

# The added value of including citizen perspectives in a transition management process towards climate neutrality.

## Insights from an experience in the Swiss Alps

*When citizens do not feel included in transition processes, implementation can become very difficult. Hence, we used a survey to include the perspective of citizens in one such transition process towards climate neutrality in the Swiss Alps, and analysed how this enhanced its legitimacy.*

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#### Abstract

Initiatives that foster transformative change often adopt a transdisciplinary approach by involving stakeholders from various sectors of society. Although transdisciplinary projects often emphasize a representative selection, it does not change the fact that a few stakeholders might develop visions, strategies, and policies that could affect many. A legitimate and transparent process is vital to ensure public acceptance and a successful implementation. In this study, we explore how citizens can be involved in transition management initiatives, based on a transition process towards climate neutrality in the Swiss Alps. Here, local citizens evaluated the vision developed by selected stakeholders, as well as the legitimacy of the process. The results were incorporated into workshops with the stakeholders. Based on the survey and interviews with stakeholders, we evaluate whether and how citizens' views informed the transition process. Overall, citizens supported the vision developed by the stakeholders. The latter, in turn, highly valued the citizens' perspectives, but were unsure about how to best integrate them. We conclude that the inclusion of citizens at an early stage can increase the legitimacy and transparency of transition processes.

#### Keywords

climate neutrality, inclusion, legitimacy, participation, sustainability transitions, transdisciplinarity, transition management

### Inclusion of citizens in transdisciplinary transition initiatives

Transdisciplinary initiatives are seen as a promising approach to support transformative change towards more sustainable societies (Schäpke et al. 2017, Kny et al. 2023). They are seen as possessing high transformative potential because they combine academic knowledge with context-specific expertise and perspectives, increasing their legitimacy and accountability (Hansson and Polk 2018, Kny et al. 2023, Lang et al. 2012). This kind of research can feature different grades of stakeholder interaction, ranging from informing and consultation to co-production (Schneider and Buser 2018). Generally, the higher the grade of interaction, the lower the number of stakeholders that will be involved. For reasons of practicality, co-production methods such as workshops, citizen assemblies, and focus groups can only include a limited number of stakeholders (Bunders et al. 2015). This calls for careful consideration of who is included in such processes, raising questions of legitimacy and transparency (Heidenreich 2018, Hölscher et al. 2018, de Geus et al. 2022, Cvitanovic et al. 2019).

This is especially relevant for sustainability transition processes, which have been criticized in the past for being technocentric and for insufficiently including citizens (Chilvers and Longhurst 2016). More recently, citizen inclusion has become much more common (Avelino and Wittmayer 2016). A lack of public acceptance can hamper or block the implementation of sustainability initiatives or policies (Klaever et al. 2024, Naumann and Rudolph 2020). However, how to effectively include citizens' perspectives

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**BOX 1: The road towards regional climate neutrality in the Eastern Bernese Oberland region (2020–2024) – a case study**

The Eastern Bernese Oberland region, with its 47,000 inhabitants in 28 municipalities, can be described as a mountainous and rural region with an economy dominated by tourism and a landscape shaped by agriculture. These municipalities form a so-called Regional Conference, which coordinates the region's interests and is responsible for regional development. In 2019, the Regional Conference set the goal of steering the region towards climate neutrality. Such a goal implies radical and transformative change, and a transdisciplinary project, called *Local Energy Transition Experiments for a Low-Carbon Society Transformation – Piloting a Transition Management Process in the Bernese Alps*, was set up to support this goal. The researchers in this case study had the lead in initiating, facilitating, and evaluating the process. Based on a stakeholder analysis, as well as consultation with regional and local partners, the researchers invited approximately 60 stakeholders from local governments, industry, and civil society to join the process. Selection criteria were based on the Wittmayer et al. (2018) description of frontrunners – innovative individuals with the potential to influence change. Additionally, invited stakeholders could suggest other stakeholders to be invited. Reflection on the

representativeness and inclusiveness of this group occurred throughout the process.

To date, key results of the process are the development of a shared vision and transition pathways, the creation of a network of stakeholders committed to achieving regional climate neutrality, the calculation of a regional greenhouse gas (GHG) balance as basis for further monitoring, and the institutionalisation of a coordination and support system for stakeholders developing initiatives that reduce regional GHG emissions (including support with funding, feasibility, regulations, and networking). At the time of writing, 27 idea sketches have been developed. Although not every one of these might prove to be feasible, actions towards their implementation have been undertaken for most of these ideas. For a comprehensive overview of this project, we refer to Moser et al. (2024).

By institutionalising the coordination and support, the transition process will continue with the implementation partners in the coming years, even after the research project has been completed.

into sustainability transition processes remains unclear. Transitions often focus on a selected group of innovative stakeholders (i. e., frontrunners) to initiate transformations towards sustainable development. This approach bears the risks of insufficient-

ly including citizens and instead creating “elites of transformation” (Heidenreich 2018). These “elite” stakeholders are usually pre-selected by project leaders who either overlook or reject the inclusion of a broader range, or a truly representative set, of stake-

**FIGURE 1:** View of Lake Brienz (Brienzersee), nestled in the heart of the Eastern Bernese Oberland, with the Alps in the background.



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holders and perspectives (Huttunen et al. 2022, de Geus et al. 2022). In this way, even if the selected stakeholders come from civil society, they may not accurately represent the views and perspectives of the broader community that stands to be affected by the envisioned transition.

### Research goals

We aim to contribute to the challenge of designing transdisciplinary transition processes in a just and inclusive manner, by exploring an approach that combines collaborative stakeholder workshops with a survey of local citizens. We draw on a transition management process (Wittmayer et al. 2018) as a specific case study for a transdisciplinary process, designed to support a transition to climate neutrality in the Swiss Alps (for more details see box 1). Transition management in particular has been criticized for its lack of democratic legitimacy (Hendriks 2009, Kenis et al. 2016). To assess legitimacy in a transition management context, we build on de Geus et al. (2022) who distinguish between input legitimacy (opportunities for participation), throughput legitimacy (quality of the participation), and output legitimacy (outcomes of the participation). Although considering these dimensions is believed to enhance legitimacy, how to effectively operationalize input and throughput legitimacy in project design remains unclear.

We analyse to what extent the integration of a citizen survey into a workshop series with stakeholders<sup>1</sup> influenced the transition process by posing two research questions:

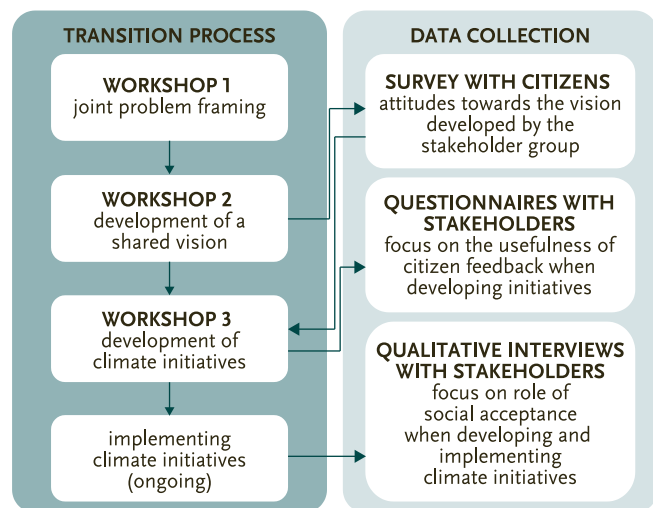
1. We ask how the surveyed citizens evaluate the legitimacy of the transition process and the results of the stakeholder process (i. e., the developed vision).
2. We ask how the participating stakeholders evaluate the inclusion of the citizens' perspectives, and whether and how this influenced their activities.

We employ a mixed methods approach to investigate these questions. After providing an overview of the transdisciplinary transition project, we briefly present our methodology. Next, we discuss our results, draw conclusions and reflect on the policy implications of our approach.

## Case description and methods

Our transdisciplinary project in the Swiss Alps focussed on supporting a transition towards regional climate neutrality<sup>2</sup> (box 1). The project was implemented between 2020 and 2024, in the Eastern Bernese Oberland region (figure 1). Through employing a transition management approach inspired by Loorbach (2010) and Wittmayer et al. (2018), the question of how a climate neutral region could and should be achieved was addressed in a collaborative manner (figure 2).

During the second workshop, stakeholders developed a vision of a climate neutral Eastern Bernese Oberland. The vision (figure 3, p. 298) comprised 32 qualitative targets for those sec-



**FIGURE 2:** Overview of how a survey with local citizens was integrated into the design of a transdisciplinary process, aimed at supporting a transition towards climate neutrality in the Eastern Bernese Oberland region, Switzerland.

tors relevant to the reduction of greenhouse gas (GHG) emissions, namely the sectors of housing, consumption, agriculture/forestry, mobility, energy, tourism, and communication/education<sup>3</sup>. The vision and its targets were subsequently presented to local citizens via a survey. In the survey, citizens were asked to evaluate the vision, as well as the legitimacy and credibility of the process. Additionally, citizens could indicate whether they wanted to stay informed or even join future events with the stakeholder group. The results of the survey then served as a key input to the third workshop with stakeholders. This workshop focused on finalizing transition pathways (which stipulates how the vision's targets could be achieved), as well as the development of the first initiatives to reduce regional GHG emissions. Presentation of the survey results to stakeholders offered them an impression of the extent to which the vision they developed was supported by local citizens. Additionally, the results provided the stakeholders with a sense of direction when finalizing the transition pathways and conceptualizing the climate initiatives. Immediately after the third workshop, the participating stakeholders completed a questionnaire and reflected on the relevance and usefulness of the citizens' perspectives. In addition, we conducted semi-structured interviews to gain a more detailed understanding of how stakeholders judged the inclusion of citizens. >

1 In this context, most stakeholders are also citizens of the study region.

In this article, when we refer to stakeholders, we are referring to participants in the transdisciplinary workshops.

2 In this context, regional climate neutrality is understood as achieving net zero GHG emissions, focusing only on direct local emissions (scope 1 emissions). Emissions from heating, energy conversion, transport, industry, agriculture, waste, and fugitive emissions are considered. This approach corresponds to the approach of the Swiss greenhouse gas inventory. For more information on the measurement of the regional emissions, see EBK (2022).

3 For a full written description of the vision, refer to Moser et al. (2024).

### VISION OF A CLIMATE NEUTRAL EASTERN BERNESE OBERLAND



**FIGURE 3:** A map of the Eastern Bernese Oberland region, featuring a multitude of innovations and practices, which relate to the 32 qualitative targets set out in the vision to achieve regional climate neutrality. For instance, biogas plants on farms depict the target on more sustainable “regional livestock farming” or various fossil-free mobility options (i. e., cars, buses, ships, and a snow groomer) are related to the target “CO<sub>2</sub> neutral fuels”. The full written narrative of the vision is described in Moser et al. (2024).  
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#### Citizen survey

The standardized survey was conducted online; however, respondents were given the option to request a paper-based version if they preferred<sup>4</sup>. The link to the survey was distributed via an official gazette (which every household in the region receives), as well as via posters displayed at local points of interest and on social media. This distribution method was chosen because one of the survey goals was to make the transition process more known in the region, and to give all citizens the opportunity to participate. Additionally, one of the project partners, the Regional Conference, frequently published announcements via the gazette. In this way, our communication method was a common and proven way for the project partners to communicate with the envisaged respondents – namely, local citizens. In total, 519 citizens filled out the survey. The mean age of respondents was 54 and the gender composition was 38% women and 62% men. Our sample thereby differed from the region’s average (mean age of 45 and balanced gender distribution). To reduce the length of the survey, respondents did not have to evaluate all 32 targets of the vision. Instead, the respondents were divided in two groups. While the first group evaluated the targets related to housing, agriculture/forestry, and mobility, the second group evaluated the targets related to consumption, energy, tourism, and communication/education.

#### Questionnaire with stakeholders

After each workshop, participating stakeholders filled in a questionnaire which focussed on the results of the respective workshop and the transition process. The questionnaire for the third workshop (i. e., the workshop where the survey results served as a key input) included standardized and open questions on the relevance and significance of the inclusion of citizens. Out of 34 workshop participants, 22 completed this questionnaire.

<sup>4</sup> Seven respondents chose to fill out the paper-based survey instead of the online version.

#### Interviews with stakeholders

After the third workshop, the stakeholders began the implementation of climate initiatives. During this phase, 13 semi-structured interviews were conducted. The selection of interview participants took the different sectors into account, and for each sector, at least one stakeholder was interviewed. The interviews focussed on the stakeholders’ first implementation efforts and the role social acceptance of citizens played in the development and implementation of such projects. The interviews were recorded, transcribed, and coded using a thematic analysis approach (Castleberry and Nolen 2018).

### Citizens’ evaluation of the developed vision and the transdisciplinary process

#### Evaluation of the vision’s qualitative targets

Overall, all targets were accepted by a majority of the respondents (figure 4). Nevertheless, nuances in support are clearly visible. Particularly high approval was given to the following targets (agreement greater than 90%): “utilization of natural resource potential”, which particularly focussed on the optimal utilization of local timber and biomass; “local value creation of agricultural products”; and “municipal buildings”, which stipulated that local municipalities should take a leading role in sustainable or low-energy construction. The least popular targets (agreement less than 75%) were adaptations of “building regulations”, which focussed on high-density construction; more “car-free villages”; and reducing “consumption of animal products”. It is also evident that targets in the “agriculture/forestry” sector were all rated very positively, whereas targets in the “mobility sector” were generally rated less positively. Targets in other sectors, such as consumption, displayed more variation. The target “waste and recycling” was one of the most popular, whereas reducing “consumption of animal products” was the least supported of all targets.

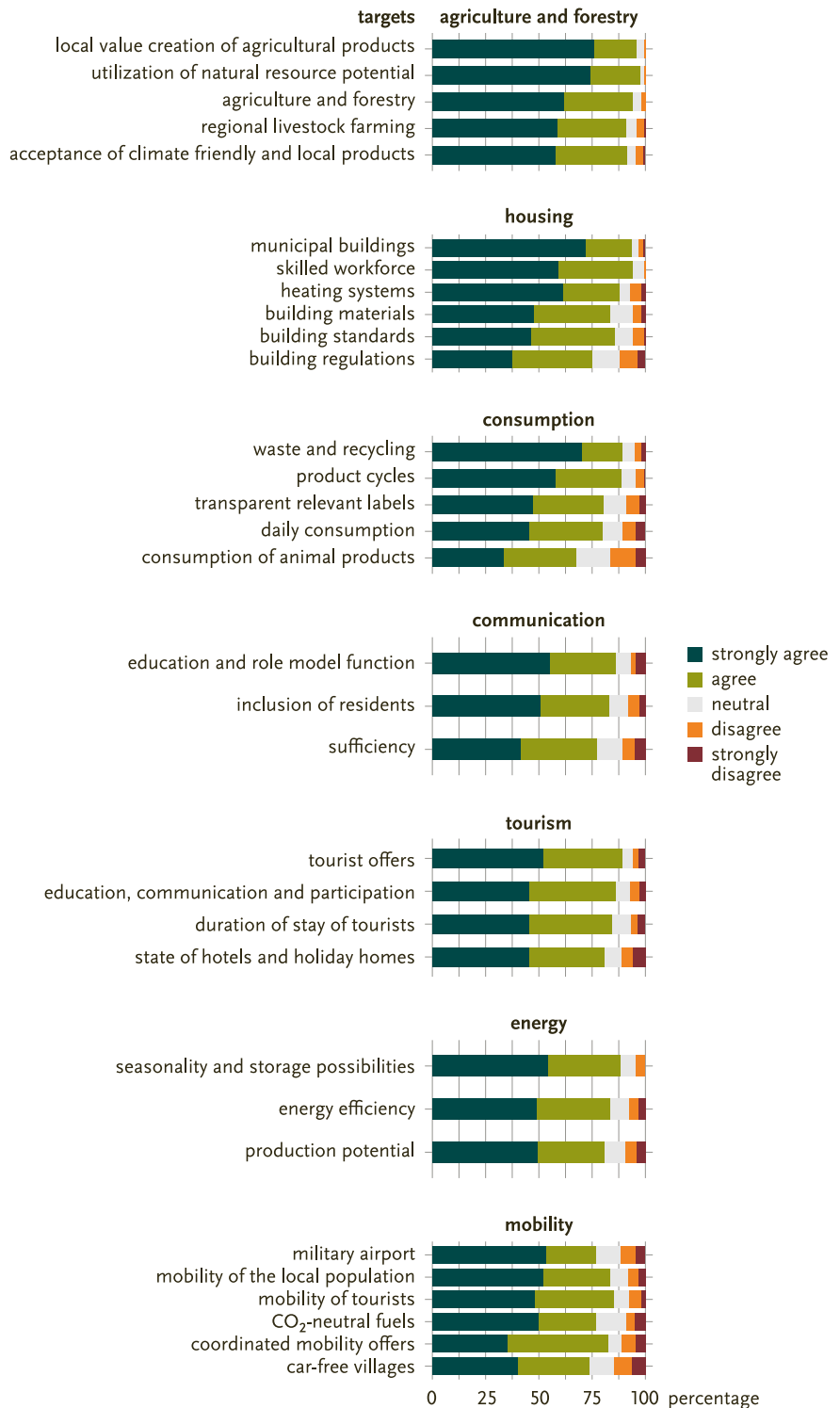
**FIGURE 4:** Citizens' acceptance of all 32 targets set out in the vision to achieve regional climate neutrality, developed by the stakeholders in the Eastern Bernese Oberland region, per sector.

**Evaluation of the transdisciplinary process**

Besides evaluating the vision and its respective targets, citizens were also asked how they viewed the transdisciplinary process overall. First, they were asked whether they supported the overall goal of developing the region towards climate neutrality. A clear majority supported this regional development goal (56.6% strongly supported; 26.9% supported it). Next, more detailed questions were asked about the transdisciplinary process. Generally, citizens assessed the process positively (figure 5, p. 300). A clear majority (44.4% strongly supported; 24.4% supported it) felt that the involved stakeholders could make a difference in terms of reducing GHG emissions, and that this process could trigger economic and societal progress (43.7% strongly supported; 26.3% supported it). Additionally, most respondents considered it important that the region takes steps to reduce its reliance on fossil fuels (48.1% strongly supported; 17.7% supported it). Finally, a majority (11.5% strongly supported; 44.6% supported it), although less strong compared to the other questions, felt that the involved stakeholders could represent their views and concerns.

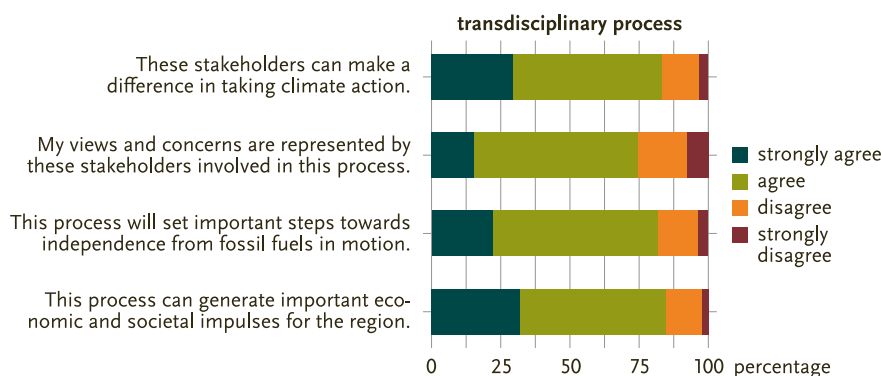
**Predictors of agreement with the vision's targets**

To gain a better understanding of the acceptance of the respondents towards the visions' targets, we conducted a multiple regression analysis<sup>5</sup>. To this end, we combined the respondent's ratings of each of the 32 targets into a single mean variable. In other words, we calculated the mean of all scores each respondent gave to the different targets. This mean score represents the respondent's overall agreement with the vision. This dependent variable was regressed according to socio-economic variables, such as age, gender, and education. Additionally, we analysed the survey item concerning how citizens viewed the legitimacy of the process (figure 5: "my views and concerns are



<sup>5</sup> The regression analysis was conducted in the statistical computing program R. Missing values were imputed using multiple imputation (Austin et al. 2021). More specifically, a Predictive Mean Matching (PMM) method, using five iterations. For the imputation of binary variables, the logistic regression (logreg) was used. Results of the imputed model were in line with that of the non-imputed model.





**FIGURE 5:** Citizens' evaluation of the transdisciplinary transition process towards a climate neutral Eastern Bernese Oberland, which featured local stakeholders jointly developing a vision and projects aimed at reducing regional greenhouse gas emissions.

represented by these stakeholders involved in this process”) to test whether the perceived legitimacy of the process explained people’s acceptance of the individual targets. Further, we also tested (as a predictor) the question of whether respondents supported the overall goal set by the Regional Conference to steer the region towards climate neutrality in the first place (climate policy). Finally, we controlled for whether the respondents assessed the targets relating to housing, agriculture/forestry, and mobility (group 1) versus those relating to consumption, energy, tourism, and communication (group 2).

The results point to positive relationships for the variables education, legitimacy, and support for the regional climate policy (table 1). A negative relationship was found for gender (male); specifically, female respondents with higher education were more likely to support the targets. Further, if respondents felt that the process was legitimate (i. e., that the stakeholder group was equipped to represent their views and concerns), they were more likely to support the targets. Support of the climate policy clearly displayed the largest positive relationship. In other words, if respondents agreed with the overall goal of the Regional Conference to steer the region towards climate neutrality, they were

much more likely to support the individual targets aimed at making this vision a reality. Age and group (survey version 1 or 2) did not show significant effects, meaning that the respondents’ age, or which version of the survey they completed, had no significant effect.

**Citizens adopting more active roles**

Notably, many respondents stated they would, indeed, appreciate being informed about the process on an ongoing basis (66.8%). In addition, 22.9% of respondents stated that they might be willing to actively participate in the process by joining future events, for instance. At the time of writing, a few – but not many – citizens had already joined events with the stakeholder group.

**Stakeholders’ evaluation of the inclusion of citizens**

In the interviews, it became evident that a lack of public acceptance had hindered stakeholders from implementing various ini-

**TABLE 1:** Regression analysis of citizen acceptance of the targets according to social demographic characteristics, as well as legitimacy and support towards the goal of regional climate neutrality in the Eastern Bernese Oberland region.

PREDICTORS	b	β	sd	p-value	2.5 %	97.5 %
age (in years)	-0.001	-0.0003	0.001	0.559	-0.003	0.003
gender (female vs. male)	-0.167	-0.181	0.05	< 0.001	-0.268	-0.093
education (other vs. university degree)	0.127	0.104	0.05	0.013	0.009	0.2
legitimacy of the process <sup>a</sup>	0.148	0.126	0.035	< 0.001	0.061	0.191
regional climate policy <sup>b</sup>	0.439	0.448	0.023	< 0.001	0.398	0.497
group (1 vs. 2)	-0.035	-0.027	0.045	0.41	0.132	0.078
adjusted R <sup>2</sup> (variance explained)	0.596					
model fit (F-test)	F (6, 506) = 61.13, p < 0.001					

a answer scale of 1 = strongly disagree to 4 = strongly agree; b answer scale of 1 = strongly disagree to 5 = strongly agree.

b: unstandardized regression coefficient  
 β: standardized regression coefficient  
 sd: standard deviation  
 p-value: probability value  
 2.5%: lower bound of the 95% confidence interval  
 97.5%: upper bound of the 95% confidence interval  
 R<sup>2</sup>: coefficient of determination

tiatives aimed at reducing GHG emissions in the past. For instance, the construction of a biogas plant was blocked due to public appeals, and local firms had refrained from exploring renewable energy projects due to fears of public backlash. This showed that public acceptance was considered an important issue by stakeholders.

*There have been efforts to build a biogas plant in the past; however, these did not materialize due to public appeals and concerns about unpleasant smells.* interview 1

After the third workshop, stakeholders were asked what they thought about the survey of citizens and whether it supported their activities. The majority of stakeholders were rather positive about the survey, as 81.8% highly valued the inclusion of citizens' perspectives in this way. This point was reiterated during interviews: six out of the 13 interviewed stakeholders said it was very valuable to gain an understanding of the perspectives of local citizens.

*It is certainly important for us to get a sense of what the population thinks. I find this very interesting information, to see where there is already a strong willingness to act. This enables you to react accordingly and take appropriate measures. I think such a survey is an important tool.* interview 4

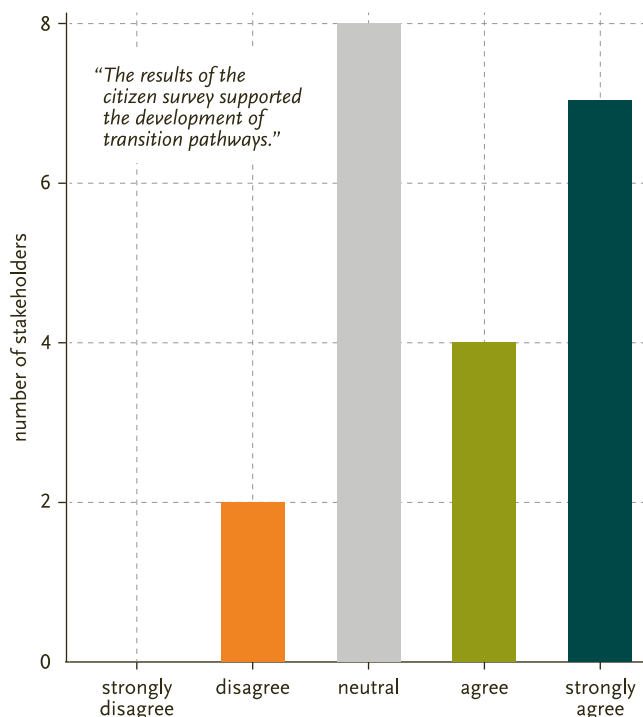
Additionally, the fact that the survey was conducted by an academic partner was seen as advantageous. One stakeholder stated that a survey conducted by their own organization would be susceptible to biases among the public.

*If something comes from our organization, then one part of the population would welcome it and another part would not. Therefore, it is better when something like a survey comes from someone neutral, to prevent prejudices.* interview 10

No clear negative comments were made by the stakeholders on the principle of including the perspective of citizens in the process. Some stakeholders did however question how this was done and how useful the citizens' feedback was (figure 6). A slight majority of the stakeholders agreed that the survey results supported the development of the pathways (33.3% totally agreed; 19% agreed). However, a large share was neutral (38.1%) and the remaining 9.5% disagreed.

Our interviews provided more detailed insights into these relatively differentiated results. Four stakeholders described how information on public opinion informed their thinking when conceptualizing local projects or measures.

*Take for example a biogas plant: this should be approved by a vote with the citizens. If there is a lot of feedback from the village that they also want this, there is a much greater chance that it will be implemented. If only a small proportion of the population supports it, then it would be pointless to try.* interview 2



**FIGURE 6:** Evaluation of stakeholders who participated in the third workshop and were responsible for developing ideas to reduce regional greenhouse gas emissions, regarding the extent to which the results of the citizens' survey were useful to them.

However, the risk of drawing generalized conclusions about public views was also cited by one respondent. As this respondent observed, public appeals are frequently initiated by a rather small group who feel particularly strongly about a certain issue or are particularly affected by a certain project.

*Also, one should not see the general public as one homogenous group; for instance, with public appeals, it is often a small group with particular interests.* interview 4

Additionally, the targets presented in the survey were rather broad and one stakeholder noted that positive survey responses should not be interpreted as support for specific projects or measures. For this purpose, it was noted, it could be worthwhile to conduct an additional survey.

*Maybe one could do another survey to gain feedback for specific project ideas that have come up. I think that could be something that would be good.* interview 10

Finally, one stakeholder reflected on why, up to this point, not a lot of citizens joined the stakeholder group (as citizens were given the option to join such events after completing the survey).

*There was an invitation to take part in a workshop. But it was during the day and that is difficult because most people work during the day, of course. If you want to include the locals, you have to organize it at other times.*

interview 8

## Discussion

Through investigating how both citizens and stakeholders in the Eastern Bernese Oberland region evaluate the described transdisciplinary process we provide insights into how such processes can be designed in a more just and inclusive manner.

### Evaluation of the vision and the process by citizens

Even though survey respondents evaluated all targets positively, differences in levels of acceptance give hints where local support for projects could be most easily found. For example, targets such as “car-free villages” or reducing “consumption of animal products”, which were among the least popular, might be more difficult to implement. The gains of these less-popular targets may need to be more explicitly communicated to improve the chances of acceptance compared to targets that already enjoy relatively high rates of approval. Positive attitudes towards the targets were most strongly associated with citizens’ approval of the overall goal set by the Regional Conference (i. e., achieving regional climate neutrality). Another, albeit weaker, predictor of

tanovic et al. 2019). The survey results enabled the stakeholders to do precisely this. At the same time, our research suggested that anticipated public acceptance (or lack thereof) can shape stakeholders’ motivation to engage in specific activities in the first place. For instance, some stakeholders were hesitant to explore certain renewable energy projects because they feared such projects would be met with public opposition. This further highlights the value of including citizens’ perspectives. Providing stakeholders with information on what kind of activities might be supported by local citizens, could enhance their motivation to engage in such activities.

On the other hand, the results of surveys such as ours can provide a general direction for the conceptualization of projects, but they should not be interpreted as providing support for specific project ideas. This explains why several stakeholders said they were unsure how to make use of the survey insights. It was suggested to conduct an additional survey at a later stage, to gain more detailed insights into citizens’ levels of support for specific projects. Nevertheless, even follow-up surveys cannot guarantee support for a given project.

*To enable greater transparency and legitimacy, project teams must carefully consider who they include and in what manner. We argue that legitimacy and transparency can be enhanced by including local citizens by means of surveys. Our approach builds upon transition management theory and shows how such transition processes can be enhanced.*

support was that of citizens’ perception of the legitimacy of the process: when respondents felt that the selected stakeholders were fit to represent their views and concerns, they tended to evaluate the individual targets more positively. This is consistent with research by others (Hansson and Polk 2018, Lang et al. 2012) indicating that transdisciplinary settings can increase the perceived legitimacy of transition processes. By contrast, when citizens have little opportunity to influence or engage with planning processes, or if the manner in which the process is designed is perceived as unfair, higher levels of opposition are to be expected (Klaever et al. 2024). When such an evaluation by citizens is embedded in transdisciplinary processes, it can serve as a useful method to put citizens’ concerns higher on the agenda. In this way, the distribution of potential positive and negative outcomes of the process could be considered more effectively.

### Inclusion of citizens from the perspective of stakeholders

Project stakeholders greatly appreciated the use of the survey to obtain citizens’ perspectives on the transition process. Getting a feeling for public opinion was seen as valuable – even necessary – when developing initiatives to reduce GHG emissions. Indeed, sustainability initiatives typically need to be adjusted to the local context in order to gain the acceptance of citizens (Cvi-

### Designing inclusive transition management processes

According to de Geus et al. (2022), how to effectively operationalize input legitimacy (opportunities for participation) and throughput legitimacy (quality of the participation) remains underdeveloped. Regarding input legitimacy, forming a representative stakeholder group was also a challenge in the case described here. The focus was on inviting frontrunners at the start of the process did not result in a perfectly balanced stakeholder group. The agricultural sector, as well as female and younger stakeholders, were underrepresented. By providing such individuals with more opportunities to join, for instance by prioritizing inviting such underrepresented individuals over other stakeholders in comparable positions, and focusing less on the criteria of frontrunners (Wittmayer et al. 2018), their participation increased. However, despite these efforts participation of younger stakeholders remained limited. From an intergenerational justice perspective, this is problematic, as younger generations will live the longest in the envisioned region and, therefore, experience the outcomes of the transdisciplinary process (both positive and negative) for the longest time.

Further, our approach might have excluded certain groups to take part. For example, all communication was done in German, making it hard for non-German speakers to participate. Addition-



ally, some of the events occurred during the COVID-19 pandemic. During these events, stakeholders were required to provide a negative test<sup>6</sup> and wear a face mask. Individuals who might not have felt comfortable with this, might have refrained from participating.

Another approach to enhance input legitimacy is using citizens surveys as a tool to recruit stakeholders. In this way, transdisciplinary processes might reduce the risk of forming stakeholder groups that are mainly comprised of “elites of transformation” (Heidenreich 2018, de Geus et al. 2022). The fact that 22.9% of the survey respondents expressed their desire to join future events associated with the transition process, suggests that a survey can be a useful tool to recruit additional stakeholders. Finding ways to expand the initial stakeholder group is often vital, but challenging, when moving from conceptualization to implementation (Hölscher et al. 2018). In addition, the large share of survey respondents who wished to remain informed about the project gave the project team a solid group of local citizens with whom they could engage and communicate. This is an important starting point for transparent, open processes. According to Kny et al. (2023), transparent reporting is key for high-quality transdisciplinary research. In our case, however, it

resources physically joining events. Another aspect of throughput legitimacy relates to the range of possible future directions being discussed (considering shifts in norms and values). Our approach could contribute to this, as the inclusion of citizens’ perspectives might enhance the justice and legitimacy of the process in an ontological sense, further allowing the incorporation of alternative views on how the transition process could and should look like.

#### Limitations and future research

While our study provides useful insights into how citizens and stakeholders perceive the inclusion of citizens’ perspectives in transdisciplinary processes, the following limitations should be considered. For our sampling method, we opted to share the invitation link to our survey via a local gazette reaching every household with the aim to raise awareness and give all interested citizens the opportunity to bring in their perspective and join the process. While this approach may have enhanced the input legitimacy and transparency of the process, it could also have resulted in self-selection bias, such that citizens with a more positive attitude towards climate neutrality might have been overrepresented in our sample. Additionally, our sample differed

### *Issues of inclusion and legitimacy are key, as the implementation of sustainability initiatives, policies, and measures can be very challenging or even impossible without the support of local citizens.*

proved difficult to include local citizens in subsequent stakeholder events, as the stakeholders’ preferred events during work hours while the citizens could typically only join at other times. Thus, the timing of future events is crucial to better involve citizens. Additionally, differences in compensation for participation may need to be considered when both citizens and stakeholders are involved. In our case, citizens participated in events during their free time, whereas stakeholders (e. g., a representative of a local energy firm) participated as part of their job.

Regarding the quality of the participation (throughput legitimacy), it is evident that citizens bringing in their perspectives via a survey is a much lower degree of participation compared to participating in workshops. The latter gives much more opportunity to engage and influence the transition process. However, this is not necessarily negative, as varying grades of involvement can be appropriate depending on the context (Schneider and Buser 2018). The fact that 22.9% of the respondents would like to become more actively involved, also implies that most respondents might be satisfied by simply providing their perspective via the survey and do not wish to spend more time and

demographically from the regions’ average, as men and older respondents were overrepresented. Because of this, our survey results are not generalizable or transferrable to other regions. Instead, they should mainly be seen as a means to improve the transparency and legitimacy of transdisciplinary processes. Future research could explore ways of enhancing the participation of citizens in a more representative manner. Regarding the regression analysis, we used the mean acceptance of all 32 targets combined to create a single variable for the analysis. This approach does not, however, account for differences between the individual targets. Further, our survey was conducted at an early stage of the process to ensure that citizens’ perspectives could be incorporated in the development of the vision and transition pathways, and to allow citizens the chance to join future events. However, as mentioned in the interviews, conducting a survey at a later stage of the process might also be worthwhile to get more detailed (possibly more useful) insights to assist the stakeholders in designing transformative activities towards the vision. Similarly, it is hard to draw causal links between the feedback of the citizens and the development of specific projects aimed at reducing GHG emissions. The citizens’ perspectives were only one among many other factors (such as funding, available expertise, and local regulations), that stakeholders considered when developing concrete projects. Future research could therefore

<sup>6</sup> Free and anonymous testing was provided to the stakeholders, to lower the threshold for individuals to participate as much as possible under the given circumstances.

explore whether and how a survey at a later stage in the process can further enhance project legitimacy and participation, for example by also asking citizens to provide feedback on concrete project ideas.

## Conclusion and implications

This study investigated how the inclusion of citizens' perspectives influences transdisciplinary transition processes. While such processes are known to support transformative change, they also raise concerns about societal inclusion and legitimacy. Usually, project leaders select and invite participants from various organizations representing science, society, and government. However, such dynamics run the risk of creating "elites of transformation" (Heidenreich 2018). To enable greater transparency and legitimacy, project teams must carefully consider who they include and in what manner. We argue that legitimacy and transparency can be enhanced by including local citizens by means of surveys. Our approach builds upon transition management theory and shows how such transition processes can be enhanced.

Transition processes in other contexts could build on these insights and further explore how to integrate citizens' perspectives in the project design, and how this could inform the activities of stakeholders. Further, a survey can serve as a useful method to enhance input legitimacy, when used to provide respon-

dents the opportunity to join a stakeholder group. Although our case showed that stakeholders found the citizens' perspectives very valuable, they were sometimes unsure about how to incorporate their feedback in practice. This highlights a need to deliberately explore what degree and quality of citizen participation might support transition processes best. For instance, in addition to feedback on the developed vision, conducting follow-up surveys to gain feedback on concrete activities, which aim to translate the vision to practice, could contribute to this.

Issues of inclusion and legitimacy are key, as the implementation of sustainability initiatives, policies, and measures can be very challenging or even impossible without the support of local citizens. Although designing a perfectly inclusive and representative process might be close to impossible, this should not dissuade researchers and practitioners to try to optimize inclusiveness of transdisciplinary projects to the best of their abilities. In this way, the legitimacy and transparency of transformative processes can be improved for the benefit of all.

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