

Public Participation and Values in Sustainable Projects

Fardau Koster

S3738035

Department of Psychology, University of Groningen

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Supervisor: dr. Goda Perlaviciute

Second evaluator: (prof.) (dr(s).) Michelle Lohmeyer

In collaboration with: Jerke Hoekstra, Bianca Muranyi, Kira Urmes, Stephanie Zuurman and Merel van der Ham

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Abstract

In order to mitigate the impacts of climate change environmental policies are required. The support from the public for these policies is necessary to create a successful implementation. In current research we will study public participation, trust in science, and values as possible contributors to the acceptability of a food tax policy. By means of an online survey, we performed an experimental study with a between-subjects design. From our convenience sample 108 people completed the survey. Participants were asked to imagine that they would participate in a public participation procedure, in which they would discuss different consequences of the food tax policy. Consequently, participants were randomly distributed between the three experimental conditions; personal consequences, environmental consequences or a combination of both. At the end the acceptability of the policy was measured. We expected that when one's values were congruent with the consequences discussed, or that when a combination of consequences was being discussed, the acceptability of the food tax policy would be higher. We performed an ANCOVA, which did not show a significant relation between the experimental conditions and the acceptableness of the food tax policy. However, there were other significant effects found, whereas people with higher levels of biospheric values evaluated the policy as more acceptable than people with lower levels of biospheric values. Moreover, people with higher levels of trust in science, were more acceptable of the policy than people with lower levels of trust in science. However, an attention check with regard to the manipulation was wrongly answered by a large part of the participants. This raises questions about the reliability of the manipulation of this study.

Keywords: Public Participation, Trust, Values, Environmental Policy

Public Participation and Values in Sustainable Projects

That the climate is changing and that humans have played a considerable part in this, is nowadays accepted by almost all scientists among different disciplines (Grothmann & Path, 2005). The increasing amount of Co₂ can be explained by the release of fossil fuels which increased enormously at the start of industrialization. Furthermore, the rising sea level, the decrease of snow and ice, and the overall warming of the atmosphere are confirming the process of a warming earth (Brenner, 2019).

As the large amount of increased Co₂ is due to human activity, changes in human behavior are critical for mitigating climate change and minimizing its negative consequences. The IPCC, Intergovernmental Panel on Climate Change, describes mitigation as the limiting of greenhouse gasses through human intervention (IPCC, 2018). This mitigation can consist of renewable energy, waste minimization processes, or changes within the transport sector. To achieve this, behavioral changes will be necessary. These changes can contain individual attempts to reduce co₂ and involve the support for climate related policies (Cologna & Siegrist, 2020). Most policymakers agreed that action is needed, but at the same time they encounter multiple struggles and often fail to get public support. One reason for this, is that these environmental policies often have direct influence on people's daily lives (Marshall et al., 2015).

Public acceptability is here defined as, the positive or negative attitude of citizens, towards a certain policy before it is actually implemented (Nilsson, Hansla, Heiling, Bergstad & Martinsson, 2015). In the current research we will limit our focus to three different yet connected aspects which could influence the public acceptability of environmental policies. These topics are: public participation, people's values and trust in science.

Public participation and the incorporation of personal values

When announcing (environmental) policies, it has become more and more clear that the decide-announce-defend approaches, where experts make the choices and later communicate this to the public, are not really the best options to obtain public support (Stave, 2002). Public participation can offer a good alternative. Environmental policies are in this research defined as all policies which contribute to the mitigation of the effects of climate change. We define public participation as the process where the public and policy makers engage in a dialogue, the public can express their opinions and views through constructive deliberation, the public is involved in decision making and has (some) level of influence on the environmental project (Liu, Bouman, Perlaviciute & Steg, 2020; Perlaviciute, 2019). Consequently, in such an public participation processes, different consequences of the policy will come to light.

The extent to which people find certain consequences important or not may depend on their pre-existing values. Therefore, when discussing different consequences of the environmental policy during public participation, different values can be targeted as well, which can lead to higher project acceptability. Indeed, when it concerns decision making in public participation, the effectivity depends not only about the facts, but is always closely connected to the preexisting values people have (Dietz, 2012; Perlaviciute, 2019). We take over the definition of Schwartz when it comes to values: “A value is a (1) belief (2) pertaining to desirable end states or modes of conduct, that (3) transcends specific situations, (4) guides selection or evaluation of behavior, people, and events, and (5) is ordered by importance relative to other values to form a system of value priorities” (1994). Schwartz’s circumplex value structure received consistent support from different research areas (Nilson et al., 2016). When considering a sustainable project, people will probably first think about how it will effect their most important values. As previous research has shown, values are influencing the norms and attitudes

people have, and are in turn important predictors of actual behavior (Dietz et al., 2005).

Biospheric and egoistic values appeared to be the most important predictors when it comes to environmental choices and behavior (Bidwell, 2013; Lazaric et al., 2020; Dietz et al., 2005).

People with high levels of biospheric values are concerned with the wellbeing of non-human species and the ecosystem as a whole. People with high levels of egoistic values are concerned with self-enhancement, which includes authority and wealth (Dietz et al., 2005).

One of the reasons that values are important in environmental choices and behavior is that emotional responses are great determinants of behavior and attitudes, such as resistance or approval towards a sustainable project. Therefore, people will react more emotionally towards sustainable projects which have large implications for their values. Consequently, when the project will have negative consequences for one's values it will evoke negative emotions as well (Perlaviciute, Steg, Contzen, Roeser & Huijts, 2018). When a public participation project is including core values of the people who are participating, it can lead to positive outcomes whereas people are more willing to listen to information which takes their core values into account and are also more convinced by this information (Perlaviciute, 2019). Thus, we assume that participants are more acceptable of the policy, when their own values are represented in the consequences.

Public participation and the incorporation of values of others

When the characteristics of public participation are more closely inspected it becomes clear that the focus of public deliberation lies on the communication, explanation and critical listening. This deliberation is about weighing all arguments and show people multiple viewpoints (Carpini, Cook & Jacobs, 2007). In this way public participation can provide more engaged and active participants and more tolerance for the opposing views (Carpini, Cook & Jacobs, 2004).

These qualities of public participation also have a positive effect on project acceptability as it will lead to greater feelings of fairness about the project itself, also called procedural fairness. In this way the process is perceived more fair and transparent (Liu, Bouman, Perlaviciute & Steg, 2020) and gives the project more legitimacy (Carman et al., 2015). Consequently, public deliberation is a way to bring a broader and more representative range of values and knowledge to light, which makes the eventual decision more acceptable and sustainable (Healy, 2004).

Therefore, we argue that when participants are confronted with multiple consequences of the project, instead of only the consequences which incorporated their values, it can also lead to higher levels of project acceptability. One of the reasons is that participants perceive the process as more fair when multiple consequences are being discussed. The realization that we all possess the same values, but the ranking differs from person to person, can lead to acceptance and the insight that other values are valid as well (Perlaviciute 2019). Moreover, the discussion of as well personal and environmental consequences of the policy promotes perspective-taking, which could lead to the conclusion that there is an overlap between the self and the other (Kim, 2013). This will possibly lead to the desire to come to a mutual understanding. Research has already shown that perspective-taking will facilitate problem-solving (Taylor & Edwards, 2021). The study from Beierle and Cayford indeed showed that when different values were incorporated in the public participation process, there was a larger chance that the participants would influence the outcome of the policy (2002). Moreover, we believe that participants will realize that it is more realistic to discuss also consequences others find important, instead of only their own. When the public participation does not feel realistic for the participants, they will probably also experience that they do not have much influence on the outcome of the project and therefore they will probably find it less acceptable as well (Liu et al., 2020). Therefore, we argue that

discussing multiple consequences of environmental policy, will lead to higher project acceptability whereas it will promote perspective taking, mutual understanding, procedural fairness and the perceived realness of the public participation.

Moreover, biospheric values appeared to be related to biospheric beliefs and environmental intentions (de Groot & Steg, 2008), which probably will result in a higher acceptability of the environmental policy (Nilsson et al., 2016). Consequently, we assume that people with biospheric values are more positive towards the proposed environmental policy irrespective of which consequences are being discussed in public participation.

Trust

As discussed in the previous paragraphs, public participation and the incorporation of values can be important predictors on how acceptable people will evaluate the sustainable project. However, public participation and values might not matter, if people do not have trust in climate science in the first place. This because science is laying at heart of an environmental policy. As believing in science is the first step to believe that the climate is changing, and that the sustainable project is necessary. How science communicates their findings to the public has considerable influence on the eventual trust. When it comes to global phenomena as climate change, which has high cognitive complexity for individuals, it is inevitable to rely on the information that scientists, institutions and policy makers are providing (Arbuckle, Morton & Hobbs, 2015). There are reasons to not trust science, such as conspiracy theories or the perceived lack of consensus among scientists (Hahn, Harris & Corner, 2016). Whatever the reason may be, this lack of trust in climate science, will prevent people from being acceptable towards a sustainable energy project.

A meta-analysis by Hornsey Harris, Bain & Fielding underlined the relationship between trust in science and climate change belief (2016). They discovered that there were two heuristics which were the second and third largest predictors of climate change belief. These heuristics were; “Scientists are trustworthy” and “there is scientific consensus (around climate change)”, so climate change must be really happening. According to a meta-analysis of Cologna & Siegrist which included 51 studies it became clear that trust in scientists leads to an increased belief in climate change and led to more climate-friendly behaviors (2020). When people make decisions in uncertain conditions, with little knowledge about the topic, they will look to trusted institutions and experts for guidance. And this level of trust correlates with public acceptance of policies (Arbuckle, et al., 2015). Therefore, it can be assumed that trust in science is such an important factor that it transcends public participation and the incorporation of values in public participation, as trust in science is directly linked to project acceptability.

Current research

In this current research we have chosen to do a scenario study in which we can investigate the concepts discussed above. As main topic, we have chosen a tax on high carbon emission foods, as a dietary shift has one of the largest impacts on reducing our carbon emission footprint (Ivanova et al., 2020). We have conducted an experimental research where participants are placed in different conditions where different consequences of the policy are discussed during public participation. These consequences are in line with biospheric and/or egoistic values. These conditions are, discussing personal consequences, environmental consequences or a combination of both. Public participation plays a central role as participants imagine that they participate in the decision-making process concerning the carbon emission tax on foods, in which

they will discuss different consequences of the policy. According to the proposed ideas described above the following hypotheses emerged:

H1: We expect to see an overall positive relationship between biospheric value orientation and the acceptability of the project irrespective of which consequences are being discussed during public participation.

H2: We expect that value orientation moderates the acceptability of the project, so when the consequences that are being discussed during public participation are congruent with participant's own values, participants will find the project more acceptable than when the consequences discussed are not congruent with their own values.

H3: When participants are faced with both personal and environmental consequences, they find the project more acceptable than when they are faced with only one type of consequence, regardless of their own values.

H4: Participants who have little trust in science will experience less project acceptability irrespective of which consequences are being discussed during public participation.

Methods

Participants and Design

The sample was recruited within the researchers' social networks by means of sharing the survey via WhatsApp private messages and group chats, Instagram stories, and email. Utilizing the snowballing method, participants were invited to further distribute and share the questionnaire within their own social networks. Data collection took place from 17.11.2021 to 29.11.2021. The online questionnaire was accessible through a link to the digital survey platform Qualtrics.

Out of 202 recorded responses, we included 108 participants in our analysis. Participants who left more than three questions unanswered or those who did not answer the second attention check correctly, were excluded. We choose to set the maximum on three unanswered questions as more would suggest that participants did not take the survey seriously. The sample consisted of 74 females and 34 males. The participants' average age ranged from 17 to 63 ($M = 25.4$, $SD = 10.64$). Most participants were Dutch (71.3%) or German (14.8%). The most common educational level in our sample was bachelor's degree (60.2%), followed by master's degree (22.2%) and high school (14.8%).

Manipulation of Public Participation Conditions

The participants were instructed to imagine a scenario that their government is considering the implementation of a carbon tax on food due to the increasing urgency of reducing carbon emissions to meet the requirements of the Paris agreement (see Appendix A for the exact text of the scenarios). Further, participants read that their government intends to engage the public in the decision-making process about the policy and hence invites people to a meeting to discuss the implementation of the carbon tax. The participants are asked to place themselves in this situation where they are involved in the decision-making process of the policy.

In our between-subjects experimental design, participants were randomly assigned to three different public participation conditions. Depending on the experimental condition, participants were informed they would discuss environmental (e.g., less deforestation), personal (e.g., ensuring personal safety), or both environmental and personal (combined) consequences of the food tax policy in a public meeting. In each condition, examples of two positive and two negative consequences of the food tax policy were given. Participants were randomly assigned to one of the three conditions using the “evenly present elements” in Qualtrics, which makes sure

that there are approximately the same number of participants in each condition. The “Environmental” condition had 38 participants, the “Personal” condition 36 participants, and the “Combined” condition 34 participants. Also, it was mentioned that the government will consider the public's opinion in their definitive decision about the carbon tax. Moreover, to strengthen our experimental manipulation the participants were asked to list some consequences that they would like to discuss in during public meeting. Furthermore, this question also aimed at engaging the participant more with the experiment.

Procedure and Materials

The participants could fill in the survey on their own, using their laptop, desktop, smartphone or tablet. Participants were able to contact one of the researchers, when there were questions before, during or after finishing the survey. Participation was voluntary, with no rewards granted, and participants were asked for their informed consent. The survey exclusively consisted of self-reports. Filling out the questionnaire took about 15 minutes. Lastly, respondents were presented with the debriefing and a link for further sharing the questionnaire. Our research was ethically approved by the Ethics Committee Psychology of the University of Groningen. As this paper is part of a group project, additional measures were included in the survey; here, only the measures relevant to the present paper will be described.

Attention checks

To check whether participants read the public participation scenarios carefully, they were asked “According to the text you just read, what type of consequences of the carbon tax on food will be discussed in the public meetings?”. Answer possibilities were “Environmental consequences”, “Personal consequences” or “Environmental and personal consequences”. Results showed that in the final sample, 23 participants in the environmental condition, 21

people in personal condition, and 3 people in the combined condition answered this question incorrectly. It could be that many participants who were not sure about the answer chose the “both environmental and personal consequences” option. Of the 108 participants 17 choose the environmental consequences, 17 choose Personal consequences and 74 choose a combination of both. This while the experimental conditions were almost equally divided.

Another possibility for the high number of wrong answers could be that the participants did not think that it was realistic to only discuss one type of consequences in public participation. Because of the high number of wrong answers, we did not exclude all participants who failed to provide the right answer. A second reason to not exclude this group is that even though they answered the first attention check incorrectly, this does not necessarily mean that they did not pay attention or did not take the survey seriously. This could rather be a reflection of the participants’ expectations about the public participation.

A closer look at the data showed that those participants can still be assumed to have answered the remaining questions attentively and seriously, whereas 108 of the 108 participants answered the attention check in the middle of the survey correctly. This check existed of the following: “To prove you are still paying attention to the questions, please select the ‘somewhat disagree’ below”. Still, this might indicate a limitation to the strength of our manipulation.

Measures

Project Acceptability

To measure the acceptability of the carbon tax policy, we used 4 items on a 7-point Likert scale from Lu et al. (2020). This included the following items: The extent to which participants found the proposed policy necessary (from 1 = very unnecessary to 7 = very necessary), the extent to which participants found the proposed policy acceptable (from 1 = not at all acceptable

to 7 = very acceptable), the extent to which participants found the proposed policy good or bad (from 1 = very bad to 7 = very good) and the extent to which participants found the proposed policy negative or positive (from 1 = very negative to 7 = very positive). The mean responses of the 4 items were combined to form the acceptability scale. Higher scores indicate a higher acceptability of the carbon tax policy. The scale scored sufficient on internal consistency. Cronbach's alpha was $\alpha = .875$ ($M=4.91$, $SD=1.17$).

Trust in Science

To measure the participants' trust in science, we used one item on a 7-point Likert scale. The scale was based on the research of Malka, Krosnick, & Langer (2009). They used the question: "How much do you trust science?", with four options from (1= completely, 4= no trust at all). To be consistent with the other scales in the current research, we transformed this into a 7-point Likert scale (from 1 "no trust at all" to 7 "full trust") ($M=5.65$, $SD=.824$).

Demographics

Participants were asked to indicate their age, gender, nationality, and educational level.

Values

People's biospheric and egoistic values were measured using 16 items on a 9 point scale used from Schwartz (1992). As we used the short version of the value scale, we refer to Steg, Perlaviciute, Van der Werff and Lurvink (2014). Participants received the list with these sixteen values accompanied by a short description of the value. Participants were asked to rate the items from opposed to my principles -1 not important, to 7-extremely important. Sixteen items were used to measure the score on four different values, namely biospheric, egoistic, hedonic, and altruistic values. The biospheric values were assessed using 4 items; preventing pollution, respecting the earth, unity with nature and protecting the environment. The egoistic values were

assessed using 5 items; social power, wealth, authority, influential and ambitious. The mean responses on each value item were combined to form the score of the respective value type. Biospheric values displayed good reliability with a Cronbach's alpha of $\alpha = .89$ ($M = 5.0$, $SD = 1.4$). Similarly, egoistic values displayed acceptable reliability with Cronbach's alpha of $\alpha = 0.71$ ($M = 2.6$, $SD = 1.3$).

Results

To investigate whether there were differences in the amount of project acceptability between the three experimental groups, we ran an ANCOVA. We included the three experimental conditions as the independent variable and the participants' values as covariate. Specifically, we conducted two such analyses, one with participants' biospheric values, and one with participants' egoistic values.

First, we ran the ANCOVA analysis with biospheric values as a covariate. There was no significant effect found between the overall model and the dependent variable project acceptability $F(2,107)=.205$, $p=.815$, $\eta^2 =.004^1$ (table 1).

H1: The effect of biospheric values on project acceptability

Biospheric values did have a significant relation with the dependent variable project acceptability $F(1, 121)=6.900$, $p=.010$, $\eta^2 =.062^2$ (table 1). Therefore, there was support found

¹ The same analysis was performed with the exclusion of the participants who failed the attention check. The experimental conditions did not have a significant effect on the dependent variable project acceptability $F(1,60)=.732$, $p=.485$, $\eta^2 =.025$.

² The covariate in this analysis, biospheric values, did not have a significant effect on project acceptability, when excluding the participants who failed the attention check $F(1, 14)=2.928$, $p=.092$ $\eta^2 =.049$. This when there was a significant positive relation in the larger sample. When excluding the participants the power of the sample is probably too small to detect an effect.

for the first hypothesis, whereas there was a positive linear relationship found between pre-existing biospheric values and project acceptability $\beta = .220$, 95% *CI* [.054, .387], $p=0.010$. The outcome suggests that participants with stronger biospheric values are more likely to find the carbon tax on food policy acceptable than participants with weak biospheric values. There was no significant interaction effect found between biospheric values and the different experimental conditions.

Table 1

ANCOVA results for project acceptability by type of consequences discussed in public participation and biospheric values

Source	SS	df	MS	F
Bio mean	9.638	1	9.368	6.900
PP condition	.573	2	.286	.205
Error	145.267	104	1.397	

Note. Adjustments made on biospheric mean =7.042

H2 and H3: The effects of the different public participation conditions on project acceptability

Secondly, we ran the ANCOVA analysis with preexisting egoistic values as a covariate. There was no significant effect found between the three experimental conditions, and the dependent variable project acceptability $F(2,107)=.210$, $p=.811$, $\eta^2 =.004^3$ (table 2). The covariate, pre-existing egoistic values, did not have a significant relationship with project acceptability either (table 2). There was also no significant interaction effect found between egoistic values and the different experimental conditions.

³ The same analysis was performed with the exclusion of the participants who failed the attention check. The experimental conditions did not have a significant effect on the dependent variable project acceptability $F(1, 60)=.545$, $p=.716$, $\eta^2 =.021$.

Consequently, there was no support found for hypothesis h1 and h2 as all three conditions did not have a significant effect on the dependent variable, project acceptability. Therefore, according to the results of this research, there were no differences between the groups who discussed consequences which were congruent or incongruent with their own values, on the acceptableness of the food tax policy. Hence, there was no support found for the second hypotheses that discussing value congruent consequences would lead to higher project acceptability (h2). Moreover, when participants were confronted with combined consequences, instead of only personal or environmental consequences, the acceptableness of the project did not heighten as we expected (h3).

Table 2

ANCOVA results for project acceptability by type of consequences discussed in public participation and egoistic values

Source	SS	df	MS	F
Ego mean	1.159	1	1.159	.748
PP condition	.662	2	.311	.210
Error	153.745	104	1.478	

Note. Adjustments made on ego mean =4.5611

H4: The effect of the level of trust in science on project acceptability

With regard to the hypotheses concerning the level of trust in science, there is a regular linear regression performed. There was a significant relationship found between the level of trust in science and the level of the acceptability of the project $F(1,105)=15.470, p<.001$.⁴ When performing a third ANCOVA analysis with trust in science as covariate, it became clear that this effect was found independently of the condition participants were in. Therefore, support was found for the fourth hypothesis, as there was a positive relationship between trust in science and

⁴ The same linear regression analysis was performed, with the exclusion of the participants who failed the attention check. There was still a significant effect found between the level of trust in science and project acceptability $F(1,60)= 23.650, p<.001, \eta^2 = .293$

project acceptability $\beta = .220$, 95% *CI* [0.268, 0.811], $p < .001$ This outcome suggests that participants with high levels of trust in science are more likely to find the food policy acceptable than participants with less trust in science.

Discussion

In current research the role of values and trust in science in public participation procedures are being investigated in relation to the acceptability of environmental policies. We conducted an experimental study where we manipulated which consequences of a food tax policy would be discussed by the participants. Participants were randomly placed in three different conditions. In these conditions' participants were told they would discuss different consequences in public participation. Accordingly, we expected that depending on the condition participants were placed in; or in the combined consequences condition, or in the condition where the consequences were congruent to one's values, the project acceptability would increase. This was not the case as there were no significant relations found between the experimental conditions and the acceptability of the food tax policy. Moreover, biospheric values and trust in science appeared to be significant predictors for the acceptability of the food tax, irrespective of the condition participants were placed in.

Theoretical and practical implications

H1) Biospheric values appeared to be a significant predictor for the project acceptability of the sustainable policy irrespective of the consequences which were discussed in public participation. This outcome is in line with previous research, which states that biospheric values are a good predictor for the acceptability of sustainable projects (Nilson et al., 2016) and environmental behavior in general (Bidwell, 2013; Lazaric et al, 2020). Accordingly, the project acceptability for people with biospheric values, may not depend on public participation as these

people are already very acceptable towards the policy. However, there are enough other reasons, to include people with biospheric values, such as their contribution to constructive public deliberation (Perlaviciute, 2019), the additional possibility of perspective taking (Kim, 2013) and the overall quality of the decision-making process. Participants with egoistic values can learn new information and hear new arguments which could make them more acceptable of the project (Carmen et al., 2015). However, it is important to realize that, public participation has less influence on participants with high levels of biospheric values, as this group is already quite acceptable towards the environmental project.

H2 and H3) The second hypothesis stated that when consequences were discussed which were congruent to people's own values that the acceptability of the food tax policy would be higher, but according to the results this hypothesis is not supported. In the similar research of Nilsson et al. value-congruent information did not increase the acceptability of the policy either (2016). Our research had similar findings, as we too did not find that the value congruent-condition increased project acceptability values. It could mean that it does not matter which consequences are being discussed, because participants already have a strong opinion about the project. However, research from Beierle and Cayford found that when policy makers incorporated the values of the public, the public could substantially change and influence the final decision-making process (2002). These mixed findings about including values in public participation require further research. Previous research made it clear that values do matter in evaluating consequences of a policy (Perlaviciute & Steg, 2015), but how this is related to public participation remains unclear according to our results.

The third hypotheses stated that, when people were presented with a combination of personal and environmental consequences, that they would be more acceptable of the project.

But also here the hypothesis was not supported as there was no significant effect found.

However, the study of Beierle and Cayford showed that the incorporation of different values had positive effects of the amount of influence the public had on the final outcomes of the decision-making process (2002). However, when the public was not capable of reconciling their different values, and therefore not agreeing on a course of action for the policy, the influence on the policy from the public would be low (Beierle & Cayford, 2002). And when the influence on the project is low so will be the acceptability of the project (Liu et al., 2020). Therefore, it could be the case that discussing multiple consequences, only lead to a higher project acceptability when participants can reconcile their values. And for this process, a real opportunity to discuss their opposing values together is needed. An option which was not provided in our research. A practical implication could be that when policy makers wish to have a public participation procedure with the inclusion of different values, they should consider whether these values are incompatible or not and provide the public with appropriate guidance.

H4) According to the results of this research, trust in science appeared to be a significant predictor for the sustainable policy, irrespective of the consequences discussed during public participation. This outcome is in line with previous meta-analyses which found support that the level of trust is connected to higher levels of belief in climate change (Hornsey et al., 2016) and more environmentally friendly behaviors (Cologna & Siegrist, 2020). It is therefore important to think of ways to improve trust in science in public participation. As Fiske and Dupree suggested that a way to improve trust in science, is to focus on the trustworthy intentions of scientists. This can be done by discussing and sharing information (2014). Which is already an important part of public participation.

Moreover, education through conversations with experts such as scientists are important (Carmen et al., 2015). Hahn and colleagues argued that people have more trust in the information scientists gave, when there is consensus between the scientists and a coherent story is provided (2016). Moreover, this increased knowledge through deliberation and credible evidence, could shift participants' attitudes positively towards the project (Carman et al., 2015). This knowledge can be used in developing public participation procedures where there is focused on the consensus of scientists, and the relevance of the evidence is made clear. Secondly, it is important to realize, that participants with initial high levels of trust in science, are probably not as much influenced by the public participation process as others, whereas the project acceptability in sustainable projects is already quite high.

Limitations and future research with regard to the manipulation

There was no effect found between the different public participation conditions and the level of project acceptability. There can be several explanations for this outcome: The first one is that participants are not susceptible for arguments given, because their opinion is already very solid. This attitude certainty can partly be seen as a trait as some people hold more strong attitudes than others. However, this attitude certainty also depends on situational factors. Such as source credibility, which refers to the perceived expertise of the source (Tormala & Petty, 2002). Moreover, by making a public statement about one's own opinion, one will be more resistant to other views, as people have a strong desire to appear consistent and therefore their attitude is not likely to change (Gopinath & Nyer, 2009). Therefore, it could be the case that in some situations discussing different consequences could have an effect on project acceptability and not in others. To find an effect for project acceptability it is probably wise to include credible sources such as

scientists in public participation, and to let participants discuss the topic without firstly stating their opinion about the policy.

Another possible reason why we did not find an effect between different public participation conditions and project acceptability is that the conceptualization of the manipulation was not sufficient, whereas almost half of the participants failed the second manipulation check. This may indicate that participants did not read the arguments carefully or that participants are tempted to choose the ‘combined option’, as it is the most neutral, and probably feels like it is least likely to be the wrong answer.

However, we think that the most credible reason that we did not find an effect and the reason for the large number of participants who failed the attention check, is that the manipulation was not realistic enough for the participants. Firstly, because the participants were not really in a public participation procedure, but they were asked to imagine themselves in such situation. This made it probably quite difficult to really read the arguments carefully and to evaluate them as if the food tax policy was really going to happen. The second problem with the realness of the manipulation could be that participants did not expect to receive only one type of consequences when engaging in a public participation procedure. Hence, participants would directly choose for the ‘combined consequences’ option as this appears as the most logical and expected scenario. This could have practical implications, as participants already may have expectations at forehand of public participation. To investigate whether this is really the case, a question at the beginning of public participation could be included which asks what the participants expected from the public participation meeting.

However, for future research it would be interesting to make the manipulation more realistic. A real policy for public participation could be used. This could be beneficial for the

policymakers, as they are receiving feedback, and make the project more acceptable through the heightened perception of procedural fairness. At the same time, it can also serve as a new research to investigate the manipulation of this current study in a more realistic setting for the participants. When participants know that they are really going to discuss the consequences with each other (in real-life), they also read the consequences probably more carefully, which again will strengthen the manipulation.

General limitations

We made the choice in current study to not exclude all the participants who failed the second attention check. Therefore, it is questionable how valid the results are. Nonetheless, a second manipulation with the exclusion of these participants is performed as well. The results did not change completely because of this. Biospheric values were in the smaller sample only marginally significant for project acceptability. Although this can probably be explained by the small sample size and a too small power to detect an effect. To avoid this problem in future research it would be better to conduct a larger sample.

Besides the limitations of the manipulation, there are some general limitations such as the convenience sample we used in current study. Therefore, it is problematic to generalize the results to the entire population as the participants of our research were mostly female ($n=74$), highly educated 82.4% and young ($M=25.4$). This could have affected the results. Young and high educated people are known to be progressive and find issues as climate change quite important (Harring & Jagers, 2018). Therefore, it could have been the case that our participants found the food tax policy already quite acceptable, and that therefore no effect was found with regard to the consequences discussed, because of the characteristics of this group. When it

comes to future research it would be important to have a representative sample of the population, by a random sampling.

Conclusion

In current research we conducted an experimental study through an online survey. The most important findings stated that both trust in science as biospheric values are good predictors for a sustainable policy. Discussing different consequences which targeted different values appeared not to have a significant effect on project acceptability. Nonetheless we think this can be explained by the limitations of our manipulation. Future research will be necessary to show this.

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Appendix A

Full text conditions

Biospheric condition

Due to the increasing urgency of reducing carbon emissions to meet the requirements of the Paris agreement, your local government is considering implementing a carbon tax on products like meat, cheese, avocados, bananas etc. A carbon tax on food is a policy that influences the price of food, based on how much carbon dioxide (CO₂) is emitted through the production of these foods. To address any possible public concerns, the government will invite the public to a meeting to discuss the implementation of the carbon tax, aiming to find a well-adjusted consensus on the topic. The discussion will focus on the environmental consequences, of which a few are mentioned below.

The government will consider the public's opinion about the environmental consequences of the carbon tax on food in their definitive decision in January 2022 about whether the carbon tax is an appropriate measure to meet the Paris agreement.

Examples of environmental consequences of the carbon tax on food to be discussed in public meetings:

Positive consequences:

- Reduced global warming

Less deforestation

Negative consequences:

- People may feel that they are entitled to consume high-carbon-emitting products if they can pay for them, which could lead to more purchases of such products -

Neglecting the effect of other greenhouse gasses like methane and water vapor that harm the environment even more

Personal condition

Due to the increasing urgency of reducing carbon emissions to meet the requirements of the Paris agreement, your local government is considering implementing a carbon tax on products like meat, cheese, avocados, bananas etc. A carbon tax on food is a policy that influences the price of food, based on how much carbon dioxide (CO₂) is emitted through the production of these foods. To address any possible public concerns, the government will invite the public to a meeting to discuss the implementation of the carbon tax, aiming to find a well-adjusted consensus on the topic. The discussion will focus on the personal consequences, of which a few are mentioned below.

The government will consider the public's opinion about the personal consequences of the carbon tax on food in their definitive decision in January 2022 about whether the carbon tax is an appropriate measure to meet the Paris agreement.

Examples of personal consequences of the carbon tax on food to be discussed in public meetings:

Positive consequences:

- Ensuring personal safety by preventing increasingly intense natural disaster. -

Increased individual well-being due to reduced pollution of water and air

Negative consequences:

Increased costs of daily groceries

-

-

Decreased choice of products because of insufficient alternatives to high-emission products

Personal and egoistic condition

Due to the increasing urgency of reducing carbon emissions to meet the requirements of the Paris agreement, your local government is considering implementing a carbon tax on products like meat, cheese, avocados, bananas etc. A carbon tax on food is a policy that influences the price of food, based on how much carbon dioxide (CO₂) is emitted through the production of these foods. To address any possible public concerns, the government will invite the public to a meeting to discuss the implementation of the carbon tax, aiming to find a well-adjusted consensus on the topic. The discussion will focus on environmental consequences and personal consequences, of which a few are mentioned below.

The government will consider the public's opinion about the environmental and personal consequences of the carbon tax on food in their definitive decision in January 2022 about whether a carbon tax is an appropriate measure to meet the Paris agreement.

Examples of environmental and personal consequences of the carbon tax on food to be discussed in public meetings:

Positive consequences:

-

Reduced global warming

-

Ensure personal safety by preventing increasingly intense natural disasters

Negative consequences:

- Neglecting the effect of other greenhouse gasses like methane and water vapor that harm the environment even more. -

Increased costs of daily groceries