Energy Citizenship and Energy Communities
for a Clean-Energy Transition

D2.2
Energy citizenship scale – development and testing (preliminary version)

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Abstract	In this deliverable, we describe the development process of a psychological energy citizenship scale. We start by describing the theoretical structure of the energy citizenship scale and elaborate on why each aspect is included. We then continue with reporting two studies which have been carried out to generate the energy citizenship scale and finish with describing the resulting current version of the energy citizenship scale. The final energy citizenship scale consists of two separate nine item scales, one individual level energy citizenship scale and one collective level energy citizenship scale.

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List of Abbreviations

CO_2	Carbon dioxide
EU	European Union
WP	Work package

1 Introduction

The issue of climate change and global warming is one of the most pressing and most difficult challenges faced by our society today. It is widely agreed that a significant reduction in carbon dioxide (CO_2) emissions is necessary to mitigate climate change (IPCC, 2022). This reduction of CO_2-emissions requires a shift of the existing energy system towards a sustainable energy system by reducing overall energy consumption and enhancing energy efficiency, as well as increasing the use of renewable energy. Since private households and (public) transportation are responsible for more than half of the energy consumption in the EU (Eurostat, 2019), citizens are seen as major stakeholders and important actors in the energy transition. The European Union relies heavily on active citizen involvement to achieve its goal of sustainable growth all over Europe (BEUC, 2019). This stresses the importance of the emergence of energy citizenship.

The concept of energy citizenship focuses on the idea that citizens play a key role in the energy transition (Devine-Wright, 2007). Energy citizens can be seen as more than just passive energy consumers as they are more aware of the implications of their energy consumption and may even be actively involved in the sustainable energy transition (Ryghaug et al., 2018). Energy citizenship focuses on public engagement and participation, in relation to the clean-energy transition. Even though the concept of energy citizenship, in a psychological context, is not new and was already introduced several years ago by Devine-Wright (2007), there is still no universally used scale to measure its manifestation in individuals and a concise and practically usable energy citizenship scale is still lacking.

In order to successfully identify the conditions under which energy citizenship emerges, to test its effectiveness, and to investigate whether energy citizenship is effective for the energy transition, we must better understand energy citizenship at the individual and societal level. Through conceptualizing and measuring energy citizenship, we will be able to see how it relates to other constructs, what factors facilitate and strengthen it on one hand, and what factors hinder its emergence on the other hand.

This deliverable forms part of WP2 of the Horizon2020 project **Energy Citizenship and Energy Communities for a Clean-Energy Transition (EC²)**. As a first part of WP2 we laid the basis for our interdisciplinary work by developing a common understanding of energy citizenship. In the preceding deliverable (Deliverable 2.1) we describe how we derived at an interdisciplinary definition of energy citizenship based on the expert opinions of a legal, economic and psychological team. Now as a second objective of WP2, in the present deliverable, we are developing a psychological scale which is based on our definition of energy citizenship and measures its manifestation within individuals. We held bi-weekly online meetings with our psychological team and our interdisciplinary team as part of our working process in WP2. During these online meetings, we discussed and received feedback from our psychological team as well as from our interdisciplinary team at different times during the scale development process.

The energy citizenship scale is a critical pillar for future work packages and project work. It will be used in the following work packages to assess energy citizenship as part of our scientific studies. In psychological studies, WP4 aims to gather empirical evidence on barriers and facilitators of energy communities and energy citizenship, as well as on the effectiveness of energy citizenship for broader sustainability goals. For that purpose, longitudinal field studies will be carried out to assess people's energy citizenship level, using our newly developed energy citizenship scale. Hence, the energy citizenship scale serves as a basis for studying energy citizenship psychologically.

In the following, we will discuss the scale development process. After explaining how the scale is connected to our definition of energy citizenship and why each aspect was included, we will move on to the studies and analysis on the items and finish with an explanation of how we derived at the current version of the scale.

2 How the scale relates to the definition

In WP2 we created an interdisciplinary definition of energy citizenship. Energy citizenship can be defined in a number of disciplinary ways, and our interdisciplinary definition creates a valuable foundation for further discipline-specific definitions. Our interdisciplinary definition of energy citizenship is short and unambiguous and therefore builds the foundation for discipline - specific definitions. Our interdisciplinary definition of energy citizenship reads as follows:

"*Energy citizenship is people's rights to and responsibilities for a just and sustainable energy transition."*

Details of the process of developing the definition and the reasoning behind it can be found in Deliverable 2.1. This interdisciplinary definition served as the foundation for our psychological definition of energy citizenship. To us,

"*Energy citizenship from a psychological perspective is people's* ***belief*** *that they as* ***individuals*** *and as* ***collectives*** *have* ***rights*** *and* ***responsibilities*** *for a* ***just*** *and* ***sustainable energy transition****, and their* ***motivation to act*** *upon those rights and responsibilities."*

Our objective was to construct a scale that measures how energy citizenship manifests psychologically in individuals and various collectives. Our psychological definition of energy citizenship forms the core of our scale's structure and conceptualization. All relevant (psychological) aspects of energy citizenship are represented in the scale. The structure that we came up with for the scale is based on all important aspects of energy citizenship which are mentioned in the psychological definition (see Figure 1).

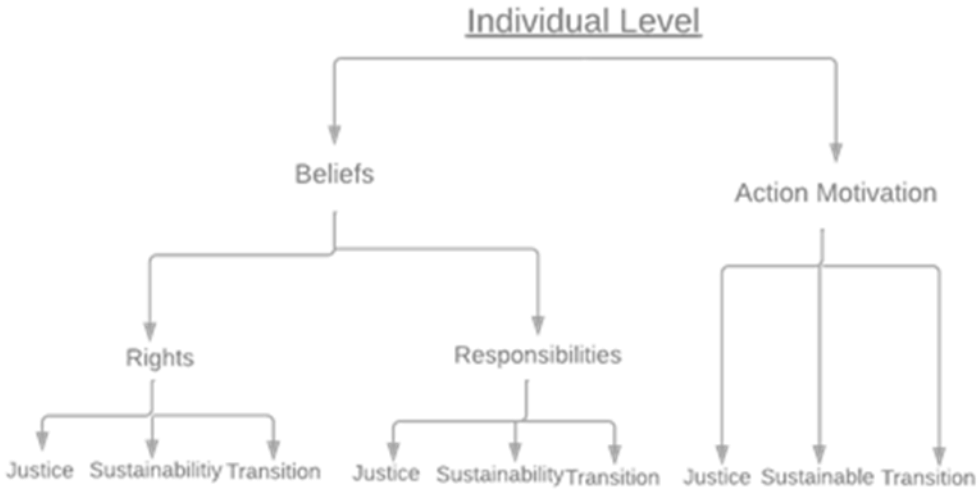

Figure 1. Structure of the energy citizenship scale

The first layer of our energy citizenship scale distinguishes between **collective and individual levels** of energy citizenship. From a psychological standpoint, we argue that energy citizenship may be perceived through the lens of individuals or numerous collectives. To begin with, individual attitudes on energy and individual energy consumption indicate one potential option for engaging in the energy transition. If someone feels personally accountable and capable of participating in the energy transition, they may take individual actions to safeguard energy or utilize more renewable energy sources, for example by preserving energy in their homes. However, experts emphasize that if major reforms to the energy system are to be achieved, energy citizenship must extend beyond individual energy use (see Bourban, 2020; Bögel et al., 2021).

An energy citizenship scale must therefore take into account not only people's individual beliefs and motivations, but also group-based beliefs and motivations. For example, a person may believe that they individually only have a limited amount of responsibility for the energy transition, but that – as part of a community – they share a bigger proportion of responsibility and the potential for change. In the case of energy citizenship, collective viewpoints therefore appear to be important to consider in addition to individual aspects.

Humans are capable of not only defining themselves as "I" but also as "we" (see Tajfel & Turner, 1986). The social identity theory helps us explain this. People, according to the social identity theory, are able to change between several social identities (see Brewer, 1991). Individuals' energy citizenship may therefore be linked to their identification as members of certain relevant social groups in terms of their social identities. To name a few, they may identify as a member of a local community, a citizen of a specific country, a member of a political party, a consumer, an EU citizen, a global citizen, a member of a specific energy community, or many other things depending on the circumstance (see Sloot et al., 2019). The basis for measuring energy citizenship is therefore provided by taking into account both an individual and a social level.

In sum, energy citizenship can be viewed as a composite of a number of personal and social versions of the self. When it comes to the energy transition, focusing just on the individual or the group is insufficient. Only a more nuanced individual as well as collective concept of energy citizenship, we

think, can create a complete understanding of people's attitudes and motivations for the energy transition. As a result, the energy citizenship scale must include individual and collective beliefs and motivations that are linked to personal and social identities.

People's beliefs about **rights and responsibilities** related to the energy transition are covered in the second layer of our energy citizenship scale. Instead of concentrating on whether individuals have (legal) rights and responsibilities, we opted to focus on people's perceptions about rights and responsibilities in our psychological scale. More specifically, we focus on how important specific energy-related rights are to them and whether they believe they are responsible for a just and sustainable energy transition. By focusing on people's perceptions of rights and the importance they place on having a particular right, we clearly differentiate ourselves from asking knowledge (literacy) questions. An energy literate person is someone who understands the energy consumption of their household appliances, understands how to save energy in their home with simple actions, understands how to make cost-effective energy-efficient decisions, and understands the relationship between energy use and climate change (Van den Broek, 2019). Studies reveal, however, that knowledge alone does not lead to a more conscientious use of energy (see Martins et al., 2020). We wanted to make a clear distinction between energy literacy and energy citizenship in our energy citizenship scale because we believe that even someone who is not an expert on energy issues may be an energy citizen. Energy citizenship is based on one's beliefs and motivations, not on one's comprehension of the energy market or the energy transition. We believe that energy literacy may be a predictor of energy citizenship, but it is not included in the energy citizenship concept. As a result, rather than focusing on people's knowledge of the energy transition and energy-related topics, the scale focuses on their beliefs about rights and responsibilities in the energy transition, how much importance they place on having energy-related rights, and whether they feel responsible for the energy transition.

Next to beliefs about rights and responsibilities, a **motivation to act** in line with these beliefs composes an important category in our energy citizenship scale. It is critical to distinguish between intention and actual behaviour when studying behaviour in a psychological setting (see Ajzen, 1985). Many psychological theories like Ajzen's Theory of Planned Behaviour describe motivation to take actions and actual behaviour as separate constructs, and describe behavioural intentions as predictors of actual behaviour (Ajzen, 1985). In our energy citizenship scale, we decided to focus on action motivations instead of actual behaviour, because a topic like the energy transition is highly susceptible for social injustices. Homeowners, for example, can upgrade their homes in energy-efficient ways or decide to install solar panels on their roof, but renters cannot make similar decisions. Many energy-related acts are also tied to financial investments that not everyone can make. At the same time, action motivations are not influenced by these external factors. Therefore, in the context of energy citizenship which also focuses on the justice of the energy transition, it appears reasonable to use an intention-oriented approach to behaviour and focus on motivation to act rather than actual behaviour.

The final tier of our energy citizenship scale concentrates on the **sustainability and justice of the energy transition**. A sustainable energy transition entails more than simply switching to a new, more efficient energy system based on low and non-greenhouse gas emitting energy sources. It must also ensure that the environmental and social costs, risks, and rewards of the change are adequately managed in order for it to be considered sustainable (Sareen & Haarstad, 2018). So, while ecological sustainability aspects like sustainable energy use through for example lowering one's consumption, flexibility in energy usage (times) or green / renewable energy usage need to be considered, the social sustainability of an energy transition cannot be disregarded. To reduce energy poverty, an energy transition must prioritize inclusion and involve all social groups, particularly marginalized populations.

As a result, in our energy citizenship scale, we emphasize the social justice of the energy transition by explicitly referring to a *just* and sustainable energy transition. Lastly, the goal of the energy transition should be to move to a decentralized energy system in which people are active actors in the energy marked and can participate in decision making processes for example in energy communities or though other citizenship actions like voting.

3 Item generation

The scale was constructed using established methods of psychological test construction. We opted for a Likert-type scale format. Participants read different items that displayed various statements. They rated how much they agreed with each statement on a 5-point scale, with 1 being "completely disagree" and 5 being "completely agree." When assessing energy citizenship with a Likert-type scale format, the total score is assumed to reflect the participant's level of energy citizenship. Our energy citizenship scale's initial item pool was intended to cover the entire range of related constructs and include items from related scales.

We took a deductive and inductive approach to generate the initial item pool. We started by generating items based on constructs that are theoretically related to energy citizenship. For this purpose, we reviewed relevant thematically connected scales. This included scales on concepts like environmental citizenship, ecological citizenship, global citizenship, pro-environmental behaviour, green consumerism, environmental attitudes and many more (e.g., Karatekin & Uysal, 2018; Stern et al., 1999; Dobson, 2003). All of these constructs and their respective scales are relevant for energy citizenship, because they focus on (one or more) aspects of our conceptualization of energy citizenship. Therefore, looking at these scales helped us generate items for the different sub facets of our energy citizenship construct. For example, two thematically closely connected concepts to energy citizenship are the constructs environmental citizenship and ecological citizenship (see Stern et al., 1999; Dobson, 2003). Stern et al. (1999) defined environmental citizenship as an active form of non-activist public behaviour, and presented examples such as "writing letters to political officials, joining and contributing funds to movement organizations, and reading movement literature" (Stern, 2000). This represents one sub category of our energy citizenship scale. To ensure the adequacy of the items we generated through this deductive approach, and to generate additional items, we then followed an inductive approach by discussing the items in our interdisciplinary WP2 team. The different teams (psychological, economic and law) added items that they, from their discipline specific focus, thought should be included in an energy citizenship measure.

In order to make sure that we cover each of the aspects in our energy citizenship definition we created a structure for item generation (see Figure 1). The structure mirrors our conceptualization of energy citizenship. By following this structure, we made sure to generate items for each sub section. For example, an item from the path Individual Level – Beliefs – Rights – Transition was "*I should have the right to participate in decision making in the energy sector*" or from the path Collective Level – Action Motivation – Sustainability "*We as citizens are willing to invest non-financial resources (e.g., time, skills, education) to support the sustainable energy transition*". We ended up with several items for each sub category and with an item pool total of 218 items which can be found in the appendix.

Note, that at this point in time, we included affect items in the scale because in the beginning we included affect in our psychological definition of energy citizenship. Following several discussions, we decided to leave affect out of our energy citizenship definition and rather treat it as a predictor and not

an actual part of our energy citizenship construct. Therefore, the initial item pool included affect items which were later dropped again.

4 First study

The goal of our first study was to test the initial item pool for comprehensibility of the items. The study was carried out in Austria, hence it was carried out in German language. The complete item pool of 218 questions was used and participants could indicate for each item if they did not understand it as well as give general comments on the items after each block of questions. Based on the results we shortened the item pool.

4.1 Participants

The sample included 67 adults aged between 18 and 79 of which 51 completed the whole survey. More than half of the participants were women (69%). Most of the participants were German (60%) or Austrian (33%) and the majority of the participants was highly educated having completed at least 12 years of education (59%). 73% were living in apartment for rent and 22% owned a house. 45% of the participants were currently students and 20% were full-time employed. Participants were recruited through various channels. First of all, the study was posted on social media in diverse Facebook groups. Secondly, the study was promoted during a lecture for bachelor psychology students. Lastly, we handed out flyers with QR-codes and links to the online survey in the city centre. Participants had the chance to enter a raffle to win 100 Euro upon completion of the study. Three times 100 Euro were raffled. Furthermore, psychology students could collect participant hours for participating in the study which they need as part of their bachelor's degree.

4.2 Procedure

Potential participants were invited to participate in the survey online using Limesurvey (http://limesurvey.org/). The survey started with a short introduction to the topic as well as an informed consent. Only if the participants indicated their consent to participate, they were able to start the survey. We started with a number of questions regarding demographic characteristics. Then all 218 items which we generated for our item pool of energy citizenship were asked on a 5-point Likert scale ranging from "*Completely disagree*" to "*Completely agree*". For the collective level items, in this study the group level which we chose was EU- citizens because, for this study, we did not look at one specific collective like an energy community but rather at the general public and citizens. The order of the items in each sub category was randomized. For each item, there was the option to click "I do not understand the statement" as well as at the end of each block of questions there was an open box for general comments and comprehensibility remarks. In total, completing the survey took about 30 to 45 minutes.

4.3 Results

The results indicate that people generally seemed to understand the items. It was only rarely indicated that one did not understand an item. The three items for which the most people indicated that they did not understand the statement were "*I should have the right to fair energy*", "*I should have the right to join an energy community*" and "*I should have the right to found an energy community*". When people indicated that they did not understand an item, it was usually connected to **difficult or ambiguous words** as people also explained in the comment boxes. Difficult words included "energy community", "fair" and "just energy". People also indicated that they found the **affect questions difficult to answer** as "it is hard to tell how you feel about a right" (participant). It was also pointed out that some **people felt unsure about the collective level questions** and were wondering whether we wanted them to

indicate how they think citizens feel / behave right now or what they wish people would feel / do. Lastly, people indicated, that for them the phrasing of the rights questions using the word **"should have the right" implies that one does not have the right yet**, which led to confusion because many of the rights in question are already present for people in Germany and Austria, like for example putting solar panels on one's roof or installing energy saving appliances in one's household.

Next to these comments provided by people, we also gained insights into **item difficulty and discriminative values** by looking at the mean scores of each item. There were several items with very high mean scores of 4.5 or higher (on a 5-Point-Scale) which indicates that most people seem to agree with these statements and they therefore do not provide a good discrimination between people. Interestingly, all of the items in which these ceiling effects could be observed, were from the Beliefs - Rights block. It seems that by asking the questions "I should have the right to…" we made the items too easy to agree with. Logically, everyone can easily agree with saying they should have a certain right, after all it does not mean that they also have to make use of it. Contrastingly it would make little sense for someone to indicate that they should not have a right, when this just gives them the possibility to do things if they ever want to. Therefore, we decided to change the wording of rights items, which will be discussed in the following.

4.4 Item reduction and revision

First, we decided to **exclude the affect items**. Based on discussions in our WP2 meetings we decided to exclude affect which had until this point been explicitly mentioned in our psychological definition of energy citizenship. We agreed on treating it as a predictor of energy citizenship rather than a central aspect of it. Since the scale is based on our psychological definition, we also excluded the affects section in the scale.

Based on the results of the first study, we then revised the items and reduced the initial item pool substantially. Weak items were progressively eliminated using increasingly conservative criteria. The first criterion for our item reduction was item difficulty, based on the mean scores and distribution of the data. Items were rejected if the range of item scores indicated either a ceiling or floor effect. For example, the average of responses on a 5-point scale to the item "*I should have the right to install energy saving appliances in my household*" was very high (M = 4.7, SD = .59). This item and other similarly performing items were deleted. We also decided to exclude questions with words that were difficult or unknown to many people like "Energy Community". Since energy community involvement is only one of many possible ways to show energy citizenship we decided to focus on other more commonly known aspects and behaviours.

Furthermore, we tried to reduce the item pool by excluding items content wise. At this stage we decided to only keep **three items per sub category**, ending up with a total of (3x8) 54 items. This left us with enough room to further exclude items after the next round of data collection based on item qualities and factor analysis. We always decided on three items per sub category that were diverse in content and also showed good statistical qualities in the first study ((close to) normally distributed data). The items for the individual and the collective level were always kept identical, only the wording was changed slightly to apply it to the different group levels.

Moreover, we also revised the phrasing of some of the items based on the feedback that we got as well as the statistical properties of the questions. Especially the rights items seemed to have caused some problems. As was indicated before, some people were confused by the wording "should have the right"

in our rights items which, for them, implied that one does not have the right, right now. This issue was further discussed in one of our WP2 meetings and we decided to change the wording to "…is an important right to me". By asking how much importance someone places on having a certain right, we move away from simply asking if someone thinks they should have a right and, in this way, we also bring in a valence judgement into the item, hence making it more difficult.

Lastly, we decided to include some **reversed coded items**. In each sub category we added one reverse coded item. Including reversed coded items is useful for checking if respondents are giving consistent answers. We tried to refrain from using (too many) negations and focus on behaviours that would be opposing the idea of energy citizenship. For example, the reverse coded item in the sub category Individual Level – Beliefs – Rights – Justice was "*I think that the right to a stable and secure energy supply may depend on the financial resources of individuals*." or in the Collective Level – Beliefs – Sustainability sub category "*We citizens think that it is solely in the hands of politicians and companies how we use and produce energy.".*

5 Second study

The second study was conducted in order to perform factor analysis and gain further insight into item qualities. The goal of this second study was to further reduce the items and to derive at a concise, easily applicable and reliable scale that captures all relevant aspects of energy citizenship.

5.1 Participants

For this study we made use of the online panel "Talk" to gather participants. This online survey panel collected a sample based on quota which are representative for the Austrian population. In total 891 people (partially) completed the survey out of which 490 had to be excluded, most of them because they did not pass the attention check (97%) or because they finished the survey too quickly. Interestingly, when looking at the characteristics of the dropouts, one can see that the majority of them were female (76%) and had completed lower-level education (86%). Out of the remaining 401 participants who completed the survey, 56% were female and 44% male. The majority (71%) had completed lower-level education and was full-time employed (40%). People most often indicated, that they were currently living in an apartment for rent (44%) or that they own a house (36%). Twenty-six people also indicated that they were members of an energy community or an energy initiative.

5.2 Procedure

Participants were invited to take part in the online survey by the panel talk. The panel talk sent out the link to our study which was carried out in Limesurvey (http://limesurvey.org/). The survey started with a short introduction to the topic as well as an informed consent which was in line with the project's ethical requirements. Similar to the first study, we started with a number of questions regarding demographic characteristics. Then our remaining 54 energy citizenship items which were asked on a 5-point Likert scale ranging from "*Completely disagree*" to "*Completely agree*". Randomized, some participants received the collective level items first, followed by the individual level items, other participants first answered the individual level items, followed by the collective level items. The group for the collective level items was again the group of EU-citizens. Furthermore, the order of the items in each sub category was randomized. In total, completing the survey took the participants on average 9 minutes.

5.3 Analysis

The aim of the analyses was to identify the best fitting item per sub category in order to shorten the scale accordingly and end up with two short and concise scales (one for the individual level and one for the collective level) that are well balanced content wise. The minimum amount of data for factor analysis was satisfied, with a final sample size of 401, providing a ratio of over 7 cases per variable. Initially, the factorability of the 54 items was examined. Several well recognized criteria for the factorability of a correlation were used. Firstly, the Kaiser-Meyer-Olkin measure of sampling adequacy was .92, well above the commonly recommended value of .6, and Bartlett's test of sphericity was significant ($\chi 2$ (1431) = 14174.951855, $p < .001$). Secondly, the communalities were all above .5, further confirming that each item shared some common variance with other items. Given these overall indicators, factor analysis was deemed to be suitable with all 54 items.

To identify the best fitting item per sub category we conducted several different factor analyses with only the items of each sub category. In each sub category we then selected the item with the highest factor loading and the highest item-scale correlation. This resulted in two separate scales (an individual level scale and a collective level scale) with nine items each. We then conduced two factor analyses on these two scales. For the factor analysis on both scales, the minimum amount of data was satisfied, with a final sample size of 401, providing a ratio of over 44 cases per variable.

First, the factorability of the nine individual level items was examined. The Kaiser-Meyer-Olkin measure of sampling adequacy was .87, and Bartlett's test of sphericity was significant ($\chi 2$ (36) = 1187.906, $p < .001$). The communalities of the variables included one score which was slightly below the recommended threshold of .5 (see Table 1 for communalities). The variable "I feel responsible to support others to participate in the sustainable energy transition (e.g., by sharing my knowledge)." had a communality value of .49 indicating that it has a variance of 49% in common with the other variables in the analysis. This may indicate that it is only moderately related to the other variables chosen for this analysis. However, since it was only slightly below the threshold of .5, and KMO and Bartlett's Test of Sphericity both indicate that the set of variables are at least adequately related for factor analysis, we therefore deemed it appropriate to continue with all nine variables.

Secondly, the factorability of the nine collective level items was examined. The Kaiser-Meyer-Olkin measure of sampling adequacy showed a good value of .88, and Bartlett's test of sphericity was significant ($\chi 2$ (36) = 1123.704, $p < .001$). The communalities of the variables included are rather low overall with one variable "Investing time, effort, and money to be able to use more renewable energy is a source of pride for us EU citizens." having a small amount of variance (33%) in common with the other variables in the analysis. This may indicate that the variables chosen for this analysis are only weakly related with each other. But since the KMO and Bartlett's Test of Sphericity both showed good values, indicating that the set of variables are at least moderately related, we therefore deemed them appropriate for factor analysis.

Table 1. Means, Standard Deviations, Factor Loadings and Communalities for Principal Components Analysis One-Factor Solution for 9 Individual Level Energy Citizenship Items (N = 401)

	Factor loading			
	1	Communality	Mean	Standard Deviation
I consider affordable sustainable energy to be an important right.	0.58	0.71	4.26	0.76
I consider it an important right to be informed about the energy efficiency of various products.	0.60	0.65	4.22	0.78
I consider being able to actively participate in the energy market (e.g., being able to produce / sell / exchange / store energy) to be an important right.	0.71	0.51	3.88	0.90
I see it as my responsibility to help others to participate in the sustainable energy transition (e.g., by sharing my knowledge).	0.70	0.49	3.56	0.96
I see it as my responsibility to contribute towards a sustainable energy transition.	0.71	0.53	3.90	0.83
I see it as my responsibility to actively participate in the energy market (e.g., produce / sell / exchange / store energy).	0.73	0.63	3.33	1.08
I am willing to play an active role in ensuring that no one is at a disadvantage during the sustainable energy transition.	0.73	0.59	3.48	0.97
Investing time, effort, and money to be able to use more renewable energy is a source of pride for me.	0.65	0.50	3.16	1.03
I am open to helping to influence energy policy and legislation.	0.63	0.60	3.49	0.90

5.4 Results

5.4.1 Factor Analysis

Exploratory factor analyses were conducted on the two scales using principal components analysis. The goal of these factor analyses was to discover hidden patterns, illustrate how those patterns overlap, and identify which characteristics are shared by multiple patterns. For the individual level, initial eigen values indicated that the first two factors explained 45%, and 12% of the variance respectively. The second factor had an eigen value just over one, so a parallel analysis was conducted to test whether or not to retain this factor. Parallel analysis is a simulation-based method that compares eigenvalues of simulated versus empirical factors (Horn, 1965). We carried out parallel analyses on the website by Vivek et al. (2017) which makes calculations using the software R (R Core Team, 2017, version 3.3.3). The analysis indicated that factor one exceeded the eigenvalues of the simulated factors, whereas factor two did not. Therefore, only factor one was retained for the individual level scale. All nine items had factor loadings of .5 or higher on this factor (see Table 1 for factor loadings). This single factor accounted for 45% of the variance. For the collective level scale, initial eigen values indicated that the first two factors explained 47%, and 11% of the variance correspondingly. The second factor had an eigen value of just below one. Parallel analysis indicated that only factor one exceeded the eigenvalues

of the simulated factors. Therefore, only factor one was retained for the collective level scale. All nine items had factor loadings of .5 or higher on this factor (see Table 2 for factor loadings). This single factor accounted for 45% of the variance. We therefore deduced that both scales could best be explained by one factor and are one dimensional constructs, respectively. This suggests that all of our items fit onto a single theoretical construct, namely (individual or collective) energy citizenship.

Table 2. Means, Standard Deviations, Factor Loadings and Communalities for Principal Components Analysis One-Factor Solution for 9 Collective Level Energy Citizenship Items (N = 401)

	Factor loading			
	1	Communality	Mean	Standard Deviation
We EU citizens consider affordable sustainable energy to be an important right.	0.65	0.42	4.31	0.83
We EU citizens consider it an important right to be informed about the energy efficiency of various products.	0.60	0.36	4.24	0.75
We EU citizens consider being able to actively participate in the energy market (e.g., being able to produce / sell/ exchange / store energy) to be an important right.	0.72	0.53	3.91	0.87
We EU citizens see it as our responsibility to help others to participate in the sustainable energy transition (e.g., by sharing our knowledge).	0.74	0.54	3.81	0.85
We EU citizens see it as our responsibility to contribute towards a sustainable energy transition.	0.74	0.54	3.95	0.86
We EU citizens see it as our responsibility to actively participate in the energy market (e.g., produce / sell / exchange / store energy).	0.72	0.52	3.65	0.93
We EU citizens are willing to play an active role in ensuring that no one is at a disadvantage during the sustainable energy transition.	0.68	0.46	3.92	0.82
Investing time, effort, and money to be able to use more renewable energy is a source of pride for us EU citizens.	0.57	0.33	3.33	0.95
We EU citizens are open to helping to influence energy policy and legislation.	0.72	0.52	3.73	0.83

By means of a confirmatory factor analysis we also checked whether there was one latent factor of energy citizenship behind the two individual level and collective level energy citizenship scales and whether they could be combined in one single scale measuring energy citizenship. Based on the previously conducted EFAs and based on our theory, we the following two models were tested using CFA. *MODEL1* was a two-factor model with the two previously described individual level energy citizenship scale and collective level energy citizenship scale constituting one factor, respectively. *MODEL2* was a single factor model, combining the two individual and collective level energy

citizenship scales in one factor. Regarding model fit, both models did not show a good or even acceptable model fit (*MODEL1*: Chi-square 1075.93, Chi-square/df = 8.03, RMSEA = 0.133, CFI = 0.696; *MODEL2*: Chi-square 1124.76, Chi-square/df = 8.33, RMSEA = 0.135, CFI = 0.710). We therefore concluded that there is not one latent factor of energy citizenship that combines both the individual and collective level energy citizenship and the two individual and collective level energy citizenship scales should be treated as separate scales.

5.4.2 Reliability

To get an estimate of the internal consistency among the remaining items, coefficient α was calculated. Overall, the coefficient αs were very good for the two subscales: .85 for the individual level, and .84 for the collective level. Not surprisingly, given the high correlations between the two scales (r (399) = .76, p < .001), the coefficient α for all 18 items together was also high: .91.

5.4.3 Level of energy citizenship in the current sample

We also looked at the how much energy citizenship the current sample showed, based on our newly developed energy citizenship scales. The individual level energy citizenship scale showed a mean of M = 3.7 with a standard deviation of SD = 0.62 in the current sample of 401 participants (see Figure 2). The collective level energy citizenship scale had a mean of M = 3.87 and a standard deviation of SD = 0.57 (see Figure 3). The only significant correlation between one of the demographic variables and our energy citizenship scales was with the variable age. The results indicate that, on average, the older a person, the higher their level of energy citizenship, both on the individual (*r* (399) = .16, *p* < .002), as well as on the collective level (*r* (399) = .17, *p* < .001). The correlations, however, are small.

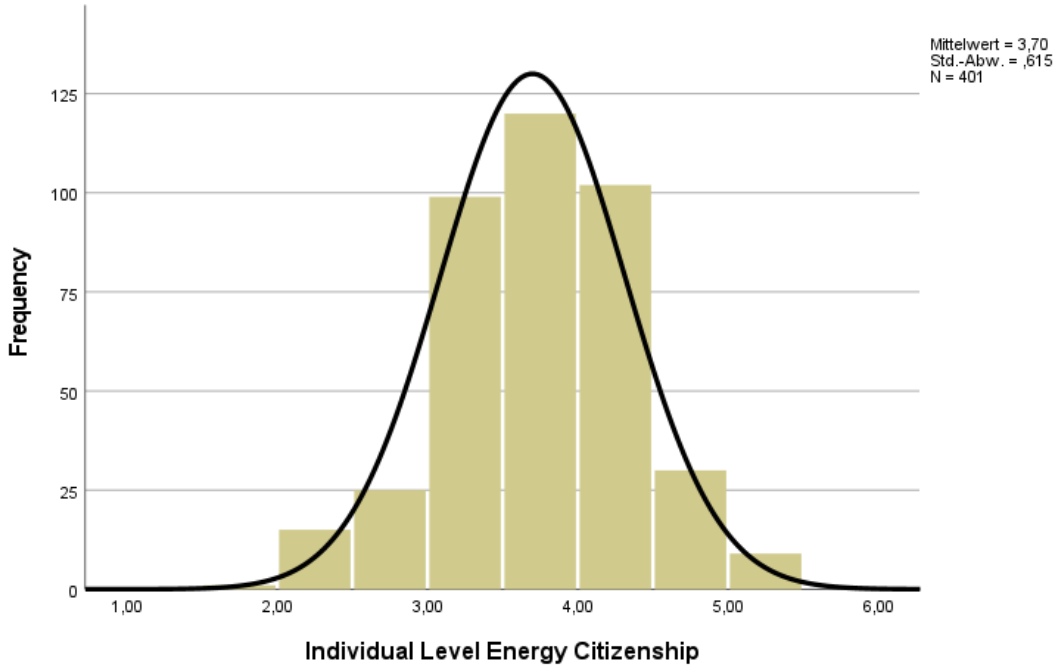

Figure 2. Individual Level Energy Citizenship Histogram

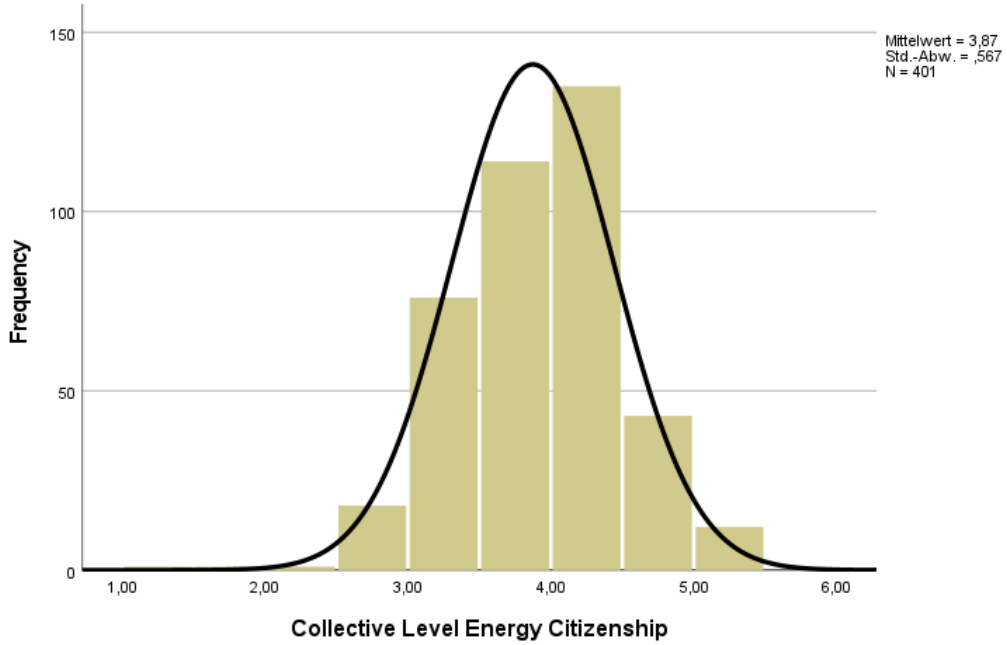

Figure 3. Collective Level Energy Citizenship Histogram

6 Current version

Based on the item reduction and the analyses in the two studies, we ended up with two separate energy citizenship scales, assessing the individual level and the collective level of energy citizenship. The **two scales** consist of nine items each. Both scales have identical items content wise and only differ in referring either to the individual "I" or a specific group. The **nine items** in each scale consist of one item per sub category of or previous structure of energy citizenship and therefore focus on all of the previously defined, relevant aspects of energy citizenship (the current versions of the two energy citizenship scales can be found in the Appendix).

We decided to change the format of the scale from a 5-point scale to a **7-point scale**. The two studies both showed that people usually got rather higher scores, which could be due to the fact that we had an Austrian sample. In other countries where people do not trust the government or face more apparent energy issues or injustices this might be completely different. But at the same time, we wanted to achieve higher differentiation between people so we now decided on a 7-point scale to get some more room for variability.

Next, we revised the introduction text for the collective level scale. We tried to make the group membership more salient. Also, we wanted to make it easier for people to understand what the assignment is. As was indicated in study one, some people felt unsure about what is asked from them, they did not understand whether we wanted to know what they think or wish the relevant group would do. The new introduction text therefore gives a better instruction to the questions. The new introduction text for the collective level scale is: "*People are members of different social groups. The following statements concern your opinion as* ***a member of the group of EU citizens.*** *Please indicate the extent to which you, as a citizen of the EU, agree with the following statements*.". This clarifies that we ask about their opinion as members of a certain group, in this case the group of EU citizens.

6.1 One item alternative energy citizenship scale

Concurrently to developing the previously described energy citizenship scale which is based on our psychological energy citizenship definition, a second short one item energy citizenship scale was developed. This one item energy citizenship scale is based on a practical energy citizenship definition which was developed next to the interdisciplinary and discipline specific definitions of energy citizenship that resulted from WP2. It was developed after discussions in three different co-creation workshops with various stakeholders of the energy transition. Other than the interdisciplinary definition, this practical definition has more practically-oriented criteria: It should be understandable for the general public, relatable, and motivating to actively participate in the energy transition. More details of the development of the practical energy citizenship definition can be found in Deliverable 2.1. The practical energy citizenship definition reads as follows:

"*Energy citizenship describes people's opportunity and willingness for active participation in the energy transition, with the goal of achieving a decentralized, equitable, and regenerative energy system. Energy citizenship is characterized by a co-responsibility between governmental authorities and people. Authorities are responsible for creating structural opportunities and decreasing barriers, particularly for marginalized groups, in order to empower people to become active. People are seen as active agents that create the foundation for, participate in, and sustain a regenerative energy system."*

In the one item alternative energy citizenship scale, participants will read this practical energy citizenship definition and answer the question "Are you willing to participate in the described concept of energy citizenship and to get actively involved within your scope of your possibilities?" The response format will again be a 7-point Likert scale.

7 Next steps and conclusion

As a next step we intend to validate the newly developed energy citizenship scales. The scale will be professionally translated into several different languages including English, Dutch, Polish, Spanish, and Italian. The first validation study will again be carried out in Austria. We will examine both, convergent as well as discriminant validity. The variables which it will be tested against include energy attitudes, environmental awareness, values and ecological citizenship. Also, we will test the one item energy citizenship scale, which consists of the practical energy citizenship definition, in this validation study. Furthermore, we will also validate the scales in at least one other European country. This will be combined with the data collection of the longitudinal studies which will be carried out in WP4.

In this deliverable, we laid out and discussed the first part of the energy citizenship scale development process. We started out with a large item pool of over 200 items covering all relevant aspects of energy citizenship. In a first study this item pool was pre tested for comprehensibility. Based on the results we revised the questions and cut down the item pool to 54 items which were then tested again in a second study. By means of factor analysis, the best fitting items per sub category were selected and two nine item energy citizenship scales (one individual level scale and one collective level scale) were the final product. In a future step, validation studies will be carried out.

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9 Appendix

9.1 Initial item pool

1.Believes

a. Individual level (I)

i. Rights

1. Justice

1. I should have the right to fair and just energy
2. I should have the right to affordable sustainable energy
3. I should have the right to sustainable energy, regardless of where I live
4. I should have the right to take part in the energy transition regardless of my income status
5. I should have the right to state my opinion within new energy projects
6. I should have the right to comprehensible information on renewable energy projects
7. I should have the right to easily accessible information on renewable energy projects
8. I should have the right to receive non material support (e.g., education) to take part in the energy transition
9. I should have the right to receive financial subsidies to participate in the energy transition

2. Sustainability

10. I should have the right to sustainable energy
11. I should have the right to install energy saving appliances in my household
12. I should have the right to produce my own energy (e.g., solar panels)
13. I should have the right to actively participate in the energy marked (e.g., sell energy / exchange energy/ store energy)

3. Transition

14. I should have the right to participate in decision making in the energy sector
15. I should have the right to co-create energy policies and laws
16. I should have the right to join an energy community
17. I should have the right to found an energy community
18. I should have the right to vote for a sustainable energy transition
19. I should have the right to protest for a sustainable energy transition

ii. Responsibility

1. Justice

20. I am responsible to contribute to making sustainable energy affordable
21. I am responsible to contribute to making sustainable energy accessible to everyone
22. I am responsible to take part in the energy transition regardless of my income status
23. I am responsible to state my opinion within new energy projects
24. I am responsible for assuring transparency in the planning of renewable energy projects

2. Sustainability

25. I am responsible to contribute to a sustainable energy transition

26. I am responsible to reduce my energy consumption (e.g., using energy-efficient home appliances, lowering the room temperature /saving hot water/ reducing laundry temperatures/ line drying laundry/eliminating standby electricity use)
27. I am responsible to produce my own energy
28. I am responsible to actively participate in the energy marked (e.g., sell energy / exchange energy)
29. I am responsible to contribute to solving energy problems
30. I am responsible to use more sustainable energy resources
31. I am responsible to make purchasing choices with regard to saving energy (e.g., buying fewer things, buying sustainably produced things)
32. I am responsible to invest non-financial resources (e.g., time, skills, education) to support the sustainable energy transition
33. I am responsible to invest financial resources to support the sustainable energy transition

3. Transition

34. I am responsible to take part in the energy transition
35. I am responsible to participate in decision making in the energy sector
36. I am responsible to co-create energy policies and laws
37. I am responsible to join an energy community
38. I am responsible to found an energy community
39. I am responsible to vote for a sustainable energy transition
40. I am responsible to protest for a sustainable energy transition
41. I am responsible to contribute to solving energy problems
42. I am responsible to inform myself on local energy projects.
43. I believe the state and companies are responsible for the energy transition
44. It is mostly in the hands of politicians and companies how we use and produce energy. (Reverse coded)
45. The way I personally use energy does not really make a difference to the energy problems that face our nation. (Reverse coded)
46. I do not feel responsible for conserving energy, because new technologies will be developed to solve the energy problems. (Reverse coded)

b. Social level (We)

i. Rights

1.Justice

47. We as citizens should all have equal rights to sustainable energy
48. We as citizens should have the right to affordable sustainable energy
49. We as citizens should have the right to sustainable energy, regardless of where we live
50. We as citizens should have the right to take part in the energy transition regardless of our income status
51. We as citizens should have the right to state our opinion within new energy projects
52. We as citizens should have the right to comprehensible information on renewable energy projects
53. We as citizens should have the right to easily accessible information on renewable energy projects
54. We as citizens should have the right to receive non material support (e.g., education) to take part in the energy transition

55. We as citizens should have the right to receive financial subsidies to participate in the energy transition

2.Sustainability

56. We as citizens should have the right to sustainable energy
57. We as citizens should have the right to install energy saving appliances in our households
58. We as citizens should have the right to produce our own energy
59. We as citizens should have the right to actively participate in the energy marked (e.g., sell energy / exchange energy)

3.Transition

60. We as citizens should have the right to participate in decision making in the energy sector
61. We as citizens should have the right to co-create energy policies and laws
62. We as citizens should have the right to join an energy community
63. We as citizens should have the right to found an energy community
64. We as citizens should have the right to vote for a sustainable energy transition
65. We as citizens should have the right to protest for a sustainable energy transition
66. When we as citizens have the right to participate in the energy market it can produce chaos (Reverse coded)

ii. Responsibility

1.Justice

67. We as citizens are responsible for affordable sustainable energy
68. We as citizens are responsible for making sustainable energy accessible for everyone, regardless of where they live
69. We as citizens are responsible for including everyone in the energy transition regardless of their income status
70. We as citizens are responsible to state our opinions within new energy projects
71. We as citizens are responsible for transparency in the planning of renewable energy projects

2.Sustainability

72. We as citizens are responsible for a sustainable energy transition
73. We as citizens are responsible to reduce our energy consumption (e.g., using energy-efficient home appliances, lowering the room temperature /saving hot water/ reducing laundry temperatures/ line drying laundry/eliminating standby electricity use)
74. We as citizens are responsible to install energy saving appliances in our households
75. We as citizens are responsible to produce our own energy
76. We as citizens are responsible to actively participate in the energy marked (e.g., sell energy / exchange energy)
77. We as citizens are responsible to contribute to solving energy problems
78. We as citizens are responsible to use more sustainable energy resources
79. We as citizens are responsible to make purchasing choices with regard to saving energy (e.g., buying fewer things, buying sustainably produced things)
80. We as citizens are responsible to invest non-financial resources (e.g., time, skills, education) to support the sustainable energy transition
81. We as citizens are responsible to invest financial resources to support the sustainable energy transition

3. Transition

82. We as citizens are responsible to participate in decision making in the energy sector
83. We as citizens are responsible to co-create energy policies and laws
84. We as citizens are responsible to join energy communities
85. We as citizens are responsible to found energy communities
86. We as citizens are responsible to vote for a sustainable energy transition
87. We as citizens are responsible to protest for a sustainable energy transition
88. We as citizens are responsible to contribute to solving energy problems
89. We as citizens are responsible to inform ourselves on local energy projects.

2.Affect

a. Individual level (I)

i. Rights

1. Justice

90. My right to sustainable energy, regardless of where I live
91. My right to take part in the energy transition regardless of my income status
92. My right to state my opinion within new energy projects
93. My right to comprehensible information on renewable energy projects
94. My right to easily accessible information on renewable energy projects
95. My right to receive non material support (e.g., education) to take part in the energy transition
96. My right to receive financial subsidies to participate in the energy transition

2. Sustainability

97. My right to sustainable energy
98. My right to install energy saving appliances in my household
99. My right to produce my own energy (e.g., solar panels)
100. My right to participate in the energy marked (e.g., sell energy / exchange energy/ store energy)

3. Transition

101. My right to participate in decision making in the energy sector
102. My right to co-create energy policies and laws
103. My right to join an energy community
104. My right to found an energy community
105. My right to vote for a sustainable energy transition
106. My right to protest for a sustainable energy transition

ii. Responsibility

1. Justice

107. My responsibility to contribute to making sustainable energy affordable
108. My responsibility to contribute to making sustainable energy accessible to everyone
109. My responsibility to take part in the energy transition regardless of my income status
110. My responsibility to state my opinion within new energy projects

111. My responsibility for assuring transparency in the planning of renewable energy projects

2. Sustainability

112. My responsibility to contribute to a sustainable energy transition
113. My responsibility to reduce my energy consumption (e.g., using energy-efficient home appliances, lowering the room temperature /saving hot water/ reducing laundry temperatures/ line drying laundry/eliminating standby electricity use)
114. My responsibility to produce my own energy
115. My responsibility to participate in the energy marked (e.g., sell energy / exchange energy)
116. My responsibility to contribute to solving energy problems
117. My responsibility to use more sustainable energy resources
118. My responsibility to make purchasing choices with regard to saving energy (e.g., buying fewer things, buying sustainably produced things)
119. My responsibility to invest non-financial resources (e.g., time, skills, education) to support the sustainable energy transition
120. My responsibility to invest financial resources to support the sustainable energy transition

3. Transition

121. My responsibility to participate in decision making in the energy sector
122. My responsibility to co-create energy policies and laws
123. My responsibility to join an energy community
124. My responsibility to found an energy community
125. My responsibility to vote for a sustainable energy transition
126. My responsibility to protest for a sustainable energy transition
127. My responsibility to contribute to solving energy problems
128. My responsibility to inform myself on local energy projects.
129. The state and companies' responsibility for the energy transition

b. Social level (We)

i. Rights

1.Justice

130. Our equal citizen rights to sustainable energy
131. Our citizen right to affordable sustainable energy
132. Our citizen right to sustainable energy, regardless of where we live
133. Our citizen right to take part in the energy transition regardless of our income status
134. Our citizen right to state our opinion within new energy projects
135. Our citizen right to comprehensible information on renewable energy projects
136. Our citizen right to easily accessible information on renewable energy projects
137. Our citizen right to receive non material support (e.g., education) to take part in the energy transition
138. Our citizen right to receive financial subsidies to participate in the energy transition

2.Sustainability

139. Our citizen right to sustainable energy
140. Our citizen right to install energy saving appliances in our households

141. Our citizen right to produce our own energy
142. Our citizen right to participate in the energy marked (e.g., sell energy / exchange energy)

3.Transition

143. Our citizen right to participate in decision making in the energy sector
144. Our citizen right to co-create energy policies and laws
145. Our citizen right to join an energy community
146. Our citizen right to found an energy community
147. Our citizen right to vote for a sustainable energy transition
148. Our citizen right to protest for a sustainable energy transition

ii. Responsibility

1.Justice

149. Our citizen responsibility for affordable sustainable energy
150. Our citizen responsibility for making sustainable energy accessible for everyone, regardless of where they live
151. Our citizen responsibility for including everyone in the energy transition regardless of their income status
152. Our citizen responsibility to state our opinions within new energy projects
153. Our citizen responsibility for transparency in the planning of renewable energy projects

2.Sustainability

154. Our citizen responsibility for a sustainable energy transition
155. Our citizen responsibility to reduce our energy consumption (e.g., using energy-efficient home appliances, lowering the room temperature /saving hot water/ reducing laundry temperatures/ line drying laundry/eliminating standby electricity use)
156. Our citizen responsibility to produce our own energy
157. Our citizen responsibility to participate in the energy marked (e.g., sell energy / exchange energy)
158. Our citizen responsibility to contribute to solving energy problems
159. Our citizen responsibility to use more sustainable energy resources
160. Our citizen responsibility to make purchasing choices with regard to saving energy (e.g., buying fewer things, buying sustainably produced things)
161. Our citizen responsibility to invest non-financial resources (e.g., time, skills, education) to support the sustainable energy transition
162. Our citizen responsibility to invest financial resources to support the sustainable energy transition

3. Transition

163. Our citizen responsibility to participate in decision making in the energy sector
164. Our citizen responsibility to co-create energy policies and laws
165. Our citizen responsibility to join energy communities
166. Our citizen responsibility to found energy communities
167. Our citizen responsibility to vote for a sustainable energy transition
168. Our citizen responsibility to protest for a sustainable energy transition
169. Our citizen responsibility to contribute to solving energy problems
170. Our citizen responsibility to inform ourselves on local energy projects.

3. Action Motivation

a. Individual level (I)

1. Justice

171. I am willing to actively contribute to a fair energy transition
172. I am willing to actively contribute to making sustainable energy affordable
173. I am willing to take part in the energy transition regardless of my income status

2. Sustainability

174. I am willing to actively contribute to a sustainable energy transition
175. I am willing to reduce my energy consumption (e.g., using energy-efficient home appliances, lowering the room temperature /saving hot water/ reducing laundry temperatures/ line drying laundry/eliminating standby electricity use)
176. I am willing to adapt my transportation methods to safe energy (e.g., using public transport, avoid using planes, switch to electric vehicles, go by bike)
177. I am willing to make purchasing choices with regard to saving energy (e.g., buying fewer things, buying sustainably produced things, buying local things)
178. I am willing to renovate my home in energy-efficient ways (e.g., insulated glazing, walls, and roofs)
179. I am willing to invest in green technology (e.g., solar panels, wind turbines, green roof)
180. I am willing to use more sustainable energy resources
181. I am willing to produce my own energy (e.g., solar panels)
182. I am willing to actively participate in the energy marked (e.g., sell energy / exchange energy/ store energy)
183. I am willing to invest non-financial resources (e.g., time, skills, education) to support the sustainable energy transition
184. I am willing to invest financial resources to support the sustainable energy transition

3. Transition

185. I am willing to actively shape the energy future of my country.
186. I am willing to participate in decision making in the energy sector
187. I am willing to co-create energy policies and laws
188. I am willing to actively engage in an energy community/ a community energy initiative
189. I am willing to join protests that demand a sustainable energy system.
190. I am willing to support policies in favor of a sustainable energy system.
191. I am willing to vote for parties who fight for a sustainable energy system
192. I am willing to sign petitions that demand a sustainable energy system
193. I am willing to contribute to solving energy problems
194. I am willing to motivate others in my local community to save energy
195. I am willing to inform myself on local energy projects.

b. Social level (we)

1. Justice

196. We as citizens are willing to actively contribute to a fair energy transition
197. We as citizens are willing to actively contribute to making sustainable energy affordable

2. Sustainability

198. We as citizens are willing to actively contribute to a sustainable energy transition
199. We as citizens are willing to reduce our energy consumption (e.g., using energy-efficient home appliances, lowering the room temperature /saving hot water/ reducing laundry temperatures/ line drying laundry/eliminating standby electricity use)
200. We as citizens are willing to adapt our transportation methods to safe energy (e.g., using public transport, avoid using planes, switch to electric vehicles, go by bike)
201. We as citizens are willing to make purchasing choices with regard to saving energy (e.g., buying fewer things, buying sustainably produced things, buying local things)
202. We as citizens are willing to renovate our homes in energy-efficient ways (e.g., insulated glazing, walls, and roofs)
203. We as citizens are willing to invest in green technology (e.g., solar panels, wind turbines, green roof)
204. We as citizens are willing to produce our own energy
205. We as citizens are willing to actively participate in the energy marked (e.g., sell energy / exchange energy/ store energy)
206. We as citizens are willing to use more sustainable energy resources
207. We as citizens are willing to invest non-financial resources (e.g., time, skills, education) to support the sustainable energy transition
208. We as citizens are willing to invest financial resources to support the sustainable energy transition

3. Transition

209. We as citizens are willing to actively shape the energy future of our country.
210. We as citizens are willing to participate in decision making in the energy sector
211. We as citizens are willing to co-create energy policies and laws
212. We as citizens are willing to actively engage in energy communities/ community energy initiatives
213. We as citizens are willing to join protests that demand a sustainable energy system.
214. We as citizens are willing to support policies in favor of a sustainable energy system.
215. We as citizens are willing to vote for parties who fight for a sustainable energy system
216. We as citizens are willing to sign petitions that demand a sustainable energy system
217. We as citizens are willing to contribute to solving energy problems
218. We as citizens are willing to motivate others in our local communities to save energy

9.2 Current version of the energy citizenship scale

Individual Level:

Please indicate the extent to which you agree with the following statements.

1. I consider affordable sustainable energy to be an important right.
2. I consider it an important right to be informed about the energy efficiency of various products.

3. I consider being able to actively participate in the energy market (e.g., being able to produce/sell/exchange/store energy) to be an important right.

4. I see it as my responsibility to help others to participate in the sustainable energy transition (e.g., by sharing my knowledge).

5. I see it as my responsibility to contribute towards a sustainable energy transition.

6. I see it as my responsibility to actively participate in the energy market (e.g., produce/sell/exchange/store energy).
7. I am willing to play an active role in ensuring that no one is at a disadvantage during the sustainable energy transition.
8. Investing time, effort, and money to be able to use more renewable energy is a source of pride for me.
9. I am open to helping to influence energy policy and legislation.

Collective Level:

*People are members of different social groups. The following statements concern your opinion as a **member of the group of EU citizens**. Please indicate the extent to which you, as a citizen of the EU, agree with the following statements.*

1. We EU citizens consider affordable sustainable energy to be an important right.

2. We EU citizens consider it an important right to be informed about the energy efficiency of various products.
3. We EU citizens consider being able to actively participate in the energy market (e.g., being able to produce/sell/exchange/store energy) to be an important right.

4. We EU citizens see it as our responsibility to help others to participate in the sustainable energy transition (e.g., by sharing our knowledge).

5. We EU citizens see it as our responsibility to contribute towards a sustainable energy transition.
6. We EU citizens see it as our responsibility to actively participate in the energy market (e.g., produce/sell/exchange/store energy).

7. We EU citizens are willing to play an active role in ensuring that no one is at a disadvantage during the sustainable energy transition.

8. Investing time, effort, and money to be able to use more renewable energy is a source of pride for us EU citizens.
9. We EU citizens are open to helping to influence energy policy and legislation.