University of Groningen

In it for the money, the environment, or the community? Motives for being involved in community energy initiatives

Sloot, Daniel; Jans, Lise; Steg, Linda

Published in:
Global Environmental Change

DOI:
[10.1016/j.gloenvcha.2019.101936](https://doi.org/10.1016/j.gloenvcha.2019.101936)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2019

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Sloot, D., Jans, L., & Steg, L. (2019). In it for the money, the environment, or the community? Motives for being involved in community energy initiatives. *Global Environmental Change*, 57, [101936].
<https://doi.org/10.1016/j.gloenvcha.2019.101936>

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

In it for the money, the environment, or the community? Motives for being involved in community energy initiatives

Daniel Sloot*, Lise Jans, Linda Steg

University of Groningen, the Netherlands

ARTICLE INFO

Keywords:

Environmental motives
Financial motives
Communal motives
Community energy initiatives
Sustainable behaviour
Initiative involvement

ABSTRACT

Community energy initiatives can foster a sustainable energy transition by promoting sustainable energy behaviour in the communities in which they are embedded. This raises the question of what motivates people to become involved in these initiatives. We investigated the importance of financial, environmental, and communal motives for initiative involvement. We propose that communal motives (i.e., being involved in one's local community) may be related to initiative involvement, as community energy initiatives not only aim to promote sustainable energy behaviour but also enable people to be involved in their community. Across three studies, respondents rated financial and environmental motives as more important than communal motives for their involvement in community energy initiatives. Yet, environmental and communal motives were uniquely related to initiative involvement, while financial motives were not. The discrepancy between which motives people rate as important and which motives actually relate to their initiative involvement suggests that financial motives are an overrated motive, while communal motives are an underrated motive for involvement in community energy initiatives. Our results suggest that targeting communal motives may be an additional way to enhance involvement in community energy initiatives and foster sustainable behaviour among people, who may not otherwise be interested in environmental protection.

1. Introduction

Community energy initiatives are seen as potentially effective approaches to facilitate a sustainable energy transition (Intergovernmental Panel on Climate Change, 2018; Seyfang and Haxeltine, 2012). These initiatives are typically formed by community members from the bottom up in order to promote sustainable energy behaviour within their community (Middlemiss and Parrish, 2010; Seyfang and Smith, 2007). Examples include initiatives that invest in local renewable energy production or promote energy efficiency and energy saving behaviours in local communities. Recent research has shown that, on top of people's personal motivations for engaging in sustainable energy behaviour, involvement in such initiatives indeed motivates sustainable energy behaviour (Sloot et al., 2018). Yet, typically, only a few community members actually become involved in such initiatives (e.g., Bomberg and McEwen, 2012). This raises the question of what motivates involvement in a community energy initiative in the first place.

In this paper, we propose that in addition to financial motives (i.e., saving money) and environmental motives (i.e., protecting the

environment), communal motives may underlie involvement in community energy initiatives. Notably, community energy initiatives offer people the opportunity to become involved in their community, which may provide an additional motivation for being involved in a community energy initiative (i.e., communal motives). Below, we will first provide the theoretical rationale behind our propositions. Next, we present results of three questionnaire studies to examine the relationship between the importance of financial, environmental, and communal motives and different indicators of involvement in Dutch community energy initiatives at different stages of the initiatives' existence. Finally, we summarise the main findings and discuss the theoretical and practical implications of our findings.

2. Motives for being involved in community energy initiatives

Involvement in community energy initiatives can be regarded as a type of sustainable energy behaviour, as these initiatives typically have the goal of encouraging sustainable energy behaviour within local communities (Sloot et al., 2017; Stern, 2000). People may engage in sustainable energy behaviour, such as being involved in community

* Corresponding author at: Department of Psychology, Faculty of Behavioural and Social Sciences, University of Groningen, Grote Kruisstraat 2/1, 9712 TS Groningen, the Netherlands.

E-mail address: d.sloot@rug.nl (D. Sloot).

<https://doi.org/10.1016/j.gloenvcha.2019.101936>

Received 16 December 2018; Received in revised form 3 May 2019; Accepted 16 June 2019

0959-3780/ © 2019 Elsevier Ltd. All rights reserved.

energy initiatives, because it serves their self-interest and because it serves collective interests (Dietz, 2015b). Specifically, related to the first, it is often assumed that people are motivated to engage in sustainable energy behaviour if doing so serves their self-interest, and particularly when doing so has financial benefits (cf. Frederiks et al., 2015; see also Miller, 1999). This implies that people may be motivated to be involved in a community energy initiative by financial reasons, that is, to save money. Indeed, people often indicate that financial motives play an important role in their decision to engage in sustainable energy behaviour (Bolderdijk and Steg, 2015). Yet, financial motives seem in some cases less predictive of sustainable energy behaviour than assumed (Asensio and Delmas, 2015; Bolderdijk et al., 2012; Schwartz et al., 2015). This may be because the financial benefits of some sustainable energy behaviours are seen as hardly worth the effort to change one's behaviour (Asensio and Delmas, 2015; Dietz, 2015a; Dogan et al., 2014). There is some initial evidence to suggest that people indicate that financial motives are important for their involvement in community energy initiatives (Dóci and Vasileiadou, 2014). Yet, the question remains to what extent financial motives are actually related to involvement in community energy initiatives. This paper will address this question by not only examining to what extent financial motives are rated as important in one's decision to take part in a community energy initiative but also testing to what extent financial motives are actually related to people's involvement in community energy initiatives.

Second, people are likely to consider collective or altruistic interests when engaging in sustainable energy behaviour. In particular, environmental motives (i.e., protecting the environment) may be predictive of sustainable energy behaviour, such as being involved in a community energy initiative (cf. Dietz, 2015b; Steg, 2016; Stern et al., 1999). Indeed, people seem to rate environmental motives as important for their engagement in sustainable energy behaviour (e.g., Noppers et al., 2014; Schwartz et al., 2015). Importantly, in general, environmental motives also appear to be predictive of sustainable energy behaviour, and, in some cases, even more so than financial motives (Bolderdijk et al., 2012; Schwartz et al., 2015). Environmental motives may be an important predictor of sustainable energy behaviour because many people value the environment (Steg and de Groot, 2012) and are motivated to act in line with these values (Dietz, 2015b; Steg et al., 2014). Acting pro-environmentally is perceived as meaningful, reflects positively on one's self-concept, and elicits positive feelings, all of which promotes sustainable energy behaviour (Taufik et al., 2015; Venhoeven et al., 2016). There is some evidence to suggest that environmental motives are also related to involvement in community energy initiatives (Sloot et al., 2018). Yet, the predictive power of environmental motives has not been compared to other motives for being involved in these initiatives. In line with previous studies aimed at explaining sustainable behaviour, we hypothesise that environmental motives will be rated as important for being involved in community energy initiatives, and that environmental motives will be uniquely and positively related to initiative involvement.

Interestingly, involvement in community energy initiatives may not only foster sustainable energy behaviour, but may also enable people to become more involved in their community, that is, to become connected with, and meet other members of, their community (Middlemiss and Parrish, 2010; Sloot et al., 2017). In general, people are motivated to be involved in relevant social groups (cf. Baumeister and Leary, 1995; Brewer, 1991), such as their local community. This implies that there may be an additional type of motive that predicts involvement in community energy initiatives: communal motives, which are the motives to be involved in one's community. Indeed, there is some preliminary qualitative evidence that people may become involved in community energy initiatives, because they are motivated by the community (e.g., Dóci and Vasileiadou, 2014; Hoffman and High-Pippert, 2010). Therefore, we hypothesise that communal motives may predict involvement in community energy initiatives, on top of

financial and environmental motives, as people may not only be interested in engaging in sustainable energy behaviour but also in becoming more involved in their community, both of which can be fostered by being involved in community energy initiatives. We investigate to what extent people rate communal motives as important in their decision to be involved in community energy initiatives, and to what extent communal motives are uniquely related to involvement in community energy initiatives, next to financial and environmental motives.

We tested our reasoning for different indicators of involvement in community energy initiatives, reflecting different stages in a person's decision process to become involved. First, a person might express an *interest to join* a community energy initiative, which precedes any potential actual involvement. Interest to join is thus a meaningful indicator of involvement among people who have not (yet) joined the initiative. However, people with an interest to join may not always actually join the initiative (cf. Kollmuss and Agyeman, 2002). Thus, a second important indicator of initiative involvement is *initiative membership*, reflecting the actual behaviour of being involved. Third, among initiative members, the level of psychological involvement is a relevant factor (Ellemers et al., 1999), as reflected in their level of *identification* with the initiative. Community energy initiative members may be more likely to behave in line with the goals and values of their initiative when they more strongly identify with it (Ellemers et al., 1999; Fritsche et al., 2018). Indeed, the more initiative members identify with their community energy initiative, the more likely they are to engage in sustainable energy behaviour (Sloot et al., 2018). Notably, below a certain level of initiative identification, community energy initiative members are just as likely to engage (or not engage) in sustainable energy behaviours as non-members. On the basis of the above, we consider three indicators of involvement in community energy initiatives: interest to join the initiative, initiative membership, and the level of identification with the initiative.

3. Overview of studies

Across three questionnaire studies, we examined the extent to which people *rated* financial, environmental, and communal motives as important for being involved in a community energy initiative. We expected that people would rate financial and environmental motives as important for involvement in their initiative, but also examined the extent to which they rated communal motives as important. Importantly, as research suggests that what people directly state as important for their actions does not necessarily predict their actions (Nolan et al., 2008; Noppers et al., 2014), we investigated to what extent the three motives are actually *related* to three indicators of community energy initiative involvement: interest to join, initiative membership, and initiative identification. In line with previous research on sustainable energy behaviour, we expected that environmental motives would be uniquely (i.e., when taking the respective other motives into account) and positively related to actual initiative involvement, whereas financial motives might be less strongly related. Additionally, we expected that communal motives would be uniquely and positively related to actual initiative involvement.

We tested our propositions with three studies in different neighbourhoods throughout the Netherlands, where a community energy initiative was planned or has been in place for some time. All initiatives were part of a network of Dutch initiatives named 'Buurkracht' (which roughly translates to 'neighbour power'; Buurkracht, 2018). Buurkracht has the declared goal of promoting sustainable energy behaviour in neighbourhoods and supports community energy initiatives emerging under its label in reaching this goal, by, for example, providing promotional materials and energy saving advice. The three studies examined community energy initiatives in different stages of their existence. Specifically, Study 1 was conducted in a neighbourhood before a Buurkracht initiative was officially launched in this neighbourhood.

We examined to what extent financial, environmental, and communal motives were related to people's interest to join the future initiative. Study 2 was conducted at two points in time among both initiative members and non-members in nine neighbourhoods in which Buurkracht initiatives had recently officially been launched. In Study 2a, the Buurkracht initiatives had only been recruiting members for less than two months and, consequently, had relatively few members. Study 2b surveyed both members and non-members of the same initiatives approximately four months later. Studies 2a and 2b allowed us to examine the importance of the three motives in explaining all three indicators of involvement in community energy initiatives (interest to join among non-members, initiative membership, and initiative identification among members). Study 3 was conducted in 29 neighbourhoods among members of Buurkracht initiatives that had already been in place for at least six months. This study aimed to examine the importance of the three motives in explaining members' initiative identification.

4. Study 1

4.1. Method

4.1.1. Procedure and participants

We pilot tested our data collection procedure that we used in all three studies and comprehensibility of the questionnaire in one neighbourhood prior to data collection (in July 2015). In September 2016, Study 1 was conducted in a neighbourhood where initiative takers (i.e. a small group of community members who started the initiative) were setting up a new Buurkracht initiative. In the questionnaire, we briefly introduced the planned Buurkracht initiative and its goals to promote sustainable energy behaviour and indicated that people in the neighbourhood would soon be invited to become involved in this new initiative. Research assistants approached all relevant households that would be invited to join the Buurkracht initiative, asking one adult resident to fill in a questionnaire (administered in Dutch). Households were approached at least twice in cases where residents were not home the first time. In cases of multiple unsuccessful attempts, questionnaires with prepaid response envelopes were left in mailboxes. Completed questionnaires were picked up by research assistants or could be sent back by the respondents in a prepaid response envelope; no reminders were sent. One-hundred and thirty respondents (54% women, $M_{Age} = 51.60$ years, $SD = 19.02$) completed the questionnaire (response rate: 31%).

4.1.2. Measures

The questionnaires included items on, among others, financial, environmental, and communal motives to become involved in the Buurkracht initiative and interest to join the initiative. Table 1 provides an overview of all measures across the three studies.

4.1.2.1. Motives. Financial, environmental, and communal motives to become involved in the Buurkracht initiative were measured with single items, following the question 'If you would take part in the new Buurkracht initiative, to what extent would the following reasons play a role for you?'. Respondents indicated to what extent the following reasons would play a role in their consideration to take part in the new Buurkracht initiative: 'Save money' (financial motive), 'Contribute to a better environment' (environmental motive), and 'Be involved in my neighbourhood' (communal motive); phrasings for the financial and environmental motive items were adapted from Noppers et al. (2014). Responses could vary from 1 'absolutely not' to 7 'absolutely yes'. Means and standard deviations are displayed in Table 3.

4.1.2.2. Interest to join the future Buurkracht initiative. Two items measured respondents' interest to join the future Buurkracht initiative: 'I would like to know more about the Buurkracht initiative in my neighbourhood' and 'I am considering joining the new

Buurkracht initiative in my neighbourhood'; scores could vary from 1 'not at all' to 7 'very much'. Items were strongly correlated ($r_{SB} = .91$); we computed the mean score for these items ($M = 4.66$, $SD = 1.41$).

4.2. Results and discussion

The data of all studies were analysed using IBM SPSS Statistics version 24. A repeated-measures ANOVA (specifying the motives as the within-subjects factor) with Bonferroni-adjusted post-hoc tests indicated that when asked directly, respondents rated both financial and environmental motives as more important than communal motives for their consideration to take part in the Buurkracht initiative that would be started in their neighbourhood, $F(2, 234) = 34.14$, $p < 0.001$, $\eta_p^2 = .226$; $\Delta M = 1.03$ and $\Delta M = 1.12$, respectively; for both post-hoc tests, $ps < .001$. Conversely, post-hoc tests indicated no significant difference between the importance of financial and that of environmental motives ($\Delta M = 0.09$; $p = 1.00$; see Table 3 for descriptive statistics).

Importantly, communal motives and particularly environmental motives were more strongly correlated with interest to join the Buurkracht initiative than financial motives (see Table 2 for bivariate correlations). Moreover, a multiple regression analysis of interest to join the Buurkracht initiative on financial, environmental, and communal motives revealed that only environmental and communal motives were uniquely positively related to interest to join the future Buurkracht initiative, whereas financial motives were not significantly related with interest to join, $F(3114) = 22.94$, $p < 0.001$, $R^2 = .38$ (see Table 3 coefficients and significance tests for all predictors). Hence, when asked directly, people rated communal motives less important for their consideration to take part in the Buurkracht initiative than financial and environmental motives. Yet, as expected, both communal and environmental motives were significantly and positively related to their interest to join the Buurkracht initiative, while financial motives were not.

5. Study 2a

Study 2 examined people's involvement in community energy initiatives in a larger sample comprising nine Buurkracht initiatives that had already been set up, at two points in time: in a very early phase of mobilising community members to join the initiatives (Study 2a) and approximately four months later, when more people had joined the initiatives (Study 2b). We examined to what extent the three types of motives were related to all three indicators of initiative involvement: interest to join (among non-members), initiative membership, and initiative identification (among members).

5.1. Method

5.1.1. Procedure and participants

We selected nine neighbourhoods in which a Buurkracht initiative had recently been set up and asked all residents to fill in a questionnaire using the same procedure as described in Study 1. Data were collected between December 2016 and May 2017. Inhabitants had been invited to join as initiative members at maximum two months prior to data collection. In total, 377 questionnaires were filled in (48% women; $M_{Age} = 51.83$ years, $SD = 22.76$; response rate: 23%).

5.1.2. Measures

Respondents completed a questionnaire that examined, among other items, the three indicators of initiative involvement and financial, environmental, and communal motives to become involved in the Buurkracht initiative (see Table 1). The questionnaire also provided a very brief description of the Buurkracht initiative's aims.

5.1.2.1. Motives. Respondents were asked to what extent financial,

Table 1
Measures and items for all studies.

	Study 1	Study 2	Study 3
Motives	If you would take part in the new Buurkracht initiative, to what extent would the following reasons play a role for you? (1 = <i>absolutely not</i> , 7 = <i>absolutely yes</i>)	To what extent do the following reasons play a role for you in your consideration to take part in the Buurkracht initiative in your neighbourhood? (1 = <i>not at all</i> , 7 = <i>very much</i>)	Why do you take part in your Buurkracht initiative? (1 = <i>completely disagree</i> , 7 = <i>completely agree</i>)
<i>Financial</i>	- Save money	- Save money	- Because I want to save money
<i>Environmental</i>	- Contribute to a better environment	- Contribute to a better environment	- Because I want to contribute to a better environment
<i>Communal</i>	- Be involved in my neighbourhood	- Increase involvement in the neighbourhood	- Because I like to do things together with my neighbours
Interest to join	Please indicate to what extent you agree with the following statements (1 = <i>not at all</i> , 7 = <i>very much</i>)	- Strengthen relations within the neighbourhood To what extent do you agree with the following statements? (1 = <i>completely agree</i> , 7 = <i>completely disagree</i>)	- Because I want to get to know my neighbours better
	- I would like to know more about the Buurkracht initiative in my neighbourhood	- I would like to know more about the Buurkracht initiative in my neighbourhood	
	- I am considering joining the new Buurkracht initiative in my neighbourhood	- I plan to join the Buurkracht initiative in my neighbourhood in the future	
Initiative membership		- I am interested in the Buurkracht initiative Are you a member of the Buurkracht initiative in your neighbourhood? <i>yes/no</i>	
Initiative identification		The following statements are about your participation in the Buurkracht initiative in your neighbourhood (1 = <i>completely disagree</i> , 7 = <i>completely agree</i>)	To what extent do you agree with the statements over your Buurkracht initiative below? (1 = <i>completely disagree</i> , 7 = <i>completely agree</i>)
		- I identify with my Buurkracht initiative	- I identify with my Buurkracht initiative
		- I feel committed to my Buurkracht initiative	- I feel committed to my Buurkracht initiative
		- I am glad to be a member of my Buurkracht initiative	- I am glad to be a member of my Buurkracht initiative
			- Being a member of my Buurkracht initiative is a central part of how I see myself

Table 2

Bivariate correlations between financial motives, environmental motives, communal motives, and indicators of initiative involvement for all studies.

Study	Financial motives				Environmental motives				Communal motives				Interest to join			
	1	2a	2b	3	1	2a	2b	3	1	2a	2b	3	1	2a	2b	3
Financial motives					.39**	.59**	.78**	–	.32**	.38**	.59**	–	.25**	.22**	.37**	–
Environmental motives	–	.54**	.34*	.19**					.38**	.52**	.61**	–	.54**	.35**	.32**	–
Communal motives	–	.43**	.25	.05	–	.34**	.01	.33**					.44**	.25**	.31**	–
Initiative identification	–	.50**	.00	.16**	–	.50**	.08	.46**	–	.66**	.60**	.55**				

Note. * $p < 0.05$ (2-tailed), ** $p < .01$ (2-tailed).**Table 3**

Means, standard deviations, and parameter estimates of the multiple regressions of involvement indicators on motives for all studies.

	Regression												
	Importance ratings				Interest to join among non-members			Membership			Initiative identification among members		
	non-members		members										
Study 1	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	β	<i>t</i> (114)	<i>p</i>						
Financial motives	5.12 ^b	1.32	–	–	–.02	–0.28	.784						
Environmental motives	5.18 ^b	1.45	–	–	.47	5.62	< .001						
Communal motives	4.06 ^a	1.54	–	–	.27	3.35	.001						
						<i>R</i> ² = .38							
Study 2a	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	β	<i>t</i> (257)	<i>p</i>	<i>b</i>	<i>X</i> (315)	<i>p</i>	β	<i>t</i> (44)	<i>p</i>
Financial motives	4.61 ^{bc}	1.76	5.00 ^{cd}	1.37	.01	0.11	.911	–.08	0.41	.521	.15	1.17	.247
Environmental motives	4.82 ^c	1.83	5.75 ^d	0.98	.31	4.01	< .001	.42	8.59	.003	.25	2.00	.052
Communal motives	3.39 ^a	1.65	3.95 ^{ab}	1.51	.09	1.30	.196	.09	0.61	.434	.51	4.40	< .001
						<i>R</i> ² = .13			<i>R</i> ² = .08			<i>R</i> ² = .53	
Study 2b	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	β	<i>t</i> (115)	<i>p</i>	<i>b</i>	<i>X</i> (163)	<i>p</i>	β	<i>t</i> (46)	<i>p</i>
Financial motives	4.41 ^b	1.81	5.15 ^b ^c	1.30	.26	1.82	.072	–.30	2.68	.101	–.22	–1.68	.101
Environmental motives	4.48 ^b	1.95	6.00 ^c	0.74	.03	0.23	.821	.88	15.60	< .001	.17	1.34	.188
Communal motives	3.24 ^a	1.56	4.41 ^b	1.40	.14	1.22	.226	.47	8.34	.004	.66	5.27	< .001
						<i>R</i> ² = .15			<i>R</i> ² = .33			<i>R</i> ² = .39	
Study 3			<i>M</i>	<i>SD</i>							β	<i>t</i> (274)	<i>p</i>
Financial motives	–	–	5.33 ^b	1.25							.07	1.35	.179
Environmental motives	–	–	5.35 ^b	1.25							.30	5.95	< .001
Communal motives	–	–	3.33 ^a	1.41							.45	9.08	< .001
												<i>R</i> ² = .39	

Note. Mean scores on motives that do not share a superscript for each study have non-overlapping 95% confidence intervals. Parameter estimates are standardised coefficients with the exception of the logistic regression analysis explaining initiative membership, for which unstandardized coefficients are reported. The Variance Inflation Factors for all linear regression models were low (maximum VIF = 2.78) and thus gave no cause for concern regarding multicollinearity.

environmental, and communal motives would play a role for their consideration to take part in the Buurkracht initiative. The introduction read: 'To what extent do the following reasons play a role for you in your consideration to take part in the Buurkracht initiative in your neighbourhood?'. We included the same single items to measure financial ($M = 4.67$, $SD = 1.71$) and environmental ($M = 4.96$, $SD = 1.76$) motives as in Study 1. Communal motives were measured with the following two items (see Table 1): 'Increase involvement in the neighbourhood' and 'Strengthen relations within the neighbourhood'; mean scores were computed ($M = 3.48$, $SD = 1.64$; $r_{SB} = .96$). Responses could vary from 1 'not at all' to 7 'very much'.

5.1.2.2. Interest to join the new initiative. Non-members (as the items are not relevant to members) completed three items reflecting their interest to join the Buurkracht initiative: 'I would like to know more about the Buurkracht initiative in my neighbourhood' (the same as in Study 1), 'I am interested in the Buurkracht initiative', and 'I plan to join the Buurkracht initiative in my neighbourhood in the future'. Scores could range from 1 'completely agree' to 7 'completely disagree'. We computed mean scores (Cronbach's $\alpha = .93$), and reverse-coded the scale so that higher ratings reflected stronger interest ($M = 3.95$, $SD = 1.82$).

5.1.2.3. Initiative membership. Respondents indicated whether they were a member of the Buurkracht initiative in their neighbourhood (yes or no); 13% of the respondents indicated they were an initiative

member ($N_{\text{Members}} = 48$).

5.1.2.4. Initiative identification. We used three items from the four-item social identification scale (Postmes et al., 2013) to assess members' identification with the Buurkracht initiative (e.g. 'I identify with my Buurkracht initiative'). The fourth item 'Being a member of my Buurkracht initiative is an important part of how I see myself' was not included in the questionnaire, as we expected a floor effect on this item in newly established initiatives. Scores could range from 1 'completely disagree' to 7 'completely agree'. The items were not completed by non-members, as they are not relevant to them. We computed mean scores (Cronbach's $\alpha = .90$; $M = 4.40$, $SD = 1.28$).

5.1.3. Data analysis

We first conducted a mixed ANOVA to compare the mean importance ratings of financial, environmental, and communal motives for members and non-members, respectively. This analysis also reveals whether the mean importance ratings differ between members and non-members, providing first insights into the extent to which the three different motives are related to membership. We next conducted a logistic regression analysis of membership, to test to what extent the motives are uniquely related to membership (i.e., while accounting for the other motives). Then, we examined to what extent the motives were uniquely related to the other two indicators of initiative involvement. Specifically, we conducted a multiple linear regression analysis of non-members' interest to join, and members' identification with the

initiative, with the three motives included as predictor variables. We followed the same analysis strategy in Study 2b. Since respondents are nested in neighbourhoods, we also estimated the multilevel models accounting for this nested data structure in Study 2a, 2b, and 3. As intra-class correlations (ICCs) were low ($ICCs < 0.05$) and multilevel estimates were similar to the single-level estimates, we report the latter for all subsequent analyses for ease of interpretation.

5.2. Results and discussion

We first examined how respondents rated the importance of the three motives for their consideration to take part in the initiative. A mixed ANOVA with motives as the within-subjects factor and membership as the between-subjects factor revealed significant main effects for motives, $F(1.94, 614.40) = 77.19$, $p < 0.001$, $\eta_p^2 = .196$, and membership, $F(1, 317) = 8.90$, $p = 0.003$, $\eta_p^2 = .027$. The interaction effect was not significant, $F(1.94, 614.40) = 2.18$, $p = .116$, $\eta_p^2 = .007$; degrees of freedom were corrected using the Greenhouse-Geisser estimate of sphericity. Bonferroni-adjusted post-hoc tests indicated that both members and non-members rated financial motives and environmental motives as significantly more important than communal motives for considering taking part in the initiatives ($\Delta M = 1.14$ and $\Delta M = 1.61$, respectively; both $ps < .001$). Moreover, they rated environmental motives as more important than financial motives ($\Delta M = 0.48$; $p < 0.001$; see Table 3 for descriptive statistics). Furthermore, generally, members rated all motives as more important than non-members did. Logistic regression analysis of membership on the three motives, however, yielded an unstable model. Specifically, the omnibus chi-square test suggested an improved model compared to the baseline model, $\chi^2(3) = 15.12$, $p < .002$, but including the three motives as predictor variables did not lead to any changes in the classification of membership (the final model did not predict any respondents to be members), which may be due to the low percentage of members at this point. Parameter estimates should therefore be interpreted with caution (Table 3).

Next, we examined to what extent the three motives are related to non-members' interest to join the Buurkracht initiative. Environmental motives were more strongly correlated with interest to join than financial and communal motives (see Table 2 for bivariate correlations). A multiple regression analysis of non-members' interest to join the Buurkracht initiative on financial, environmental, and communal motives showed that environmental motives were uniquely positively related to interest to join, whereas financial motives and communal motives were not uniquely related to interest to join the initiative, $F(3, 258) = 13.34$, $p < 0.001$, $R^2 = .13$ (see Table 3 for full statistics). This suggests that stronger environmental motives increased interest in becoming a member of the Buurkracht initiative among non-members.

Lastly, we explored whether the three motives were uniquely related to the extent to which members identified with the Buurkracht initiative. Bivariate correlations indicated financial and environmental motives to be similarly strongly and positively correlated with initiative identification, while communal motives showed a relatively stronger correlation with identification. The intercorrelations between the three motives were rather strong, which could make it less likely that multiple motives predict the level of identification with the initiative. Since few people had joined the initiative at this point, the sample of members was small, but a post-hoc power analysis ($1 - \beta = 1.00$ for the overall model) revealed that statistical power was not a concern. A multiple regression analysis indicated that members' identification with the Buurkracht initiative was stronger the more highly they rated the importance of communal motives, whereas financial and environmental motives were not uniquely related to initiative identification ($R^2 = .54$; $F(3, 44) = 16.81$, $p < 0.001$; Table 3; see Table 2 for bivariate correlations).

In summary, our results provide partial support for our predictions. Environmental motives were the only type of motives uniquely related

to interest to join among non-members, while communal motives were the only type of motives uniquely related to initiative identification among members. Conversely, financial motives were not significantly related to either indicator of initiative involvement. Results further suggested that none of the motives uniquely contributed to the prediction of membership at this point.

6. Study 2b

Study 2b examined the same neighbourhoods approximately four months after Study 2a did. This allowed us to test if the relationships between the three motives and the different indicators of initiative involvement are similar across the different stages the initiatives are in.

6.1. Method

6.1.1. Procedure and participants

As in Study 2a, we approached people in the same nine neighbourhoods, approximately four months later. Notably, we invited all households that had filled in the questionnaire of Study 2a. Additionally, we invited all other initiative members to participate, irrespective of whether they had filled in a questionnaire in Study 2a, as well as a random selection of households that had not signed up to the Buurkracht initiative yet, to ensure the sample would be large enough. How many additional households we selected depended on the size of the neighbourhood. For very large communities (> 400 households), we selected roughly half of the households, while in smaller communities (< 150 households) all households in the neighbourhood were asked to participate. In households that had already participated in Study 2a, we asked that the same person would fill in the questionnaire. Questionnaires were filled in by 190 respondents (43% women; $M_{Age} = 55.24$, $SD = 15.44$; response rate: 21%).

6.1.2. Measures

Measures in this study were identical to those in Study 2a (see Table 1; for financial motives, $M = 4.62$, $SD = 1.71$; for environmental motives, $M = 4.92$, $SD = 1.82$). For communal motives, the Spearman-Brown coefficient indicated excellent scale reliability, $r_{SB} = .98$ ($M = 3.57$, $SD = 1.60$). For interest to join, Cronbach's α was 0.95 ($M = 3.50$, $SD = 1.74$), and for initiative identification, Cronbach's α was 0.86 ($M = 4.44$, $SD = 1.03$). Twenty-five percent of respondents indicated they were an initiative member ($N_{Members} = 48$), whereas the remaining 141 respondents were non-members, resulting in the ratio between members and non-members being somewhat more balanced than in Study 2a.

6.2. Results and discussion

Again, we first examined differences in the ratings of importance of the three motives and how these importance ratings differed among members and non-members. A mixed ANOVA with motives as the within-subjects factor and membership as the between-subjects factor revealed significant main effects for motives, $F(1.86, 307.19) = 62.17$, $p < 0.001$, $\eta_p^2 = .274$, and membership, $F(1, 165) = 24.06$, $p < 0.001$, $\eta_p^2 = .127$. This time, the interaction was also significant, $F(1.86, 307.19) = 5.03$, $p = .008$, $\eta_p^2 = .030$; degrees of freedom were corrected using the Greenhouse-Geisser estimate of sphericity. Bonferroni-adjusted post-hoc tests indicated that both members and non-members rated financial motives and environmental motives as significantly more important than communal motives ($\Delta M = 0.92$ and $\Delta M = 1.39$, respectively; both $ps < .001$). Moreover, respondents rated environmental motives as more important than financial motives ($\Delta M = 0.47$; $p < .001$). Overall, again, members rated the motives as more important than non-members did. The significant interaction effect indicates that while members overall rated the motives as more important than non-members did, the strength of these differences

varied between motives. Specifically, members rated environmental motives and communal motives as substantially more important than non-members did ($\Delta M = 1.54$ and $\Delta M = 1.24$; both p s < .001), whereas differences in ratings of the importance of financial motives were less strong ($\Delta M = 0.74$; $p = 0.012$). Moreover, only members rated environmental motives as more important than financial motives (see Table 3 for descriptive statistics). This suggests that environmental and communal motives, but not financial motives, underlie initiative membership. Indeed, a logistic regression of membership on the three motives revealed that respondents were more likely to be an initiative member the more important they rated environmental and communal motives, whereas financial motives were not significantly related to initiative membership, $\chi^2(3) = 9.63$, $p < 0.002$, Nagelkerke $R^2 = 0.33$ (see Table 3).

Next, we examined the relations between motives and non-members' interest to join. Bivariate correlations showed rather weak positive relationships between the three motives and interest to join (see Table 2). A multiple regression analysis showed none of the motives to be uniquely related to interest to join, and the overall proportion of explained variance was low, $F(3113) = 6.50$, $p < 0.001$, $R^2 = 0.15$ (see Table 3). One explanation for the low amount of explained variance in interest to join in both Study 2a and 2b could be the reverse-scoring of the items capturing interest to join, with lower numbers on the Likert scale indicating stronger interest to join. Some respondents may have incorrectly answered these items, causing additional measurement error.

We lastly looked at the relationship between the three motives and members' initiative identification. Bivariate correlations showed that neither financial nor environmental motives were significantly related to initiative identification, whereas communal motives were positively related to identification with the Buurkracht initiative. As in Study 2a, the sample of initiative members was relatively small, but a post-hoc power analysis ($1-\beta = 1.00$ for the overall regression model) indicated that power was high. A multiple regression analysis revealed that members' identification with the Buurkracht initiative was stronger the more important communal motives were to them, whereas financial or environmental motives were not uniquely related to initiative identification, $F(3, 43) = 9.34$, $p < 0.001$, $R^2 = .39$ (Table 3; see Table 2 for bivariate correlations).

To summarise, environmental motives were uniquely related to initiative membership, and communal motives were uniquely related to both initiative membership and members' identification with the Buurkracht initiative. Again, financial motives were not significantly related to any of the three indicators of initiative involvement. Finally, this time, none of the motives uniquely predicted interest to join in this study. These results again provide partial support for our proposition that, next to environmental motives, communal motives are related to involvement in community initiatives.

7. Study 3

Our findings on the relationship between financial, environmental, and communal motives and members' initiative identification (Study 2a and 2b) were based on relatively few members. Therefore, we conducted a last study to further examine the relationship between the motives and initiative identification. Specifically, Study 3 comprised a much larger sample of Buurkracht initiative members in 29 different Buurkracht initiatives that had already been in place for a longer period of time. In this study, we focused solely on initiative members' identification with the initiative, so we did not include non-members.

7.1. Method

7.1.1. Procedure and participants

Between October and December 2015, questionnaires were distributed in 29 neighbourhoods in which a Buurkracht initiative had

been in place for at least six months. We selected initiatives with a minimum of five members that had at least one official initiative meeting. The average existence of the selected Buurkracht initiatives was one year and three months, and on average the initiatives had 60 members. Research assistants went door to door, asking members of these initiatives as well as each member's right-door neighbour, who was not a member, to fill in a questionnaire that would be collected later, or could be mailed back in prepaid response envelopes. In total, 589 people filled in the questionnaire. Since the variables relevant for this study (e.g., members' initiative identification) were only theoretically relevant for initiative members, only members ($N = 303$) were included in the analysis reported below (32% women; $M_{age} = 55.86$, $SD = 12.78$; response rate: 24%).

7.1.2. Measures

Respondents filled in a questionnaire assessing, among other items, financial, environmental, and communal motives for involvement in the Buurkracht initiative and identification with the Buurkracht initiative (see Table 1).

7.1.2.1. Motives. Members were asked: 'Why do you take part in your Buurkracht initiative?'. One item each captured financial ('Because I want to save money') and environmental ('Because I want to contribute to a better environment') motives. Additionally, communal motives were captured by two items that differed slightly in their phrasing from those in the previous studies: 'Because I like to do things together with my neighbours' and 'Because I want to get to know my neighbours better'. All items were measured on a 7-point Likert scale from 1 'completely disagree' to 7 'completely agree'. Scale reliability was good ($r_{SB} = .76$), so we computed a mean score for these items. Means and standard deviations are displayed in Table 3.

7.1.2.2. Initiative identification. As the initiatives in this study had already existed for a while, we added an additional item to the initiative identification scale included in Study 2, namely 'Being a member of my Buurkracht initiative is a central part of how I see myself' (adapted from Postmes et al., 2013; $\alpha = .87$). The response scale for each item ranged from 1 'completely disagree' to 7 'completely agree' ($M = 3.56$, $SD = 1.26$).

7.2. Results and discussion

A repeated-measures ANOVA with Bonferroni-adjusted post-hoc tests indicated that, when asked directly, members rated financial motives and environmental motives as significantly more important than communal motives for taking part in the initiative, $F(1.91, 545.31) = 270.49$, $p < 0.001$, $\eta_p^2 = .487$ ($\Delta M = 1.97$ and $\Delta M = 2.00$, respectively; for both post-hoc tests, $p < 0.001$). Post-hoc tests indicated no difference between the ratings of financial and environmental motives ($\Delta M = 0.03$; $p = 1.00$; see Table 3 for descriptive statistics; degrees of freedom were corrected using the Greenhouse-Geisser estimate of sphericity).

Bivariate correlations showed a moderately strong relationship between initiative identification and environmental and communal motives, whereas the relationship between identification and financial motives was also significant but substantially weaker (see Table 2). Multiple regression analysis indicated that both environmental and (in particular) communal motives were positively uniquely related to members' initiative identification, whereas financial motives were not uniquely related to initiative identification, $F(3275) = 53.09$, $p < 0.001$, $R^2 = .39$ (Table 3). These results are in line with our predictions.

8. General discussion

This paper examined the importance of financial, environmental,

Table 4

Overview of results regression analyses testing the relationships between motives and indicators of initiative involvement.

	Interest to join	Membership	Initiative identification
Study 1			
Financial motives	0		
Environmental motives	+		
Communal motives	+		
Study 2a			
Financial motives	0	0	0
Environmental motives	+	+	0
Communal motives	0	0	+
Study 2b			
Financial motives	0	0	0
Environmental motives	0	+	0
Communal motives	0	+	+
Study 3			
Financial motives			0
Environmental motives			+
Communal motives			+

Note. + indicates a statistically significant positive relationship between the respective motive and involvement (while controlling for the other two motives), 0 indicates a non-significant relationship.

and communal motives for people's involvement in community energy initiatives. We expected that although people may not rate communal motives as important, communal and environmental motives, and to a lesser extent financial motives, would be uniquely (i.e., when taking the respective other motives into account) and positively related to different indicators of initiative involvement. In three studies, we examined ratings of the importance of the three motives as well as their relationship with three different indicators of initiative involvement, including interest to join, initiative membership, and identification with the initiative. When asked directly, respondents consistently rated financial and environmental motives as more important than communal motives for their initiative involvement. Interestingly, environmental and financial motives were mostly rated as equally important, but sometimes environmental motives were rated as more important, which was particularly the case among initiative members (as opposed to non-members). Yet, when looking at the relationships between these three motives and the different indicators of initiative involvement, a different and more varied picture emerged. Table 4 gives an overview of which significant relationships we found across studies. Notably, and corresponding to our expectations, environmental and communal motives were in most cases uniquely positively related to different indicators of initiative involvement (i.e., when taking the respective other two motives into account). Specifically, environmental motives were uniquely related to initiative membership in Study 2b, interest to join in Studies 1 and 2a (but not in Study 2b), and initiative identification in Study 3 (but not in Study 2a and 2b). Communal motives were uniquely related to initiative membership in Study 2b (but not in Study 2a), interest to join in Study 1 (but not in Study 2a and 2b), and initiative identification in Study 2a, 2b, and 3. In contrast, financial motives were consistently not uniquely related to the different indicators of involvement.

These findings have important theoretical implications. In line with previous research, people indicated financial and environmental motives as important for their involvement in community energy initiatives (Dóci and Vasileiadou, 2014). Moreover, we found that environmental motives were mostly, though not in all cases, uniquely related to initiative involvement, while financial motives were consistently not. This resonates with experimental research on sustainable behaviour, which revealed that environmental appeals are effective in promoting sustainable energy behaviour and can be more effective in promoting sustainable choices than appeals to financial motives (Asensio and Delmas, 2015; Bolderdijk et al., 2012; Dietz, 2015a; Schwartz et al., 2015). Our findings extend this research by showing

that environmental motives are also more predictive of involvement in a community energy initiative than financial motives. As such, our findings complement a growing body of literature suggesting that altruistic concerns, and particularly environmental motives, are a consistent predictor of sustainable behaviour (see Dietz, 2015b; Steg, 2016, for overview papers).

A key contribution of this paper is our examination of the role of communal motives (i.e., being involved in one's local community) in explaining involvement in community energy initiatives, next to financial and environmental motives. While people rated these motives as less important for their involvement in community energy initiatives, we found that, in line with our prediction, communal motives were in many cases (but not in all cases) uniquely related to different indicators of initiative involvement, particularly to initiative identification. The question remains why people are motivated to be involved in their community. For example, communal motives may be important because people would like to have better contacts with other community members, or because they are motivated to improve their community – the former reason is more likely to reflect self-interest, while the latter reason reflects altruistic concerns. Most importantly, our findings suggest that, next to environmental motives, communal motives can provide an additional motivation for involvement in community energy initiatives. As not everyone is likely to be strongly motivated by environmental concerns, communal motives may be an important alternative path to foster initiative involvement and, as a result, sustainable energy behaviours among members of such initiatives.

Overall, we found that environmental and communal motives are more strongly related to indicators of involvement than financial motives. However, whether environmental and/or communal motives were uniquely related to involvement varied between studies and indicators of involvement in community energy initiatives. First, this could imply that both motives play a different role at different stages of initiative involvement. Particularly, our findings suggest that environmental motives were consistently the strongest predictor of membership and interest to join (although environmental motives were not a significant predictor of interest to join in Study 2b, nor were any of the other motives). Communal motives were typically less strongly, or not significantly, related to these indicators of involvement in community energy initiatives. In contrast, communal motives seemed to be the strongest predictor of members' identification with the community energy initiative, while environmental motives were typically less strongly, or not significantly, related to this indicator of initiative involvement. Future research is needed to more systematically test these potential differences in relationships between environmental and communal motives at different stages of involvement.

Second, the differential effects of communal motives on the indicators of involvement may also be due to the somewhat differential conceptualisations of communal motives across the three studies. In Study 1 and 2, communal motives mostly referred to being involved in one's neighbourhood, which might reflect more altruistic concerns. In contrast, in Study 3 communal motives mostly referred to interacting with one's neighbours, which might reflect more self-interested concerns. These different conceptualisations of communal motives could affect the relationships between communal motives and initiative involvement. Future research is needed to study how different conceptualisations of communal motives are related to involvement in community energy initiatives, and in particular to compare whether the predictive power varies when communal motives reflect self-interest versus altruism.

Finally, partial inconsistencies in our found relationships between motives and initiative involvement across studies may be due to different sample sizes, which can lead to unstable estimates for the relationships between motives and indicators of initiative involvement. For example, we can speculate that the reason we did not find any unique relationships between environmental motives and initiative identification in Studies 2a and 2b is the small sample size of members

in these studies, as the larger sample of Study 3 revealed both environmental and communal motives to be uniquely linked to initiative identification. This implies that future research could include larger samples to test the consistency of the findings.

Overall, our three studies point to a discrepancy between people's ratings of the importance of the three motives and the relationships between these motives and different indicators of initiative involvement, confirming that people are not always aware of, or acknowledge, what motivates them. Importantly, people seem to *underestimate* the importance of communal motives. Specifically, though communal motives were rated as relatively unimportant, they were mostly, though not always, positively related to different indicators of involvement in community energy initiatives. In contrast, people rated financial motives as important, but financial motives were not predictive of involvement in community energy initiatives. As such, our research resonates with earlier studies that showed that the importance of instrumental motives (such as financial ones) is sometimes overrated (Noppers et al., 2014; see also Schwartz et al., 2015). This does not imply that financial motives are generally not an important predictor of sustainable behaviour. Indeed, financial motives are likely to be an important predictor of sustainable behaviour if such behaviour is associated with substantial financial costs or benefits. Yet, many sustainable behaviours are associated with small financial costs or benefits that are perceived as hardly or not worth the effort, in which case financial motives are not likely to be an important predictor of sustainable behaviour (Dietz, 2015a; Dogan et al., 2014). Future research could examine why this discrepancy between the rated importance of financial and communal motives on the one hand, and the predictive power of these motives on the other hand occurs and study the conditions under which such discrepancies are most likely.

Our findings on the relevance of communal motives for involvement in community energy initiatives are both in line with and complement earlier studies demonstrating the importance of the social context for sustainable behaviour (Cialdini and Trost, 1998; Jans et al., 2018). Most of this work has focused on social influences on sustainable behaviour, showing that people are more likely to act sustainably when they believe others expect them to do so (i.e., injunctive norms), or when they believe that other people engage in such actions (i.e., descriptive social norms; see Keizer and Schultz, 2018, for an overview). Our research extends this research demonstrating the importance of social norms by showing that people may also be motivated to engage in sustainable behaviour when they believe this enables them to be more strongly involved in relevant groups, such as their local community. Obviously, communal motives might not be relevant for all types of sustainable behaviour. Yet, they may be a promising route to promote sustainable behaviour as many bottom-up initiatives have been established to promote sustainable behaviours in specific social groups; examples are communal recycling events, second-hand clothing swaps, and different types of community energy initiatives. Indeed, our research suggests that people may engage in certain sustainable behaviours simply because they care about being involved in the particular social group, even if they do not care about the sustainable behaviour itself.

It is a particular strength of our research that we examined involvement in real-life community energy initiatives. At the same time, our results are based on correlational evidence, not allowing us to draw firm causal conclusions on the found effects. Future research could test the causal relationships in more depth, for example, via experimental or longitudinal research designs. We used single items to measure financial and environmental motives (and communal motives in Study 1). While single items can be a concern in some cases, their use is appropriate when they reflect a clear construct (Postmes et al., 2013; Rossiter, 2002), which is arguably the case for financial and environmental motives.

Our research has important practical implications. Based on our results, it seems that practitioners could better appeal to people's

environmental motives and communal motives in order to increase (future) involvement in community energy initiatives, while an appeal to financial motives may not lead to an increase in initiative involvement. Future research could examine whether community energy initiative involvement can be promoted by appealing to environmental and communal motives, for example via promotional materials or advertisements.

9. Conclusion

In conclusion, we found that people consistently rated financial and environmental motives as important for their initiative involvement, whereas they rated communal motives as substantially less important. Yet, environmental and communal, but not financial, motives are mostly positively and uniquely related to different indicators of initiative involvement. This suggests that the importance of communal motives may be underrated in some cases, whereas the importance of financial motives may be overrated. Next to environmental motives, communal motives may provide an interesting alternative path for encouraging people's involvement in community energy initiatives.

Acknowledgements

This work was supported by the 'Topsector Energie en Maatschappij', within the programme 'Energie en Innovatie' (project no. TESA114010). We thank Rebekah M Olson for proofreading this manuscript.

References

- Asensio, O.I., Delmas, M.A., 2015. Nonprice incentives and energy conservation. *Proc. Natl. Acad. Sci. U. S. A.* 112, 510–515. <https://doi.org/10.1073/pnas.1401880112>.
- Baumeister, R.F., Leary, M.R., 1995. The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychol. Bull.* 117, 497–529. <https://doi.org/10.1037/0033-2909.117.3.497>.
- Bolderdijk, J.W., Steg, L., 2015. Promoting sustainable consumption: the risks of using financial incentives. In: Reisch, L.A., Thøgersen, J. (Eds.), *Handbook of Research on Sustainable Consumption*. Edward Elgar, Cheltenham, UK, pp. 328–342.
- Bolderdijk, J.W., Steg, L., Geller, E.S., Lehman, P.K., Postmes, T., 2012. Comparing the effectiveness of monetary versus moral motives in environmental campaigning. *Nat. Clim. Change* 3, 413–416. <https://doi.org/10.1038/nclimate1767>.
- Bomberg, E., McEwen, N., 2012. Mobilizing community energy. *Energy Policy* 51, 435–444.
- Brewer, M.B., 1991. The social self: on being the same and different at the same time. *Pers. Soc. Psychol. Bull.* 17, 475–482. <https://doi.org/10.1177/0146167291175001>.
- Buurkracht, 2018. Buurkracht. Retrieved July 19, 2018, from <https://buurkracht.nl/>.
- Cialdini, R., Trost, M., 1998. social influence: social norms, conformity and compliance. In: Gilbert, D.T., Fiske, S.T., Lindzey, G. (Eds.), *The Handbook of Social Psychology*. McGraw-Hill, New York, NY, US, pp. 151–192.
- Dietz, T., 2015a. Altruism, self-interest, and energy consumption. *Proc. Natl. Acad. Sci.* 112, 1654–1655.
- Dietz, T., 2015b. Environmental value. In: Brosch, T., Sander, D. (Eds.), *Oxford Handbook of Values*. Oxford University Press, Oxford, pp. 329–349.
- Dóci, G., Vasileiadou, E., 2014. "Let's do it ourselves" Individual motivations for investing renewables at community level. *Renewable Sustainable Energy Rev.* 49, 1–25. <https://doi.org/10.1016/j.rser.2015.04.051>.
- Dogan, E., Bolderdijk, J.W., Steg, L., 2014. Making small numbers count: environmental and financial feedback in promoting eco-driving behaviours. *J. Consum. Policy* 37, 413–422. <https://doi.org/10.1007/s10603-014-9259-z>.
- Ellemers, N., Spears, R., Doosje, B., 1999. *Social Identity: Context, Commitment, Content*. Blackwell, Oxford, England.
- Frederiks, E.R., Stenner, K., Hobman, E.V., 2015. Household energy use: applying behavioural economics to understand consumer decision-making and behaviour. *Renewable Sustainable Energy Rev.* 41, 1385–1394. <https://doi.org/10.1016/j.rser.2014.09.026>.
- Fritzsche, I., Barth, M., Jugert, P., Masson, T., Reese, G., 2018. A social identity model of pro-environmental action (SIMPEA). *Psychol. Rev.* 125, 245–269. <https://doi.org/10.1037/rev0000090>.
- Hoffman, S.M., High-Pippert, A., 2010. From private lives to collective action: recruitment and participation incentives for a community energy program. *Energy Policy* 38, 7567–7574.
- Intergovernmental Panel on Climate Change, 2018. *Global Warming of 1.5° C: An IPCC Special Report on the Impacts of Global Warming of 1.5° C Above Pre-industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change*.
- Jans, L., Bouman, T., Fielding, 2018. A part of the energy "in crowd": changing people's

- energy behavior via group-based approaches. *Ieee Power Energy Mag.* 16 (1), 35–41.
- Keizer, K., Schultz, P.W., 2018. Social norms and pro-environmental behaviour. In: Steg, L., De Groot, J.M. (Eds.), *Environmental Psychology: An Introduction*. John Wiley & Sons, Ltd., Chichester, UK, pp. 179–188. <https://doi.org/10.1002/9781119241072.ch18>.
- Kollmuss, A., Agyeman, J., 2002. Mind the Gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environ. Educ. Res.* 8, 239–260. <https://doi.org/10.1080/13504620220145401>.
- Middlemiss, L., Parrish, B.D., 2010. Building capacity for low-carbon communities: the role of grassroots initiatives. *Energy Policy* 38, 7559–7566. <https://doi.org/10.1016/j.enpol.2009.07.003>.
- Miller, D.T., 1999. The norm of self-interest. *Am. Psychol.* 54, 1053–1060.
- Nolan, J.M., Schultz, P.W., Cialdini, R.B., Goldstein, N.J., Griskevicius, V., 2008. Normative social influence is underdetected. *Pers. Soc. Psychol. Bull.* 34, 913–923. <https://doi.org/10.1177/0146167208316691>.
- Noppers, E.H., Keizer, K., Bolderdijk, J.W., Steg, L., 2014. The adoption of sustainable innovations: driven by symbolic and environmental motives. *Glob. Environ. Chang.* Part A 25, 52–62. <https://doi.org/10.1016/j.gloenvcha.2014.01.012>.
- Postmes, T., Haslam, S.A., Jans, L., 2013. A single-item measure of social identification: reliability, validity, and utility. *Br. J. Soc. Psychol.* 52, 597–617. <https://doi.org/10.1111/bjso.12006>.
- Rossiter, J.R., 2002. The C-OAR-SE procedure for scale development in marketing. *Int. J. Res. Mark.* 19, 305–335. [https://doi.org/10.1016/S0167-8116\(02\)00097-6](https://doi.org/10.1016/S0167-8116(02)00097-6).
- Schwartz, D., Bruine de Bruin, W., Fischhoff, B., Lave, L., 2015. Advertising energy saving programs: the potential environmental cost of emphasizing monetary savings. *J. Exp. Psychol. Appl.* 21, 158–166. <https://doi.org/10.1037/xap0000042>.
- Seyfang, G., Haxeltine, A., 2012. Growing grassroots innovations: exploring the role of community-based initiatives in governing sustainable energy transitions. *Environ. Plann. C Gov. Policy* 30, 381–400. <https://doi.org/10.1068/c10222>.
- Seyfang, G., Smith, A., 2007. Grassroots innovations for sustainable development: towards a new research and policy agenda. *Env. Polit.* 16, 584–603. <https://doi.org/10.1080/09644010701419121>.
- Sloot, D., Jans, L., Steg, L., 2017. The potential of environmental community initiatives - a social psychological perspective. In: Römpeke, A., Reese, G., Fritzsche, I., Wiersbinski, N., Mues, A. (Eds.), *Outlooks on Applying Environmental Psychology Research*. Bundesamt für Naturschutz., Bonn, pp. 27–34 BfN-Script.
- Sloot, D., Jans, L., Steg, L., 2018. Can community energy initiatives motivate sustainable energy behaviours? The role of initiative involvement and personal pro-environmental motivation. *J. Environ. Psychol.* <https://doi.org/10.1016/j.jenvp.2018.06.007>.
- Steg, L., 2016. Values, norms, and intrinsic motivation to act proenvironmentally. *Annu. Rev. Environ. Resour.* 41, 277–292. <https://doi.org/10.1146/annurev-environ-110615-085947>.
- Steg, L., Bolderdijk, J.W., Keizer, K., Perlaviciute, G., 2014. An Integrated Framework for encouraging Pro-environmental Behaviour: the role of values, situational factors and goals. *J. Environ. Psychol.* 38, 104–115. <https://doi.org/10.1016/j.jenvp.2014.01.002>.
- Steg, L., de Groot, J.I.M., 2012. Environmental values. *The Oxford Handbook of Environmental and Conservation Psychology*. Oxford University Press <https://doi.org/10.1093/oxfordhb/9780199733026.013.0005>.
- Stern, P.C., 2000. New environmental theories: toward a coherent theory of environmentally significant behavior. *J. Soc. Issues* 56, 407–424. <https://doi.org/10.1111/0022-4537.00175>.
- Stern, P.C., Dietz, T., Abel, T., Guagnano, G.A., Kalof, L., 1999. A value-belief-Norm theory of support for social movements: the case of environmentalism. *Hum. Ecol. Rev.* 6, 81–97. <https://doi.org/10.2307/24707060>.
- Taufik, D., Bolderdijk, J.W., Steg, L., 2015. Acting green elicits a literal warm glow. *Nat. Clim. Chang.* 5, 37–40. <https://doi.org/10.1038/nclimate2449>.
- Venhoeven, L.A., Bolderdijk, J.W., Steg, L., 2016. Why acting environmentally-friendly feels good: exploring the role of self-image. *Front. Psychol.* 7, 1–8. <https://doi.org/10.3389/fpsyg.2016.01846>.