to criticism on the impartiality of the information that the mini-public received and that this could hurt the credibility of the outcomes: "There only needs to be one very negative reaction on this on social media about the selection of participants in the mini-public or the information they received and then the credibility of the citizens forum is immediately questioned by the council. The beauty of the combination with a maxi-public consultation and the citizens forum is that the confidence in the credibility of the recommendations is higher and the chance that the results are contested is lower." A member of the second mini-public that was interviewed for this research argued that one drawback of the process was that some of the experts that were consulted gave very detailed information about certain technologies such as hydrogen that were quite unrelated to the specific task and topic of the citizens forum.

(4) The quality of policy deliberations: By involving both digital participation and intense deliberation in a small group setting, policy-makers stated that they have a much better feeling about the position of their citizens as well as about their underlying reasons and values. When the recommendations of the citizens forum were presented to the municipal council, some of the council members drew the conclusion that they learned from the process that their citizens have a lot of valuable knowledge and expertise. In the council, the responsible alderman stated that the citizens' recommendations were not only "valuable but also reasonable" and that they integrated well with the local culture of autonomy and self-responsibility. In the interview, the alderman stated that: "consulting the maxi-public is not just a survey in which people state whether they are for or against something. It provides meaningful results." One of the civil servants argued: "In the discussion in the city council the PVE research carried a lot of weight. The figures were discussed in terms of content. This gave the council confidence." The member of the citizens forum argued that he appreciated the focus on values: "The PVE research gave a lot of information and direction on how people think about it on the basis of values. When things become complex, the essence is to get to the heart of the matter. The added value of the citizens forum is that we can get the core out of the results and give soul and inspiration to the city council. But through the value driven results of the maxi-public consultation the citizens forum was pushed in a direction closer to the core of the public will." One of the process coordinators argued that the interpretation of the citizens adds value to the quality of the recommendations: "Without the discussion about it, a maxi-public consultation is only a report. The Mienskip idea (a reference to the local community) was hardly mentioned in the qualitative results of the PVE, but this was the interpretation of the citizens forum. As an analyst, you might have missed this." The second process coordinator said that the citizens forum reduced the ambiguity of the recommendations of the maxi-public: "A PVE provides a rich set of information and offers so many possibilities for interpretation. Too much room for cherry picking politically. We wanted to let the citizens themselves formulate the interpretation. Otherwise you get that each political party tries to interpret the outcomes in line with their interests."

(5) The political uptake of the recommendation: The principles defined by the citizens forum were used as an assessment framework for other climate policies. One of the civil servants said that colleagues continued to seek contact with the citizens forum regarding the interpretation of the principles in light of the decision-making on new plans. For instance, in the new policy regarding small wind farms, the citizens forum was consulted to reflect on the extent to which the principles were respected. Moreover, various respondents cited that the recommendations increased the confidence of the municipality to take decisions on behalf of their community. One of the civil servants experienced that the

municipality could take a stronger position due to the participatory process: "We could take a very strong position in negotiations with other municipalities and the province. We could also say that we carefully consulted our residents and other municipalities not. They could not say they had consulted the residents. This has given the organization self-confidence. That's what the residents really think. If someone says something else, you are strong. It has made the municipality stronger. Stronger in its positions. Stronger towards other municipalities and the province." Additionally, it was observed by the members of the citizens forum that the province used some of the principles in their policy notes.

Respondents mentioned various causes for the high uptake of the participatory process. The member of the citizens forum argued that a first success factor was the "logic" of the three-stage process in which a mini-public defines the questions and the dilemmas, a maxi-public provides advice and a mini-public translates this into policy recommendations. This respondent said that all people involved felt that this was not just a few opinions but the outcome of a thorough process. Other respondents endorsed that it was vital that citizens were in the lead in all stages of the participatory process. The alderman said: "Before this process there was so much anger and negative emotions in the community regarding a previous decision-making process. I realized that the only way to gain support for new policies was to involve citizens in all stages. Also in defining the policy questions and interpreting the results." One civil servant highlighted the importance of the first mini-public: "Residents played an important role at every stage of the process. If the scenarios had been devised by analysts, it wouldn't have been something residents had done." The same civil servant also emphasized the importance of the second mini-public: "the whole idea of the process is that you find out what residents really think. Then the residents should also communicate the results and not a researcher who is not 'someone from the community'. This is more credible for the municipal council." The member of the citizens forum endorsed this: "When you would only consult a maxi-public you miss the passionate transmission from people who have been engaged in the process. The intermediate step of citizens interpreting the PVE report is crucial. You need the connection from the report and the researcher to the city council. You get things moving because something touches you and it resonates. By using our language as residents and focusing on certain things, the council feels that something should be done." Finally, the other civil servant said: "Citizens will think that whoever pays a citizen's participation process influences the way recommendations are drawn. My experience is that citizens have no confidence in this. It is seen as the butcher inspecting his own meat. Here, this was avoided as the citizens interpreted the results."

(6) Acceptability of policy recommendations by non-participants: Only the alderman was able to reflect on this topic. He said that initially there was a lot of issue polarization but after the participatory process and the unanimous adoption of the recommendations by the council, this stopped: "We have had a new proposal on small windmills at farmers' premises. No resistance, no formal complaints, no problems. While we have a population that quickly grabs the pen and approaches a council member, this hardly even happens anymore now that we conducted this particular participatory process. As a municipality, we want to buy windmills and there was no resistance. No angry faces, reproaches or revolts either. Now everyone always refers to the advice of the climate citizens forum. For instance, the vision document for the thermal energy transition is based on the advice of the forum. Only one speaker and no formal complaints. Council members and I refer to the advice. Action groups and citizens too. An action group against windmills has turned into an exploration project group for geothermal energy in Bolsward. It has gained support. We are also working on our own municipal energy company. First, there was a lot of fuss about it, now there is no longer a political discussion."

6. Discussion and Conclusions

In this paper, we have set out to research the advantages and disadvantages of invoking mini- and maxi-publics in climate policy-making. Whereas some of the weaknesses of each

approach stem from their fundamental differences (high-intensity deliberation or reaching a high number of participants), others are to be found in the context of their application (either a mini-or maxi-public can be co-opted, manipulated or their results cherry-picked by politicians). Our idea was that a combination model of both approaches might reduce the pitfalls of participatory methods, not only because they are largely complementary instead of substitutable, but also because both mini-publics and maxi-publics provide reliable yet different information about citizen considerations and preferences about public policies.

In the following, we summarize and reflect on the findings of our case study according to six potential benefits of combining maxi- and mini-publics in the municipality of Súdwest-Fryslân and how these compared to other recent findings in the field.

(1) The time spent by a participant of the mini-publics was on average three days over the course of several weeks, whereas the time spent by a participant of the maxi-public was on average 20 min. Thus the combination model allowed for different needs and intensity levels of participation, which has proven to be crucial for inclusive participatory processes on climate change [54]. Most deliberative mini-publics account for a minimum of 20 hours length to have sufficient time to learn and deliberate [61]. However, we could observe that it is still difficult for the low-educated to engage in either mini- or maxi-public devoted to climate policy-making. Improving means to participate and assistance while participating for those members remains crucial.

(2) We only partly achieved the full objective of representation. Even though it was one of the largest and most diverse group of citizens that ever participated in local energy transition policy-making in the Netherlands, factors such as sparsely populated and remote areas and no representative citizens panel being available in the municipality contributed to the fact that some groups were overrepresented and others underrepresented. As the authors of [61] argue, representativeness is not a given and recruitment processes must be robust. However, we did not detect in our qualitative data that the local government sided with the affluent interests. Moreover, controlling the results through reweighting and giving a mini-public the chance to discuss the results in their deliberative meetings reduced the risk of transmitting aggregated results to decision-makers through a lens of an expert view only.

(3) Even though the six policy proposals in our case were designed by a diverse group of citizens, they triggered some negative sentiments by participants of the maxi-public regarding bias, exclusion of technologies, or the option of "not doing anything at all". Data on how citizens respond to citizen-centered policy-making and how that changes over time are scarce. As we know from other studies, it is mostly the disenfranchised or disaffected part of the public that is eager to participate in deliberative forums, whereas many others prefer exclusively supporting roles [62]. Nonetheless, processes that allow participants to come up with their own recommendations run less risk of being used as tokenistic exercises [61]. It is unfortunately not possible in our case to compare the sentiment of participant statements, had the six options been instead designed by energy policy experts only.

(4) The intense deliberation in two different stages gave some insights into how the quality of the proposals improved. Not only did the citizens have a central option to think about that was not on the table of the government (storage), but this option was also quite welcome in the maxi-public (even though not the most popular). On the other hand, the maxi-public produced thousands of written statements on positive, negative arguments as well as on conditions, under which participants would accept a certain option of a combination thereof. As the authors of [63] argue, a citizen-deliberation component in large-scale policy consultation can provide novel data about the preferences of policy mixes and prospective policy challenges. Our combination model provided a wealth of data and a rich foundation not only for the members of the mini-public but also for the team of accompanying researchers as well as the elected members of the municipal council to analyze, discuss and triangulate the underlying values that must steer future climate policy-making.

(5) The recommendations of the citizens' forum were unanimously accepted by the city council. Compared to scientific reports of the French and UK climate assemblies [44,45], a positive lesson learned in Súdwest-Fryslân was the early involvement of the local parliament regarding important preconditions and a clear statement about how the councillors will process the recommendations. Moreover, as the citizens' recommendations in Súdwest-Fryslân were in line with the basic requirements of the Regional Energy Strategy, they could thus lower the risk of being politically or legally rejected. Stakeholders and researchers might therefore study the embedding of their mini- and maxi-publics in the larger political system and conduct outcome-orientated comparisons. According to the authors of [61], the biggest impact is to create a strong political platform for action by providing elected representatives with a public mandate on climate change. As we have seen in our case, politicians then often follow up with increased motivation for climate action.

(6) Participants of the mini-public valued that they could deliberate on different and conflicting viewpoints from the larger public since these would certainly resurface again in the many decisions that would follow in the next two decades. The public debate surrounding the mini- and maxi-publics was able to generate a public debate and increased momentum for policy change, something that the authors of [61] argue is crucial to the success of climate assemblies. Nevertheless, we can unfortunately not report how non-participants of both procedures assessed the combination approach. Empirical evidence of another study suggests that different selection methods of citizens assembly members have no main effect on the perceived legitimacy in the broader public [64].

In sum, augmenting mass participation and deliberative mini-publics has allowed citizens to learn from each other, form reasoned opinions, and evaluate positions, thereby reducing the pitfalls of the individualistic approaches to preference formation. Moreover, in accordance with [61], triangulating a deliberative component with a "snapshot" participatory value evaluation gave not only policy-makers but also media reporters, as well as environmental, community, and industry advocates a fuller understanding of public opinion about future energy and climate policy. As the authors of [27] put it, our three-step process, therefore, spurred public opinion formation embedded in a larger deliberative system and contributed to discussions in various sites, across time, organized by different sets of factors [23].

Limitations: We must maintain that our case study reflects specific local and cultural characteristics that might be very different from other regions in the Netherlands, Europe, and, of course, worldwide. Moreover, due to time and financial constraints, our combination of mini- and maxi-public for climate policy is far from perfect in accommodating all participatory and deliberative design principles equally. As such, other combination cases might yield different results. Absent any control groups or isolating confounding influences, we are unfortunately not able to compare how recommendations would differ, let alone the uptake of the recommendation into the political system.

Deepening the experimentation with such combinations can overcome the predicament of whether decision-makers will prefer the results of a deliberative mini-public to the less informed public opinion of ordinary voters and increase a political system's capacity for collective action [65]. Future research might thus engage with further combinations of mini- and maxi-publics in different political and cultural contexts as well as with regard to different climate and energy issues. Other studies might seek to weave deliberative functions into online participation or to use crowdsourced ideas or validation during climate deliberations. Such advanced combination models, e.g., [64], might help to resolve the dilemma of a random person having to trust the recommendations of the mini-public without knowing whether she would have come to a similar conclusion, had she been also part of that mini-public [52]. According to [9] other avenues of research could investigate how the integration of mini- and maxi-publics could foster social engagement of the disengaged, social cohesion within polarized or fragmented, as well as compassion with communities that are severely affected by climate change. Regarding the latter, it might be interesting to conduct future experiments with virtual reality or the metaverse for participants of both

the mini- and the maxi-public. This would provide researchers with a glimpse of how citizens change their policy opinions if they (virtually) experience how it feels to live under drought, flooding, or heavy air pollution.

Appendix A. Maxi-Public Recruitment Campaign

At the end of April 2020, the municipality placed an announcement in the local newspaper four times and sent invitations to all their contacts and to all the village councils. It also sent a letter to 10,000 households in the municipality on 6 May. From 12 April 2020, a paid, geolocated social media campaign was launched via Facebook and Instagram. At the same time, the municipality advertised via its social media accounts and on its website. Vlogs and teaching materials were produced and were offered to schools to attract young people since inhabitants 14 years old and older were allowed to participate in the PVE. In addition, a low-educated and a control group were recruited via Kantar Public, and a helpline was installed for those who had trouble navigating through the online platform.

Appendix B. The Six Options at Large

Appendix B.1. The Municipality Takes the Lead

The municipality of Súdwest-Fryslân is actively engaged in making energy generation more sustainable. Inhabitants are protected as much as possible against nuisance from windmills and other energy installations. The government also ensures that everyone has access to affordable energy. Inhabitants with a low income are supported; through subsidies, they can as well generate sustainable energy.

The municipality takes the lead in developing new energy plans. There will be programmes to make entire neighborhoods and villages sustainable. The inhabitants of Súdwest-Fryslân determine the preconditions for large-scale energy generation. The municipality offers room for local initiatives. It supports inhabitants who come up with new ideas. If these new ideas do not lead to achieving the target (half of the electricity generated sustainably in 2030), the municipality will make its own choices.

Important parameters of this policy option

- The municipality can help inhabitants who have little to spend and share the profits. This way, people with smaller wallets can also generate sustainable energy.
- The energy needs of all inhabitants of Súdwest-Fryslân are not equal. The municipality will divide the costs and benefits between cities and villages.

- The municipality does not have influence on everything. Energy policy is also steered from the national government in The Hague. Moreover, there is a limited budget. Meaning the municipality cannot protect or help everyone.
- In this way the municipality can keep control over its energy management. Energy becomes a public good again.

Appendix B.2. Residents Do It Themselves

In Súdwest-Fryslân residents work together in neighborhoods and villages to generate sustainable energy. They organize themselves in energy cooperatives to buy solar panels. Or neighbors invest together in a village windmill, a neighborhood battery or a shared heat pump. They help each other save energy. The profits benefit the community. The energy desk of the municipality provides information so that residents can choose which technology best suits their home or village. The government makes it attractive for people and companies from their own municipality to spend money on sustainable energy. If the power grid can no longer handle all the sustainable energy offered, local energy producers are given priority for supplying power to the grid. There are also joint facilities, enabling the people and businesses within a community to supply each other with energy.

Important parameters of this policy option

- Residents of neighborhoods and villages are co-owners of local installations. This stimulates the region's independence in its own energy supply. The money they earn from sustainable energy generation stays in the region.
- A great deal of knowledge and expertise is required to implement sustainable energy projects. That knowledge and skill is not available in every district or village. The municipality will provide support through an energy desk.
- The landscape may become fragmented because local communities are free to choose the technology they use to generate energy.
- It is sometimes very difficult for a village or neighborhood to reach a joint decision. Every house and every street is different, so it can be difficult to find one solution together.

Appendix B.3. The Market Determines

Market parties are given every opportunity to generate sustainable energy in Súdwest-Fryslân. The municipality designates areas where companies are allowed to develop projects for energy generation. Companies can also propose areas to the municipality themselves. For example, they can enter into contracts with landowners to produce energy on their land. Market parties are obliged to involve residents in their plans. The municipality sets limits for nuisance. The municipality uses the knowledge and skills of the market. Experienced developers can quickly make the energy supply more sustainable. Only projects where they can earn enough money will be developed. Companies are allowed to innovate and try out new ideas and technologies.

Important parameters of this policy option

- It is a low-cost option for the inhabitants but the social returns are low. The market does not choose environmentally or socially friendly solutions, but only those that make the most money.
- Companies that spend money on sustainable energy and new technology are rewarded.
- Not all inhabitants of Súdwest-Fryslân can benefit. Small projects by Súdwest-Fryslân residents cannot compete with large companies. Or the companies buy small projects.
- The landscape may become fragmented, because companies come up with their own locations and may choose which technology they use for energy generation. In this way, market parties have more influence on how Súdwest-Fryslân looks than the municipality and residents themselves.

Appendix B.4. Large-Scale Energy Generation in a Small Number of Places

This option affects the landscape of Súdwest-Fryslân in as few places as possible. In order to generate sufficient sustainable energy, the municipality has designated a few areas for large-scale wind and solar parks. In the rest of the municipality there is no visible energy generation. People who live near large-scale wind and solar parks share in the profits. Part of the profit is distributed annually. People who live very close by get more than those further away.

Important parameters of this policy option

- By stimulating large projects, the municipality will receive a profit. This money can be distributed to the inhabitants. The money can also be used for facilities, for example to keep the swimming pool or the library open, or to make the region more attractive to young people.
- By allowing large wind farms in some places, you can protect the landscape in others.
- Large wind parks and solar parks can have an impact on tourism. Tourists might consider it a detriment to the Frisian landscape.
- People who live near a wind or solar park can experience this as unpleasant due to, for example, noise nuisance, impact shadow and falling house prices.

Appendix B.5. Investing in Storage

The municipality of Súdwest-Fryslân is becoming 'the battery of the Netherlands'; the place where sustainably generated energy is stored for later use. The municipality supports projects to store energy. Storing energy is important for the energy supply in the Netherlands. This is not only important for the municipality of Súdwest-Fryslân, but for the whole of the Netherlands. In this way Súdwest-Fryslân can keep control of its energy supply and earn money by trading energy. The more the municipality invests in storage, the easier it becomes to generate energy on a large scale.

Important parameters of this policy option

- Much innovation is still needed in storage. Some storage options use a lot of raw materials, (neighborhood) batteries and other storage forms such as hydrogen can be dangerous for people in large quantities.
- The obvious solution is to store the energy close to the sustainable energy source or close to the user.
- In this way, the municipality can maintain control over its energy management and play an important role in the energy transition.

Appendix B.6. Become the Energy Supplier of The Netherlands

The municipality and the inhabitants of Súdwest-Fryslân do everything in their power to generate as much sustainable energy as possible. An important difference with the other five choices is to generate much more energy than the municipality needs. This helps the rest of the Netherlands to make its energy supply more sustainable. Súdwest-Fryslân can thus earn a lot of money by selling energy. It will also create jobs in sustainable energy development. Suitable places to generate energy are the industrial areas and on the IJsselmeer. Most energy comes from large wind farms and solar parks, but also from new ways of generating energy such as geothermal energy and 'blue energy'. This requires an expansion of the power grid. Some of the surplus electricity is converted into hydrogen.

Important parameters of this policy option

- Combining various new energy technologies increases the yield of renewable energy.
- Generating sustainable energy is good for the local economy. It creates jobs, companies like to settle in areas with a lot of sustainable energy. At the same time, tourism can be adversely affected.
- The municipality retains control over the generation of energy. The money that Súdwest-Fryslân earns flows directly back to the community.

- People who live close to these industrial energy parks and the IJsselmeer may experience a higher amount of nuisance.

Appendix C. Regression Analysis of Characteristics and Preferences

We did a linear regression analysis to say something about the relationship between the characteristics of participants and their preferences: for each strategy, we related the number of points awarded to the characteristics of respondents. This allows us to say how much reliability the characteristics of participants are related to their preferences. The effects that are statistically significant (marked with two or three asterisks, i.e., with a significance level of 5% or lower) are included in the main analysis.

Table A1. Policy preferences according to socio-demographic indicators.

Policy Option	Municipality Takes the Lead	Residents Do It Themselves	The Market Decides	Concentration	Storage	Energy Supplier
Gender (f)	4.539 ***	1.998	−3.822 ***	0.585	−2.710 ***	0.950
	(1.648)	(1.425)	(1.032)	(1.156)	(0.999)	(0.626)
Age						
18–25	9.129	6.592	−1.597	−11.179 **	−5.631	−1.616
	(7.584)	(6.557)	(4.748)	(5.319)	(4.594)	(2.880)
26–35	11.907 *	12.417 **	−1.815	−12.626 ***	−0.862	−7.544 ***
	(6.727)	(5.817)	(4.211)	(4.718)	(4.075)	(2.554)
36–45	12.827 **	11.409 **	−2.555	−10.491 **	−3.085	−6.855 ***
	(6.508)	(5.627)	(4.075)	(4.565)	(3.943)	(2.471)
46–55	10.681 *	12.009 **	−2.899	−10.087 **	−4.189	−6.942 ***
	(6.347)	(5.488)	(3.974)	(4.452)	(3.845)	(2.410)
56–65	13.332 **	12.300 **	−3.439	−8.611 *	−5.200	−8.493 ***
	(6.301)	(5.448)	(3.945)	(4.420)	(3.817)	(2.392)
66+	16.656 ***	7.991	−3.127	−9.228 **	−7.686 **	−9.001 ***
	(6.314)	(5.459)	(3.953)	(4.429)	(3.827)	(2.397)
Education	−1.205	0.417	1.207 **	0.252	0.025	−0.087
	(0.765)	(0.661)	(0.479)	(0.536)	(0.464)	(0.290)
Kantar sample	−2.128	−1.239	3.436 *	2.675	−0.641	−0.037
	(3.141)	(2.716)	(1.967)	(2.203)	(1.903)	(1.193)
Relation to sustainable energy						
Member of a cooperative	−5.420 *	6.197 **	−1.594	1.639	1.617	0.004
	(3.060)	(2.646)	(1.916)	(2.146)	(1.853)	(1.162)
Green entrepreneur	−3.331	−1.455	3.848	1.106	−2.129	−0.965
	(4.541)	(3.926)	(2.843)	(3.185)	(2.750)	(1.724)
Green energy consumer	5.267 ***	−2.193 *	−1.561	1.121	−0.911	0.295
	(1.517)	(1.312)	(0.950)	(1.064)	(0.919)	(0.576)

Table A1. *Cont.*

Policy Option	Municipality Takes the Lead	Residents Do It Themselves	The Market Decides	Concentration	Storage	Energy Supplier
Has renewables shares	−0.877	2.564	−0.825	0.076	2.569	−0.624
	(2.748)	(2.376)	(1.721)	(1.928)	(1.664)	(1.044)
Other relationship	−1.099	1.921	−2.062 *	−0.063	0.254	0.324
	(1.768)	(1.529)	(1.107)	(1.240)	(1.072)	(0.671)
Prosumer	−3.152 *	4.114 ***	−2.494 **	−2.049 *	3.975 ***	0.501
	(1.761)	(1.523)	(1.102)	(1.235)	(1.067)	(0.669)
No interest in renewables	−1.089	−7.615 **	−0.160	2.671	−3.763	−2.185
	(3.830)	(3.312)	(2.398)	(2.686)	(2.320)	(1.454)
No, but interested	0.942	2.793	−3.472 **	−0.840	0.633	1.108
	(2.154)	(1.862)	(1.348)	(1.511)	(1.305)	(0.818)
Postal code area						
Urban	0.049	−2.282	−0.431	0.493	−2.505	−0.856
	(6.086)	(5.263)	(3.810)	(4.269)	(3.686)	(2.311)
Lake area	−5.089	3.526	−1.202	2.813	−1.696	−1.831
	(5.709)	(4.936)	(3.574)	(4.004)	(3.457)	(2.168)
Coastal	−1.988	8.634 *	−4.491	−3.017	−0.797	−2.767
	(5.474)	(4.733)	(3.427)	(3.840)	(3.315)	(2.079)
Windpark area	0.634	−7.440 ***	2.978	4.272 *	−0.460	−0.016
	(3.110)	(2.689)	(1.947)	(2.182)	(1.884)	(1.181)
Countryside	−4.511	3.267	−1.446	−0.220	−0.983	−1.664
	(6.157)	(5.324)	(3.855)	(4.319)	(3.729)	(2.338)
N	1149	1149	1149	1149	1148	1149
r2	0.06	0.08	0.04	0.02	0.06	0.05

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Appendix D. Experience with PVE—Participant Responses

Participants of the maxi-public were asked how the municipality should weigh the advice of residents and the advice of experts. A majority indicated that the municipality should give equal value to expert advice.

Table A2. How much weight should be given to the advice of citizens in relation to the advice of experts.

The advice of citizens should be decisive	5%
There should be more weight on the advice of citizens than on the advice of experts	16%
There should be equal weight between the advice of citizens and the advice of experts	53%
There should be more weight on the advice of experts than on the advice of citizens	23%
The advice of experts should be decisive	3%

In the maxi-public, we observed two different major themes. Respondents stressed that citizens should continue to have a say in municipal policy, not only be consulted in one-off experiences, since "the landscape is quickly forgotten when money starts to be involved" (citizen quote). Another theme that occurred was how well-educated participants see other (allegedly unqualified) citizens' responses:

- *"Some insight into the energy market and the energy transition world is needed to be able to give a well-founded answer. Many individuals do not have this, it would have been better to conduct a good information campaign first."*
- *"I personally think that the idea of distributing points is a bit difficult for many people. I would have preferred a more intuitive questionnaire."*
- *"I believe that the questions are too complicated for residents with little or no knowledge of the issues and therefore many will drop out and that if they do answer, the answers are based on too little knowledge of the issues and the survey will not give a useful result."*

Appendix E. Examples of Value Maps of the Maxi-Public

For each of the six policy options, we mapped which values emerged in the qualitative answers of the maxi-public. The list below shows which of the 19 values occurred most often. The list of values was compiled from the participants' answers and refined in several rounds of analysis by three different coders. The illustrative figures below show the relative importance of values that participants attach to certain policy scenarios (a complete list of figures and a description of the values are available upon request).
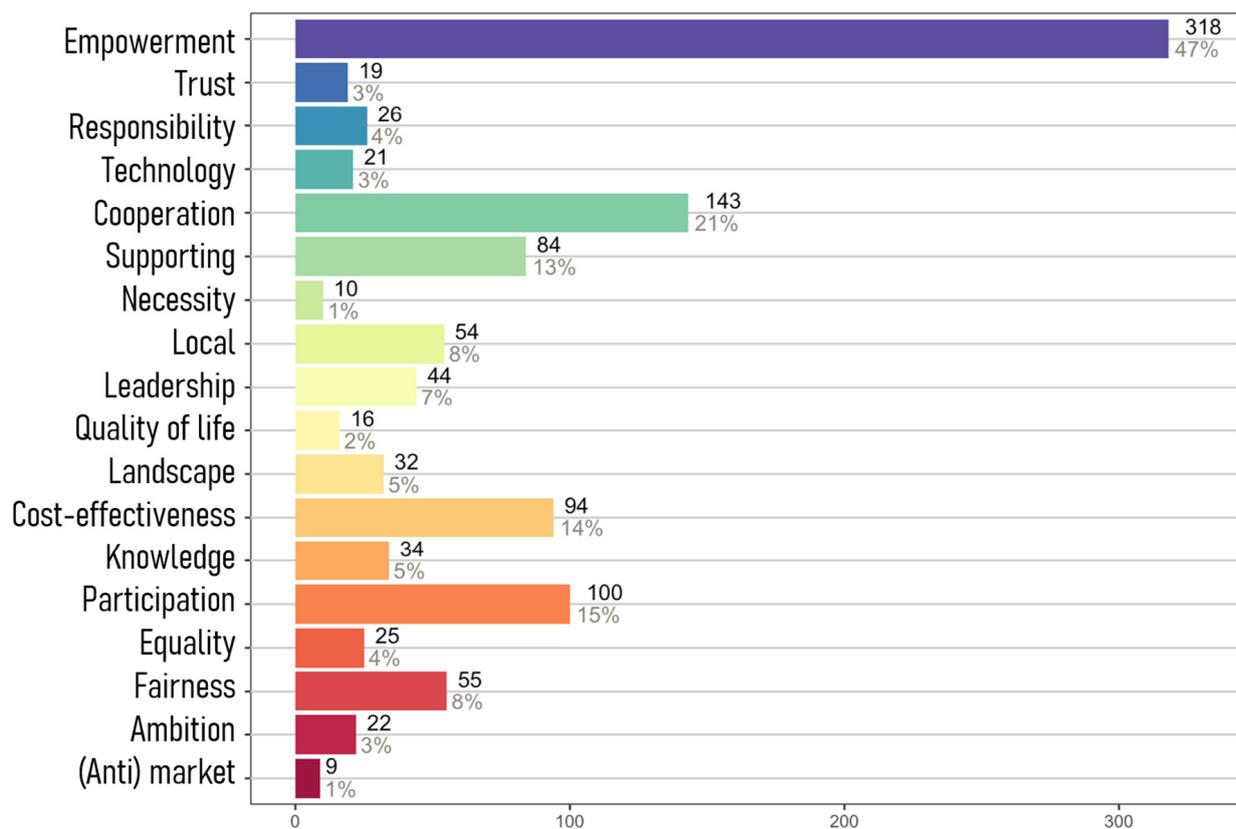

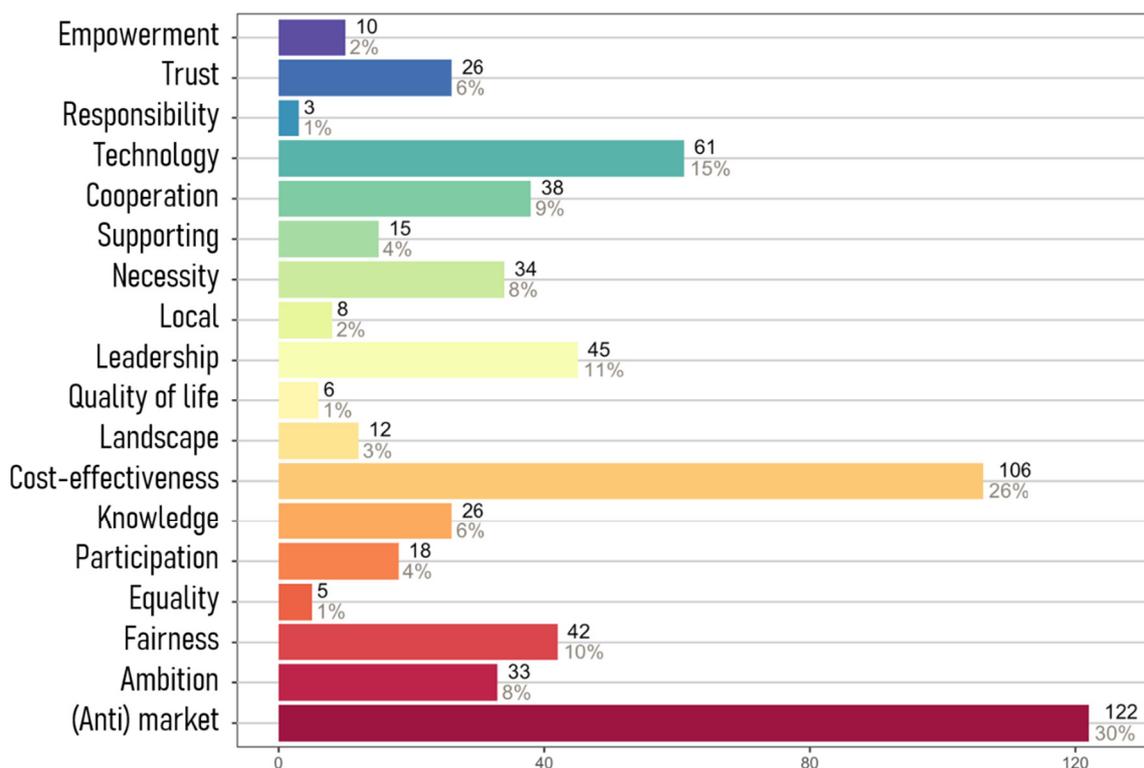**Figure A1.** Value map scenario "residents do it themselves".

Figure A2. Value map scenario "the market decides".

Appendix F. Questionnaire to the Policy-Makers, Councilors, Participation Facilitators, and Members of the Mini-Public

1. Why was a Participatory Value Evaluation (PVE) consultation combined with a mini-public in which citizens co-developed the PVE and a citizens' assembly that translated the insights of the PVE into recommendations? What was the reason to choose for multiple methods instead of one method?
2. Would you recommend a similar participation process to another municipality? If so, what are your main arguments for recommending such a participatory process?
3. What would have gone less well if you had only conducted a PVE consultation?
4. What would have gone less well if you had only conducted a citizens' forum?
5. What are the most important points of improvement from the participation process in Súdwest-Fryslân? If we could do it all over again, what would you have done differently?
6. Do the advantages of combining a PVE consultation with a citizens' assembly outweigh the disadvantages? Or do you think, in retrospect, that it would have been better to use one of the two methods of participation or to do something completely different?

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