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Goedkoop, Fleur

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4

UNPACKING THE ROLE OF TRUST FOR INVOLVEMENT IN COMMUNITY ENERGY INITIATIVES: A MIXED METHODS APPROACH

This chapter is based on Goedkoop, F., Dijkstra, J., & Flache, A.
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Abstract

CEIs involve collective action, potentially generating collective benefits both to the local community and society at large from which others cannot be excluded, next to private benefits. For collective action problems to be addressed, especially the trust that resides within social relations is of importance. Despite the emphasis on trust in the literature, micro-level quantitative evidence that trust induces people to contribute to CEIs is scarce. CEIs interact with actors at different societal levels such as (national or regional) governments, local municipalities, energy companies and NGO's, community associations. This multilayered social environment renders both interpersonal trust (between people) and institutional trust potentially important for CEIs. It is not self-evident that trust in these distinct actors at different levels would have similar implications for participation. Furthermore, it is important to examine the social mechanisms underlying the trust – participation link. Theoretically, trust is hypothesized to impact cooperation mainly because it raises expectations that other people will also contribute to the collective action. We make a distinction between initiators (N= 45) and community members (N=398) with various levels of intention to participate. Results show that general trust in institutions and neighbors does not contribute to involvement in CEIs by community members, but the specific expectation that other community members will do. For initiators, findings indicate that low expectations either regarding the government or about the prospect of involvement of community members, actually contributes to taking the lead. Theoretical and practical implications arising from our findings are discussed.

4.1 Introduction

Many bottom-up community energy initiatives (CEIs hereafter) have emerged in recent years (Bauwens et al., 2015; Magnani & Osti, 2016). Typically, a CEI is initiated by community members aiming to promote more sustainable energy behaviors in their local community, making them distinct from projects managed by government agencies, NGO's or energy companies. One of the main challenges of setting up a successful CEI is for the initiators to engage other community members. Notably, participation in CEIs partly involves collective action potentially generating benefits both to the local community and society at large from which others cannot be excluded (e.g., Bauwens, 2017; Bell et al., 2005; Bomberg & McEwen, 2012; Brewer & Stern, 2005; Kalkbrenner & Roosen, 2016). On the one hand the non-excludability of (at least a part of) the benefits generated by a CEI incentivizes people to free-ride on the efforts of others (Olson, 1965). On the other hand, it is often stated that such relatively small-scale initiatives may be well positioned to successfully solve free rider problems and organize collective action, because they can build on pre-existing trust relationships within the community (e.g. E. Ostrom & Walker, 2003; Walker et al., 2010).

Indeed, considering CEIs, trust within communities has been shown to be important for their success (Haggett et al., 2013; Seyfang & Smith, 2007; Sovacool, 2014; Walker et al., 2010; Wüstenhagen et al., 2007). However, despite the emphasis on trust in the literature, micro-level quantitative evidence that trust induces community members to participate in CEIs is scarce. Existing studies usually take the initiators as the unit of analysis (Boon & Dieperink, 2014; Haggett et al., 2013; Seyfang & Haxeltine, 2012; Van Veelen, 2018) or rely on qualitative data with small samples of participants (e.g., Dóci & Vasileiadou, 2015). These approaches likely lead to hindsight bias: "if there is a successful outcome, the analyst often posits that trust has caused it" (Zand, 2016, p. 69). Studies that take a broader perspective rely on samples of the general population (Kalkbrenner & Roosen, 2016; Koirala et al., 2018) and as such, trust is not linked to a concrete CEI in which actual participation is a real possibility. The current study extends this body of knowledge by investigating the role of trust in contributing to participation among a sample of community members living in a community in which a CEI was underway at the time it was conducted, including both community members and initiators of the CEI, using a mixed methods approach.

Apart from these methodological limitations of the current state of the art, a conceptual challenge is that *different forms of trust* can be related differently to initiative involvement. In fact, we know relatively little about the working of different forms of trust when it comes to CEIs. When trust is investigated at the individual level, it is usually conceptualized as "generalized trust" (Kalkbrenner & Roosen, 2016), representing the degree to which respondents trust "most people". This generalized trust concept mainly refers to trust between relatively unfamiliar people (Delhey, Newton, & Welzel, 2011; Nannestad, 2008), measuring out-group trust more than trust in family and neighbors. Yet, CEIs interact with actors at different societal levels such as (national or regional) governments, local municipalities, energy companies and NGO's, community associations and, crucially, neighbors within the community. This multilayered social environment renders both interpersonal trust (between people) and institutional trust potentially important for CEIs. It is not self-evident that trust in these distinct actors at different levels would have similar implications for participation. For

example, while trust in neighbors might increase CEI participation, it may be especially a *lack* of trust in the ability of government to provide sustainable energy solutions that mobilizes people for collective action in a CEI (Greenberg et al., 2013).

In addition to these methodological and conceptual issues it is important to examine the social mechanisms underlying the trust – participation link. Theoretically, trust is hypothesized to impact cooperation mainly because it raises *expectations* that other people will also contribute to the collective action (Ostrom, 1998; Sønderskov, 2008). Consequently, participation not merely hinges on general trust, but on the specific expectations that others will cooperate as well (Axelrod & Hamilton, 1981; Bettencourt et al., 1992; Kollock, 1994; Lubell, 2004; Oliver, 1984; E. Ostrom & Walker, 2003). This expectation follows, for example, from the notion that even selfish rational actors would be willing to contribute given universal conditional cooperation by all participants (Flache & Dijkstra, 2015). However, the trust – expectations – participation pathway is not self-evident and empirically contested. For example, previous experimental research found general trust and expectations about other people's contributions not to be associated (Dijkstra, 2013).

In this study, we unpack the concept of trust in the context of CEI participation. We move beyond existing research by distinguishing interpersonal from institutional trust, and separating trust from specific expectations people hold regarding the participation of others. This allows us to paint a more comprehensive picture of the role of trust regarding participation in CEIs.

We use data from seven communities in the Netherlands where a CEI was recently initiated. We make a distinction between initiators (N= 45) and community members (N=398) with various levels of intention to participate. Since there are relatively few initiators compared to the general sample, we additionally conducted semi-structured interviews among eight initiators to get a more comprehensive picture of whether and how trust affects participation for both the initiators and the community members.

4.2 Theoretical background

4.2.1 Collective action in CEIs in the start-up phase

Participation in CEIs partly resembles collective action (e.g., Bauwens, 2017; Bell et al., 2005; Brewer & Stern, 2005; Kalkbrenner & Roosen, 2016) since it generates both private benefits such as a return on investment or green electricity at a lower price and collective benefits such as contributions to a better environment, benefits to the local economy (e.g., through the hiring of local contractors or merchants), increased social cohesion, collective efficacy through cooperation, and contributions to local and national resource independence (Seyfang et al., 2014; Seyfang & Haxeltine, 2012; Sokona et al., 2012).

The collective action feature of CEIs and the dilemmas to which this may lead are especially prominent in the start-up phase of project development since at this point costs and risks are highest. CEIs involve innovative organizational techniques and governance structures, financial ambiguities, and legal complexities. Community members typically lack accurate information about what to expect from these projects in terms of their viability, results, required efforts, and involved parties. Consequently, in the start-up phase, the decision to

participate in a CEI is complicated by high levels of uncertainty. For instance, it is hard for individual community members to foresee how dependable the new energy cooperation will be (e.g., how well organized they will be), and energy prices, determining the profitability of joining, are equally hard to predict. Moreover, any time and effort spent volunteering for the CEI is lost in case the initiative does not deliver. In such circumstances of high uncertainty, existing trust relations can foster cooperation of community members in a CEI (cf. Siegrist & Cvetkovich, 2000). Alternatively, cooperation must be backed up by some form of institutional setting deemed reliable and trustworthy (Cook, 2005). In the next section examine the role of both institutional and interpersonal trust for an individual's decision to participate in a CEI.

4.2.2 Unpacking the role of trust

Institutional trust

Institutions are “the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights)” (North, 1991, p. 97). Institutional (or horizontal) trust generalizes beyond specific actors to an institutional system (Braithwaite & Levi, 1998; Zucker, 1986). Thus, institutional trust means trusting that an institution fulfils its role in a satisfactory matter to an individual (Cheibub, Przeworski, Limongi Neto, & Alvarez, 1996). For example, it is the trust that given sets of rules governing a specific social system will remain applicable and well-functioning in the future. Or that the government and other agencies will effectively carry out the tasks assigned to them according to the rules laid out in relevant laws and regulations. Previous research focusing on renewable energy projects set up by governments or developers found that trust in responsible agents is positively related to public acceptability of risky technologies (Midden & Huijts, 2009; Siegrist & Cvetkovich, 2000) and renewable energy projects (Huijts, Molin, & Steg, 2012; Liu, Bouman, Perlaviciute, & Steg, 2019). A lack of trust often hinders acceptance (Terwel, Mors, & Daamen, 2012) and can contribute to public objections to projects (Barry, Ellis, & Robinson, 2008; Cass, Walker, & Devine-Wright, 2010). The increase in CEIs could be interpreted as a response to the declining role of the state over the past decades in many societal domains such as agriculture, infrastructure, and energy (De Moor, 2015). It might be exactly this lack of trust that induces people to politically participate in more unconventional ways, while high trust in the government seems to be related to inertia (Gamson, 1968). For example, previous research on political protests has shown that low trust in larger institutions actually increases the incentive to take action (Dalton & Wattenberg, 2002; Inglehart, 1990). Thus, the lack of institutional trust may drive people to take matters in their own hands and engage in CEIs.

Yet, CEIs also depend on a supportive institutional environment to be successful (Kemp & Rotmans, 2005). Erratic (renewable) energy policies implemented by governmental institutions increase uncertainty regarding the future development of renewable energy technologies (Devine-Wright, 2007; Goedkoop & Devine-Wright, 2016), impacting CEI effectiveness and profitability. Considering the multilayered social environment in which CEIs find themselves, we propose a distinction should be made between national government and local governments such as municipalities. CEIs are located in a local context and therefore predominantly interact with local actors (Nolden, 2013; Oteman et al., 2014). Especially in

the Netherlands, local governments have some authority in setting up their own programs to foster the energy transition (Warbroek, 2019). Not only are local governments typically more trusted than national governments (van der Werff & Steg, 2016), trust in local institutions may thus motivate people to participate in CEIs whereas overreliance on national governments to take action is expected to breed inertia. These two contrary mechanisms linking institutional trust and CEI involvement lead us to the following contrasting hypotheses:

Hypothesis 1: The more trust people have in the national government, the less willing they are to participate in a CEI.

Hypothesis 2: The more trust people have in the local government, the more willing they are to participate in a CEI.

Interpersonal trust

Interpersonal trust is defined here as “a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another person” (Rousseau, Sitkin, Burt, & Camerer, 1998, p. 395). It has been argued that CEIs are often more embedded in existing local trust relations compared to projects set up by external actors and it is exactly this feature that renders them promising. The ability to draw upon such existing personal trust relations between community members, can ensure that CEIs are developed in ways which are adjusted to local interests and needs (Koirala et al., 2018; Walker et al., 2010) and it enables cooperation, communication and commitment to the collective good (e.g., Misztal, 1996; E. Ostrom & Walker, 2003; Putnam, 1993). We thus expect the following:

Hypothesis 3: The more trust individuals have in community members, the more willing they are to participate in a CEI.

More specifically, interpersonal trust entails the notion of the belief or expectation that others will participate, too (Kollock, 1994; Oliver, 1984; E. Ostrom & Walker, 2003). People do not generally behave as pure rational actors but as conditional cooperators (Fischbacher et al., 2001). This is consistent with the idea from game-theoretical research on cooperation that conditional cooperative strategies in a context of “shadow of the future”, such as tit-for-tat strategies¹⁶, can help solve cooperation problems (Axelrod, 1984). The idea is that people do not merely opt for such strategies to protect themselves from being exploited and carrying the costs of providing the collective action (E. Ostrom, 1998), but also since otherwise they cannot benefit themselves from the ongoing cooperation (since others protect themselves against exploitation by playing this strategy). With regard to CEIs, especially the assurance that others will take action and make similar sacrifices seems important for participation. In fact, theoretically these expectations are an important conduit for the operation of trust, since mutual cooperation between people generally requires that trust is established providing assurance that others will cooperate as well (Bauwens, 2017; Sønderskov, 2008). Thus, general trust in neighbors might feed into a norm of reciprocity by raising the expectation that most people will cooperate. Furthermore, trust in the contributions of others may be important for

16. This strategy entails cooperation in the first round and subsequently mimic the actions of the other person

the belief in the feasibility of the initiative (cf. Lindenberg, 2014). Since engagement of other community members is crucial for an initiative to be successful, the belief that others will contribute reduces uncertainty about a CEI's potential for success. This leads to the following hypotheses:

Hypothesis 4: Individuals who expect more community members to participate, are more willing to participate in a CEI

Hypothesis 5: The more trust individuals have in other community members, the more other community members they expect to participate in a CEI, and the more willing they are to participate in a CEI (mediation hypothesis)

4.3 Method

This research was conducted among initiators and community inhabitants of seven communities in the northern part of the Netherlands. Five communities were located in rural areas and two were city neighborhoods. Within all of these communities a CEI was initiated by a small group of inhabitants varying from 5 to 9 in size. We combine interview data of initiators of CEIs with survey data of community inhabitants of these communities. The data contain 45 initiators of which 8 were interviewed in-depth, and 398 community inhabitants (see detailed description below). Different kinds and degrees of participation exist (Hoffman & High-Pippert, 2010; Walker & Devine-Wright, 2008), both financial (investing) and non-financial (e.g., volunteering) (Kalkbrenner & Roosen, 2016; Koirala et al., 2018). Since people could not formally sign up as initiative members yet, we examined two indicators of CEI involvement, namely people's willingness to participate in the initiative (in terms of volunteering for and financially investing in the initiative) and their actual (self-reported) attendance of an initiative meeting.

4.3.1 Data collection

The study was conducted via a self-administered questionnaire in seven local communities in the Netherlands in which a CEI had recently started. Data was collected within these seven communities between 2015 and 2018, after an information evening about these initiatives had been organized. All initiatives aim to make their local community energy neutral within the next ten years (produce all energy that is used sustainably). The initiatives follow different strategies to achieve this goal, for example creating awareness regarding energy saving and renewable energy alternatives, offering schemes for collective purchase of solar cells, or encouraging participation in community owned sustainable energy projects. All of these communities were supported by the Dutch foundation "Together Towards Energy Neutrality" (*Stichting Samen Energieneutraal*, n.d. see appendix for description on vision and goals SEN), which provided advice and functioned as an umbrella network organization for all the local initiatives.

First, an information letter about the upcoming study with a short initial survey containing a request for participation was sent to community members door-to-door (administered in Dutch). We asked one adult resident per household to fill out the survey and send it back to

us, to indicate whether they were willing to participate in the study. These invitations were accompanied by a prepaid response envelope. In the short survey, people could indicate whether they would like to receive an email with a link to an online questionnaire or request a paper version of the questionnaire that would be sent to them via regular mail; in this case, they needed to fill out their address details. In addition, questionnaires were delivered door-to-door to a random sample of initially approached households who had not responded to our first request for participation.

The total number of households approached for the main questionnaire was 1886, of which 579 completed the questionnaire (response rate for the main questionnaire: 30%, ranging from 26% to 41% across communities). Of all main questionnaires 49% were completed online and 51% on paper. We separated the data from all respondents who indicated to be initiators of the projects, leading to a sample of 534 community member respondents and 45 initiators. To facilitate comparisons between the different analysis steps, the sample of community members is limited to respondents who have non-missing values on all variables used in this study, resulting in 398 cases.

Of the community members, 57% were male and 43% female, with a mean age of 57.11 ($SD = 14.18$), which is quite high but similar compared to other studies on CEIs (e.g., Sloot et al., 2018). Most respondents had either completed secondary vocational education or training (30%) or higher education (46%). The median household income level was 2,000-2,900 euros net per month (ranging from less than a 1,000 euros net per month to 4,000 or more). Of the initiators, 74% indicated to be male and 26% female, with a mean age of 58.45 ($SD=10.68$). Most of the initiators had completed higher education (80%) and the median household income level for this group was 3,000-3,999 euros net per month (see for all descriptive statistics Table 4.1).

4.3.2 Operationalization of variables

Willingness to participate in the community energy initiative. We first briefly informed respondents about the local initiative via the following statement: “The following questions are concerned with energy saving and sustainable energy production via community energy initiatives. The research focuses specifically on an initiative, initiated by community members, which started recently in this community named [add name].” Willingness to participate was then measured via two questions¹⁷: “Do you want to volunteer in this community energy initiative” and “Do you want to financially invest in this community energy initiative?”. Answers could be (0) no; (1) maybe; (2) yes; (3) already participating or already financially contributing; this last category was excluded from the analyses because they do not capture willingness to participate, and only initiators were “already participating” at the point of data collection. The questions were strongly positively correlated $r_s(398) = .55; p < .01$. As answering either one of these questions indicates a willingness to become involved, we combined these two items by using a maximum score, that is, using the highest score on either of the two questions for each respondent [no] 23.3%; [maybe] 60.2%; [yes] 16.4%.

Initiative meeting attendance. One item asked respondents whether or not they had attended an information meeting about the initiative that had been organized prior to data collection. Respondents could respond with [no] 80.4% or [yes] 19.6%.

Interpersonal trust was measured using the statement “to what extent do you trust your

17. In two communities a more general question was asked: “Do you want to participate in the initiative?”.

neighbors"¹⁸ (all trust questions were based on the Longitudinal Internet Studies for the Social sciences panel administered by CentERdata, Tilburg University, the Netherlands). Answers were provided on a 5-point scale ranging from (0) "never" to (4) "always" ($M = 2.74$, $SD = 0.69$).

Institutional trust was measured using two statements indicating "to what extent do you generally trust the municipality" and "to what extent do you generally trust the national government". Again, answers were provided on a 5-point scale ranging from (0) "never" to (4) "always" ($M = 2.36$, $SD = 0.85$; $M = 2.08$, $SD = 0.96$).

Expectations neighbors was measured via the question "How many neighbors do you think are willing to participate in the community energy initiative?". Answers could range on a 5 point scale from (0) "none" to (4) "most neighbors" ($M = 3.04$, $SD = 0.92$).

Control variables.

In all analyses we control for the nested structure of the data (community members within communities) by including community fixed effects using dummy coding for the communities. Second, we expect people to be more willing to participate when they value the initiative more. Thus, we also include a measurement of respondent's personal sustainable energy motivation as a measure of general interest in the collective good. This was assessed via three items (Sloot et al., 2018): "I find it important to be conscious about my energy behavior", "I find it important to reduce my energy consumption", and "I find it important to use sustainable energy". Answers were provided on a 7-point scale ranging from (1) completely disagree to (7) completely agree ($\alpha = 0.83$). Furthermore, we controlled for the number of other organizational memberships to determine whether some people are simply "joiners" as this has been found to be positively related to social movement participation (McAdam & Paulsen, 1993). In addition, education has been shown to be related to concern about the environment, with highly educated people being more concerned compared to lower educated people and organizational activities usually require skills that are more common among educated people. Level of education was measured using the following question: "What is your highest level of education obtained" which could be answered on a 9 point scale ranging from (0) no education to (8) a university degree. Level of education is categorized in three levels: (0) low, (1) medium and (2) high. Furthermore, since women generally report stronger environmental behaviors compared to men, we also take gender differences into account (See Gifford & Nilsson, 2014 for an overview).

18. This is a translation of the Dutch word "buurtgenoten" which encompasses a broader range of people living within near proximity, rather than merely next-door neighbors.

Table 4.1: Descriptive statistics of the variables included in the analysis for the sample of initiators ($N=45$) and community members ($N=398$)

Variable name	Initiators		Community members	
	Mean	S.D.	Mean	S.D.
Trust government	2.20	0.84	2.08	0.96
Trust municipality	2.38	0.81	2.36	0.85
Trust neighbors	2.73	0.61	2.74	0.69
Expectation participation	2.49	0.81	3.04	0.92
Personal sustainable energy motivation	6.13	0.68	5.49	1.03
Associational memberships	2.88	2.03	1.46	1.71
Variable name	Value	Percent	Value	Percent
Gender	Male	73.0	50.1	56.8
	Female	17.0	49.9	43.2
Education	Low	6.5	10.0	10.6
	Medium	12.9	59.0	29.6
	High	80.6	31.0	59.8

Descriptive results regarding the community members showed that, as expected, respondents had more trust in neighbors compared to the government or municipality and trust in neighbors was generally quite high ($M = 2.74$, $SD = 0.69$) (see for differences between communities Appendix 2). In addition, most people estimated that relatively many community members wanted to participate in the initiative ($M = 3.04$, $SD = 0.92$). Finally, respondents' personal sustainable energy motivation was relatively high ($M = 5.49$, $SD = 1.03$). Initiators score quite similar on the general trust measures compared to community members, while the expectations regarding the participation of others seems somewhat lower for the initiators ($M = 2.49$, $SD = 0.81$). In addition, initiators seem to have a higher personal motivation to engage in sustainable behaviors. Finally, the number of associational memberships is almost twice as high for initiators compared to community members.

4.4 Plan of analyses

All data was analyzed using R (R Core Team, 2017). We examined the relationships between institutional trust, interpersonal trust, and the expectation regarding other community members' participation, and the two indicators of initiative involvement by estimating a proportional odds model (for willingness to participate) and logistic regression analyses (for initiative meeting attendance). Since in proportional odds models one equation is estimated for all transitions in adjacent levels of the dependent variable, it is assumed that slopes are equal across these transitions (proportional odds assumption; Brant, 1990). A Brant test showed that this assumption cannot be rejected based on these data. First, we estimated the effect of both indicators of institutional trust and interpersonal trust on willingness to participate and initiative meeting attendance (Table 4.3; model 1a & 4b; model 1). Next, to test our mediation hypothesis, we estimated a linear regression model with the expectations of other community members as the outcome variable (Table 4.3; model 1b). In a next step, we added the perception of the contribution of other community members to the first model

(Tables 4.3 & 4.4; model 2). Finally, we added all control variables to this model (Tables 4.3 & 4.4, model 3). Hypotheses are tested on these final models. Coefficients are shown in ordered log-odds. Although similar slopes are estimates for the different levels of the dependent variable, different thresholds are estimated, one for each transition of the dependent variable (no-maybe and maybe-yes). Interpretation of these thresholds is comparable to the constant term in binary logistic regression.

4.5 Results

4.5.1 Results quantitative data

Table 4.2: Correlations between all dependent and independent variables used in the analyses

	1.	2.	3.	4.	5.
1. Trust government					
2. Trust municipality	.71***				
3. Trust neighbors	.38***	.48***			
4. Expectation neighbors	.11	-.04	-.08		
5. Willingness to participate	.18***	.13**	.08	.13**	
6. Initiative meeting attendance	.11*	.12*	.15**	.03	.09**

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Correlations between the two outcome variables and the predictors were computed using the Spearman rank coefficient, the intercorrelation between the two outcome variables is assessed via a Cramer's V (see Appendix 1 for chi-square test).

Bivariate results (see Table 4.2) showed that our two indicators of institutional trust, trust in the national government and trust in the local municipality, were closely related ($r = .71$; $p < .001$). In addition, interpersonal trust was also positively and significantly related to trust in the municipality ($r = .48$; $p < .001$) and the government ($r = .38$; $p < .001$). However, interpersonal trust was negatively related to the expectations regarding neighbors' willingness to participate ($r = -.08$; $p = .081$). When it comes to our outcome variables, trust in the national government and trust in the local municipality were both positively significantly related to willingness to participate ($r_s = .18$; $p < .001$, $r_s = .13$; $p = .009$) and to attending an initiative meeting ($(r_s = .11$; $p = .04$, $r_s = .12$; $p = .03$). Interpersonal trust was only significantly related to attending an initiative meeting ($r_s = .15$; $p = .004$), whereas the expectations regarding neighbors' willingness to participate was only significantly related to willingness to participate ($r_s = .13$; $p = .01$, $r_s = .03$; $p = .597$).

Regression analyses showed that trust in the national government was positively significantly related to willingness to participate in the first model (Table 4.3; model 1, $b = 0.43$; $p = .018$) but that this effect did not remain significant after adding our control variables (Table 4.3; model 3, $b = 0.25$; $p = .133$). Furthermore, trust in the national government was not significantly associated with a greater likelihood to attend an initiative meeting in the final model (Table 4.4; model 3, $b = -0.01$; $p = .963$). This is not in line with H1 stating that the more state-level institutional trust people have, the less willing they are to participate in a CEI. Trust in the local municipality was also not related to willingness to participate (Table 4.3; model 3, $b = 0.07$; $p = .719$) or initiative meeting attendance (Table 4.4; model 3, $b = 0.19$; $p = .524$). This is also not in line with H2 stating that the more local-level institutional trust people have,

the more willing they are to participate in a CEI. Note that while bivariate analyses showed these concepts to be closely related, variance inflation factor scores indicated no severe multicollinearity problems (a maximum of 2.39). The final model provided the best fit with the data based on the AIC criterium, compared to the other models.

When it comes to interpersonal trust, our findings showed that trust in neighbors was also not related to willingness to participate (Table 4.3; model 3 $b = 0.29$; $p = .129$) nor to initiative meeting attendance (Table 4.4; model 3 $b = 0.21$; $p = .447$). This is not in line with H3 indicating that the more trust individuals have in community members, the more willing they are to participate in a CEI. In addition, results from the mediation analyses (model 1^b) showed no significant effect of trust in neighbors on the expected willingness of others to participate (Table 4.3; $b = 0.03$; $p = .720$) but did show a significant effect for trust in the national government ($b = 0.15$; $p = .019$). These results however refute H5 (mediation hypothesis) stating that the more trust individuals have in other community members, the higher the expectation about their contribution the CEI, and the more willing they are to participate. Yet, partly in line with H4, results did show that the expectation of other community members to participate in the initiative had a positive and significant effect on willingness to participate (Table 4.3; $b = 0.58$; $p < .001$) but not to attend an initiative meeting (Table 4.4; $b = 0.11$; $p = .601$). Also here, the final model provided the best fit with the data.

4.5.1.1 Covariates

The coefficients of the control variables were generally in line with the results found in previous research. Community members who adhered to a stronger personal motivation to engage in sustainable energy behavior were more likely to get involved and attend an initiative meeting, just as community members who were a member of one or more associations. Community members who were highly educated were also more willing to get involved but not to attend an initiative meeting. Finally, women were less likely to both be willing to participate or attend a meeting compared to men.

Table 4.3: Proportional odds model of willingness to participate. Unstandardized coefficients (N=398)

	Model 1 ^a		Model 1 ^b		Model 2 ^a		Model 3	
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Threshold 1	-1.60	0.89	1.92***	0.37	-0.74	0.93	1.12	1.34
Threshold 2	1.49	0.90			2.44	0.94	4.60***	1.16
Trust government	0.43**	0.16	0.15*	0.06	0.36**	0.16	0.25	0.17
Trust municipality	-0.04	0.19	-0.10	0.07	0.00	0.19	0.07	0.20
Trust neighbors	0.16	0.18	0.03	0.07	0.16	0.18	0.29	0.19
Expectation neighbors					0.47***	0.13	0.58***	0.14
Female [male = ref]							-0.63**	0.23
Education [Low= ref]								
Medium							0.59	0.38
High							-0.29	0.39
Personal motivation							0.39***	0.11
Associational memberships							0.24***	0.07
AIC	701.25				690.36		658.61	

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Controlling for community fixed effects.

^a Outcome variable is willingness to participate, threshold 1 is the intercept, ^b outcome variable is expectation neighbors

Table 4.4: Logistic regression of initiative meeting attendance. Unstandardized coefficients (N=398)

	Model 1		Model 2		Model 3	
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Intercept	-3.88**	1.25	-3.17**	1.29	-7.64***	1.97
Trust government	0.12	0.22	0.14	0.23	-0.01	0.24
Trust municipality	0.09	0.26	0.06	0.27	0.19	0.29
Trust neighbors	0.37	0.25	0.38	0.25	0.21	0.28
Expectation neighbors			0.14	0.18	0.11	0.19
Female [male = ref]					-1.54***	0.35
Education [low= ref]						
Medium					2.90**	1.13
High					1.94	1.11
Personal motivation					0.36*	0.17
Associational memberships					0.38***	0.09
AIC	354.31		355.66		314.03	

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Controlling for community fixed effects.

4.5.1.2 Supplementary analyses and robustness checks

We conducted several supplementary analyses. First, as a robustness check, we re-ran the model on a mean instead of a max score computed from the two indicators for willingness to participate. This yielded identical results in terms of significance. Second, due to the relative high level of missing data (25%), we additionally conducted all analyses after imputing these missing values. We obtained similar results as when the analyses were restricted to the complete cases only sample (see appendix 3 for more details and results after imputation). Third, since long term residents have been shown to trust neighbors more (Greenberg, 2014) and are usually more integrated in the community, we additionally controlled for the years a person was living in the community. Since this was not related to either dependent variable and did not change results substantially, for power reasons it was not included in the final analyses. Fourth, we conducted explorative analyses on trust in initiators specifically. This was indeed strongly significantly associated with both outcomes of involvement. Since trust in initiators reflects the capabilities of initiators setting up a CEI, instead of more general trust in other community members, this was not taken into account in the main analysis. Finally, in all these initiatives, the initiators absorb the highest costs of time, effort, and resources (Kemp & Rotmans, 2005) with high uncertainty about the rewards making them likely distinct from community members. For this reason, we re-ran our analysis with initiators included. We found similar results for our trust measures except for the effect of the expectation regarding other people's participation, which became smaller. Since there were relatively few initiators, to gain a better understanding of potential differences between initiators and community members regarding the working of trust and expectations, interviews were conducted with initiators from the initiatives included in this study.

4.6 Interviews with initiators

4.6.1 Method

Face-to-face interviews with eight initiators were conducted between March 2015 and April 2016, and lasted approximately one hour each (all conducted by the same interviewer). The actual interviews were preceded by a pilot interview. All interviews were conducted in Dutch. We asked questions about initiators' opinions on the initiative and its progress, how they felt about other initiators and community members, other parties with whom they collaborated, and whether and how these aspects influenced their decision to take the lead in setting-up such initiatives.

4.6.2 Plan of analyses

Each interview was recorded with the permission of the participants, transcribed, and subsequently coded using the program Atlas.ti. A partly deductive, partly inductive procedure was followed during the analyses, which followed a thematic approach (Joffe, 2011). Analysis, encompassing coding and interpretation, was conducted by one of the authors but discussed with a trained researcher and assistant to ensure inter-rater reliability. This specifically has been recommended to increase the dependability of small-sample qualitative energy research

(Bickerstaff, Devine-Wright, & Butler, 2015). Our understanding of the data was additionally informed by monthly meetings of the CEIs in three communities, at which notes were taken of group discussions in addition to other documents that were available such as meeting minutes.

4.6.3 Findings

Concerning the different forms of trust, issues regarding institutional trust and trust in the participation of the community at large were mentioned more often than general trust in neighbors. This relatively greater emphasis on institutional trust may be a reflection of the fact that these projects were in the starting phase of project development in which the main focus is on attracting subsidies and building a sound business model, as indicated by one of the initiators:

“It’s hard to start without money, so that is our first concern” (Initiator 1)

There were however differences between initiators in this regard. Whereas for some initiatives an indication of the support from the community was mentioned to be crucial prior to starting the project, for others this was merely expressed as a concern later on in project development when members needed to be recruited.

*“You have to start somewhere,
we then agreed upon starting with the inhabitants” (Initiator 5)*

Partly, this may be related to the specific (sub) goals of these initiatives. While some focus more on renewable energy delivery, others focus more on creating awareness and fostering behavioral change.

Institutional trust

Our in-depth interviews with initiators revealed particularly low trust in the national government and specifically its contribution to a greener society and support for CEIs. There was consensus among all initiators that setting up CEIs in practice and sustaining the motivation to move these initiatives forward were hampered by a perception of ‘macro’ level instability in Dutch energy policy and a lack of tailored support.

“The government is occupied with it [the energy transition], but if you look at how much green energy is actually generated in the Netherlands, it is ridiculously little” (Initiator 1)

This is in line with the idea that CEIs are often initiated as a response to the declining role of the state over the past decades in many societal domains, trying to fill the perceived gaps left (De Moor, 2015). Indeed, it seems that, at least in part, distrust actually spurs initiators into action (e.g., Gamson, 1968), contrary to our findings for community members. However, just as community members, initiators expressed higher trust in the local level government compared to the national government, especially regarding the support for CEIs. Importantly, trust was expressed more often among initiators who actively engaged with actors within the local government, had personal contact with them, and who were often more highly educated as well.

“Yes they are genuinely interested and I feel like they want to support us. Of course they have reservations but they are generally interested and that is already quite something”
(Initiator 4)

“The municipality has been interested from the start and has made a subsidy available and so the interest is definitely there” (initiator 6)

Yet, many initiators expressed significant doubts about the actual support of the municipality for CEIs when it comes to for example funding arrangements. These doubts do seem to be potentially problematic for (sustained) motivation for the project.

“Actions speak louder than words, I mean they are all very cooperative when it does not cost any money, but when something needs to be signed they back out immediately” (Initiator 7)

Especially, there was consensus among initiators that conditions for subsidies are problematic, hindering the progress of the project.

“Certainly when you apply for subsidies, there will be all kinds of conditions attached to it which comes at the price of our autonomy” (initiator 2)

This seems to be a wider concern in various European countries, where funding schemes increasingly rely on competitive mechanisms such as auctions (Bauwens, 2019).

Interpersonal trust and expectations

In addition to concerns about institutional support, the interviews revealed concerns about willingness of other community members to get involved. Especially, there is quite some uncertainty among initiators about the possible contributions of other community members in the start-up phase.

“We are still very much exploring, how much support there is within the community, how many people possibly want to participate” (Initiator 5)

Generally, in line with our descriptive results, initiators hold quite pessimistic views about the contributions of other community members and are quite skeptical of their neighbors' cooperativeness as indicated by the following statements:

“People in general just don't do much, they are scared of changes, they have a ‘wait and see’ mentality. Well, let's show them! When nobody does anything, nothing will happen you know” (Initiator 4)

This is in line with previous research on volunteering in local cooperatives more generally (Oliver, 1984), and it shows that although members are often more optimistic than nonmembers about prospects of collective action, active members are more pessimistic about such prospects. Activists are often perfectly aware of the fact that they give others to the opportunity to free ride on their efforts, but this is actually part of their motivation to take action. Oliver (1984) refers to this as “the paradox of community life”; people who are

most positive and trusting about their neighbors may engage less because they believe others will take care of the problems and absorb the organizational costs, in their view rendering it unnecessary to take action themselves.

A particular distinction between people who were born in the community and people who moved there at a later stage in their life came up during the interviews. Often, initiators who were active in CEIs migrated to the communities at later stages and were more engaged in community development in general, as also indicated by the relative higher number of associational memberships among initiators. Mostly, 'incomers' (Creamer et al., 2018) in our study expressed a concern with the willingness of local residents to participate in the project and mentioned the local residents to particularly "wait and see".

"With the original villagers it is a bit more difficult. Not all of them are cheering you on you know, not at all" (Initiator 5)

However, most initiators believed that with time, a substantial amount of community members could be attracted:

"You can attract people who initially think negatively about the initiative, it's possible, but then you have to show them some results, show them that people are deeply involved. It's a snowball effect really, in the long term I mean" (Initiator 7)

"The further you come along the way, the more support there is, I am convinced of that" (Initiator 8)

Thus, not only were initiators particularly highly motivated to take action for the environment, it seems that they are spurred into action by the idea that otherwise no action will emerge and the collective good will not be provided. Yet, lower trust in municipalities seemed to interfere with beliefs about the feasibility of the project, especially in early stages when CEIs often rely on external resources funding arrangements and planning consent.

4.7 Conclusion & discussion

This research addressed the question of whether different forms of trust in different actors had different effects on participation in CEIs. By doing so, a distinction was made between initiators and community members, using both surveys and in-depth interviews. First of all, for community members, we found little evidence that institutional trust, both in the national government and the local municipality, was associated with involvement in a CEI. If anything, trust in the national government seemed positively related to participation for community members instead of negatively. Indeed, it may be that to some extent local cooperation must be backed up by some form of institutional setting people deem reliable and trustworthy (Cook, 2005). Furthermore, as we had contrasting hypotheses on the working of trust, these effects might cancel each other out. Additionally, trust in the government may have an indirect effect, increasing the legitimacy of the initiators of a project, for example via securing their access to sufficient resources and legal expertise.

When it comes to interpersonal trust, we did not find trust in neighbors to be related to participation. This is in contrast with findings from limited previous research (Kalkbrenner & Roosen, 2016; Koirala et al., 2018), examining general attitudes towards involvement instead of willingness to participate in a specific local project as was done in this study. Thus, while trust may be related to a positive attitude towards participation, when it comes to contributing to an actual initiative, this relationship seems to be much weaker. Thus, while previous research found trust in the community to matter (Haggett et al., 2013; Seyfang & Smith, 2007; Sovacool, 2014; Walker et al., 2010; Wüstenhagen et al., 2007), we showed that on the micro level, general trust in neighbors may not be as crucial for participation. This highlights the importance of looking beyond the initiators of CEIs in order to investigate involvement of community members in CEIs.

Interestingly, trust in neighbors was also not indirectly related to involvement via the expectation that other community members would participate in the CEI. Thus, contrary to previous research and our expectations (E. Ostrom & Walker, 2003; Sønderskov, 2008), general trust in neighbors did not feed into a norm of reciprocity by raising the expectation that most people will cooperate. This is however in line with findings from experimental research indicating that general trust and expectations about other people's contributions may not always be associated (Dijkstra, 2013). One explanation for our findings on interpersonal trust could be that the working of trust is context specific. As Hardin (2002, p. 9) states: "I might ordinarily trust you with even the most damaging gossip but not with the price of today's lunch. While some I might trust with almost everything, some I might trust with almost nothing, others I only trust in some specific contexts". Thus, maybe I do not trust my neighbor with the key to my house, but I do trust that my neighbor would participate in a CEI. And, while generally trusting my neighbor may feed into a general reciprocity expectations, it might not lead to the specific expectation of cooperation within a CEI. Future research could examine this by for example taking multiple, more specific, contexts into account when measuring trust.

Yet, in line with previous research (e.g., Kollock, 1994; Oliver, 1984; E. Ostrom & Walker, 2003), the perception of the cooperativeness of other community members was itself directly positively associated willingness participate in a CEI (but not initiative meeting attendance). Thus, the working of interpersonal trust might be more complex than highlighted in previous research on CEIs. Future research could assess possible mechanisms underlying the relation between expectations and involvement (e.g., signaling, efficacy beliefs, fear of being exploited, and reciprocity). For example, such research could examine whether it is an increased believe in the feasibility of the project based on the confidence in the contributions of others that leads to increased cooperation (Lindenberg, 2014).

For initiators, descriptive results and interviews revealed a lack of institutional trust, especially in the national government but, in line with our theorizing, this actually seems to spur them on. However, a lack of trust in the local municipality is likely to be disruptive of the belief in the feasibility of the initiative. Furthermore, most initiators seemed quite uncertain about the participation of other community members at the start-up phase of the initiative. Importantly, while the expectations regarding other community member's participation was found to be positively related to involvement for community members, for initiators the (expected) lack of action in the community seems to motivate them to take action. This seems to indicate that while community members may indeed merely cooperate conditionally on the expected cooperation of others (Ostrom, 1998), initiators seem to behave like unconditional

cooperators, contributing to the collective good in any case. Thus, besides expected differences with regard to the socio-economic background between initiators and community members, there seem to be additional differences between initiators and community members. Future research with bigger sample sizes, especially for the group of initiators, should test these implications in order to make more firm claims about such differences.

4.6.2 Limitations

Before we discuss the policy implications of these findings, we want to consider some limitations of the study. One limitation is that we did not take generalized trust into account. This did not allow us to compare to what extent generalized trust is related to CEI involvement and our more specific measures of institutional and interpersonal trust. Next, due to the cross-sectional design we were unable to draw firm conclusions concerning causality. This may be problematic since “trust lubricates cooperation and cooperation builds trust” (Putnam, 1993; p.171) and trust has been identified as both a necessary characteristic but also a potential outcome of cooperative behavior (Walker et al., 2010). In addition, at least partly, the skepticism about the cooperation of other community members might merely be a consequence rather than a cause of involvement; for example, for some initiators this may be the result of experienced frustration in the process of getting people involved. Yet, since initiatives within the investigated communities were still in the start-up phase, trust is not likely to be developed by cooperation within the initiative. Finally, we kept our focus relatively narrow measuring trust in the government using a single item concept. Yet, institutional trust can relate to governmental institutions more generally or the political leaders currently in charge of them (Blind, 2007). The latter is usually referred to as political trust. Furthermore, a distinction can be made between trust in competence (ability to function) and trust in the intentions (fairness of the system) (e.g., Nooteboom, 2007). While not being the focus of this study, it would be interesting for future research to include multiple measures of institutional trust to gain a more comprehensive picture of its relation to involvement in CEIs.

4.6.3 Policy implications

While we did not find institutional trust to matter for involvement, initiators seem in part to take action due to their dissatisfaction with the actions taken by the government. To be sure, this does not imply that a supporting government is not needed for the success of these initiatives. Interviews revealed how a lack of support in the form of, e.g., funding possibilities and available expertise contributes to uncertainty about the viability of the project. Indeed, many projects depend on a supportive institutional environment to be successful (Kemp & Rotmans, 2005) and stability in this government support is equally important. Second, as we found the expectation of community members regarding fellow community member’s participation to matter for involvement, initiators and policymakers could appeal to such expectations. This may be especially important since people often think others behave less sustainably compared to themselves (Bouman & Steg, 2019; Chapter 2 this thesis). By doing so, initiators and policymakers should carefully align such messages with the actual interest in the community to avoid discrepancy between this actual interest and the conveyed expectations which can potentially undermine such approach (Cialdini, 2003). Finally, our results show that the working of trust might be more complex than highlighted in previous research on CEIs. These findings represent an important step in the scientific understanding of the role of trust for involvement in CEIs and for developing effective strategies for participation.

Appendices

Appendix 1. Chi-squared test between initiative meeting attendance and willingness to participate

Table 4.5: Chi-squared test between initiative meeting attendance and willingness to participate

		Willingness to participate		
		No	Maybe	Yes
Initiative meeting attendance	No	21.2%	50.3%	8.9%
	Yes	2.9 %	10.2%	6.5%

$\chi^2 (2, N = 398) = 24.64, p < .001$

Appendix 2. Descriptive statistics per community

Table 4.6: Descriptive statistics per community

	Com 1		Com 2		Com 3		Com 4		Com 5		Com 6		Com 7	
	RURAL Percent	Mean	RURAL Percent	Mean	RURAL Percent	Mean	RURAL Percent	Mean	URBAN Percent	Mean	RURAL Percent	Mean	RURAL Percent	Mean
Willingness to participate:														
No	20.0	31.8	19.2	23.2	30.6	20.7	27.7							
Maybe	50.0	40.9	42.6	68.4	62.9	74.1	65.9							
Yes	30.0	27.3	38.2	8.4	6.5	5.2	6.4							
Initiative meeting attendance														
No	80.0	68.2	82.4	85.3	54.8	96.5	87.2							
Yes	20.0	31.8	17.6	14.7	45.2	3.5	12.8							
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Trust government	2.24	0.96	1.54	1.14	2.35	0.92	2.24	0.78	2.19	0.76	1.20	1.05	2.02	0.83
Trust municipality	3.03	0.64	2.45	0.91	2.63	0.68	2.32	0.73	2.46	0.69	1.58	0.91	2.22	0.90
Trust neighbors	3.39	0.55	2.72	0.77	3.02	0.51	2.76	0.51	2.81	0.65	2.07	0.58	2.35	0.78

Appendix 3. Results after imputation

The percentage missing values across all variables used for this study varied from 0.9 to 14.8% (Table 4.7 gives the missing data rates of each variable with a total of 136 out of 534 records who were incomplete (25%)). The relative high number of missingness when considering all variables used for analyses in this study shows quite an arbitrary pattern of missingness overall. Multiple imputation (MI) was used to create and analyze 50 multiple imputed datasets. As rule of thumb the number of multiple imputed datasets should be at least equal to the highest missingness per variable (15 in this case). Yet, it is always better to use a higher number of imputed datasets (Van Buuren, 2018). We used multiple imputation by chained equation (MICE; see for more information on MI Groothuis-Oudshoorn & Van Buuren, 2011) to impute the variable(s). All available variables in the dataset were used as predictors for the missing data per variable. Scale items were imputed first and consequently used for the creation of the scales using passive imputation. Used correctly, MI will “neither improve collected data, nor ignore obtained information” (Manly & Wells, 2014, p. 399) and can be used for data with both continuous and categorical variables (Van Buuren, 2007; Van Buuren, Brand, Groothuis-Oudshoorn, & Rubin, 2006). Variables were imputed using predictive mean matching. Since predictive mean matching imputes only values that are observed, the original categories of the categorical variables remain preserved. Estimates per imputed dataset were combined using Rubin’s rules.

Table 4.7: Percentage missing values per variable

Variable	Percent Missing
Willingness to participate	3.9
initiative meeting attendance	4.3
Trust government	1.1
Trust municipality	1.3
Trust neighbors	3.7
Expectation neighbors	14.8
Gender	8.1
Education	8.9
Personal motivation	0.9
Associational memberships	6.7

Table 4.8: Proportional odds model of willingness to participate after imputation. Unstandardized coefficients (N=534)

	Model 1 ^a			Model 1 ^b			Model 2 ^a			Model 3		
	Estimate	S.E.	FMI	Estimate	S.E.	FMI	Estimate	S.E.	FMI	Estimate	S.E.	FMI
Threshold 1	-1.10	0.77	0.04	2.21***	0.33	0.14	-0.34	0.82	0.05	1.76	1.00	0.07
Threshold 2	1.92	0.78	0.04				2.75	0.84	0.05	4.10***	1.03	0.07
Trust government	0.33*	0.15	0.04	0.08	0.06	0.11	0.30*	0.15	0.03	0.27	0.15	0.05
Trust municipality	-0.14	0.17	0.05	-0.01	0.07	0.13	-0.14	0.17	0.04	-0.12	0.17	0.06
Trust neighbors	0.05	0.16	0.05	0.04	0.07	0.14	0.03	0.16	0.06	0.15	0.16	0.06
Expectation neighbors							0.36**	0.12	0.11	0.40**	0.12	0.10
Female [male = ref]										-0.71**	0.20	0.10
Education [low= ref]												
Medium												
High												
Personal motivation										0.09	0.34	0.11
Associational memberships										0.68*	0.32	0.10
										0.14***	0.03	0.09
										0.17***	0.06	0.10

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Controlling for community fixed effects. ^a Outcome variable is willingness to participate, threshold 1 is the intercept, ^b outcome variable is expectation neighbors. FMI indicates the fraction of missing information; it shows the proportion of variation that is attributable to the missing data

Table 4.9: Logistic regression of initiative meeting attendance. Unstandardized coefficients (N=534)

	Model 1			Model 2			Model 3		
	Estimate	S.E.	FMI	Estimate	S.E.	FMI	Estimate	S.E.	FMI
Intercept	-3.81***	1.07	0.05	-3.07**	1.13	0.06	-7.61***	1.86	0.14
Trust government	0.06	0.20	0.05	0.08	0.20	0.05	-0.06	0.23	0.08
Trust municipality	0.05	0.24	0.05	0.04	0.24	0.05	0.17	0.27	0.07
Trust neighbors	0.41*	0.20	0.05	0.40	0.21	0.05	0.26	0.23	0.07
Expectation neighbors				0.32*	0.16	0.17	0.34	0.18	0.18
Female [male = ref]							-1.31***	0.31	0.17
Education [low= ref]							2.24*	1.09	0.22
Medium							2.99**	1.08	0.23
High							0.14**	0.05	0.15
Personal motivation							0.39***	0.08	0.08
Associational memberships									

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Controlling for community fixed effects. FMI indicates the fraction of missing information; it shows the proportion of variation that is attributable to the missing data

