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SONNET – SOCIAL INNOVATION IN ENERGY TRANSITIONS

Co-creating a rich understanding of the diversity, processes, contributions, success and future potentials of social innovation in the energy sector

D6.2 | D25:

SIE evaluation:

**Characterising successful SIE to enable
secure, sustainable, competitive, and affordable
energy transitions**

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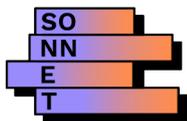
Work Package: 6

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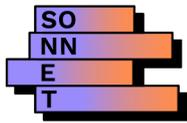
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Executive Summary

Within the SONNET project, the main aim of WP6 is to quantify which initiatives engaged in social innovation in the energy sector (SIE-initiatives) achieve the highest contribution towards EU-aims. For this purpose, we prepared 3 different surveys that are included in Annex 3ff to assess different aspects and perspectives regarding the contribution of SIE-initiatives.

Based on the responses to the first survey - responses from 42 researchers, 18 representatives of initiatives engaged in social innovation in the energy sector (SIE-representatives) and 36 representatives of organisations that are active in the energy sector (field-actors) - we find that SIE-initiatives most successfully contribute to their own aims, such as "social acceptance" and "local community". Aims shared by SIE and EU (referred to as shared-aims) towards which the SIE-initiatives are perceived to contribute the most are "renewables production" and lower "CO₂-emissions", which are also the Shared-aims that are most important to SIE-initiatives.

Building on the typology of social innovation in the energy sector (SIE) that was developed as part of SONNET Deliverable D1.1 and the corresponding SIE-initiatives analysed in SONNET work-package 3 (Deliverable D3.2), we assessed to what extent SIE-initiatives representing different types of SIE were perceived as more successful than others. Controlling for other relevant factors, such as the respondent type and the country, we find that the average contribution towards shared-aims is significantly higher for SIE-initiatives engaged in the social relation of "Competition" and significantly lower for SIE-initiatives engaged in the social relation of "Conflict" than for SIE-initiatives engaged in other types of social relation (i.e. "Cooperation" or "Exchange"). While SIE-initiatives that were focussing on "Thinking"-type activities achieved a slightly lower average contribution score than SIE-initiatives engaged in the other types of activities ("Doing", "Organizing"), this difference is not statistically significant.

Likert scale ratings regarding the perceived contribution of SIE-initiatives towards different SIE-aims, aims shared by SIE and EU (referred to as shared-aims) and/or EU-aims were positively correlated. Reasons for this could be that some of these aims are fairly similar concepts (such as "energy efficiency" and "reduced energy consumption") or that there are spill-overs between these aims (such as in case of "independence of supplies" and "security of supply").

As two of our surveys received hardly any responses, we conducted follow-up interviews, which revealed that most SIE-initiatives probably do not collect objective data regarding their contribution towards EU-aims or shared-aims (except those on "renewables generation"), and that the data which they do collect is hard to compare across SIE-types. During a workshop to inform future projects, we identified two promising alternative approaches that could be used to quantify the contribution of SIE-initiatives towards EU-aims and shared-aims: the usage of automated media-analysis and /or data available from the database of the European Energy Awards (EEA).

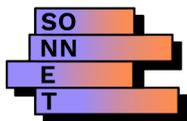
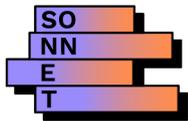


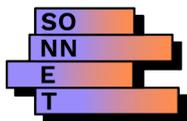
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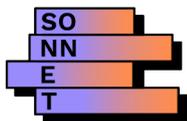
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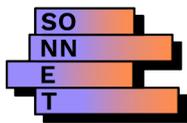
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1 CONTEXT

1.1 Introduction

SONNET aims to create an inter- and transdisciplinary understanding of the diversity and processes of social innovation in the energy sector (SIE). It assesses – critically and reflexively – the success, contributions, and future potential of SIE towards sustainable energy transitions in Europe. SONNET investigates how, to what extent, and under which enabling conditions diverse types of SIE may result in new breakthroughs or successfully help to overcome transition barriers, such as limited citizen engagement or slow adoption of new technologies.

1.2 Objectives of WP6

The objectives of WP 6 were to:

1. map the alignment between EU-aims and SIE-aims
2. develop an evaluation scheme of SMART indicators and additional benefits for better understanding successful examples of SIE and their contributions to EU-aims
3. apply the evaluation scheme to understand successful examples of SIE and their related contributions to European Energy Union objectives

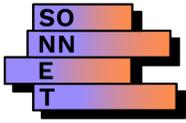
The first two of these objectives are addressed by deliverable D6.1. As part of the goal alignment analysis in D6.1, we identified a list of SIE-aims, EU-aims and aims shared by SIE and EU (referred to as shared-aims)¹, and assessed the importance which different SIE-initiatives attach to each of these aims. In addition to that, we developed an evaluation scheme consisting of 3 surveys to measure the contributions of SIE-initiatives towards EU-aims and shared-aims using SMART indicators which is described in more detail in Appendix 5 of D6.1.

The aim of the current deliverable D6.2 was to evaluate and triangulate the result from these surveys to answer the research question:

Q1: “Which types of SIE-initiatives achieve the biggest contribution towards the EU-aims in different countries?”

However, only the first of these three surveys received sufficient responses to allow for a meaningful analysis. Our answer to the above research question is thus limited to the results from

¹ In SONNET D6.1 the category of EU-aims included the Shared-aims.



the first survey. In addition to that, we have amended the scope of the report to answer the following questions:

Q2: *“Why have the surveys achieved such a low number of responses?”*

Q3: *“Which alternative evaluation schemes could be used in future projects to measure the contribution of SIEs towards EU-aims?”*

To answer these additional questions interviews and a workshop were implemented.

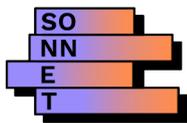
1.3 Report structure

The rest of this report is structured as follows:

Section 2 summarizes the original, survey-based evaluation approach. For a more detailed description of the evaluation approach, readers should refer to D6.1.

Section 3 presents an analysis of the results we achieved using survey 1 from the original evaluation approach.

Section 4 presents the results from a series of follow-up interviews regarding the shortcomings of our original evaluation approach and the findings from a subsequent workshop regarding alternative evaluation approaches.

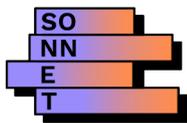


1.4 Definition of key concepts

Throughout this document we will use the following concepts² (alphabetical order):

- Aim*: The directed aim, intent or purpose of the EU Energy Union, the SIE-initiative, SIE-actors, or other field-actors.
- Alignment*: The extent to which different actors and institutions share the same aims, i.e., have a similar strength (“strong” vs. “weak”) of support for their aims.
- EU-aim*: An aim which was mentioned as a main policy aim of the EU in official documents, and was not mentioned in the literature on SIE-initiatives as an SIE-aim.
- Field-actors: are individuals, organizations or other collectives who are part of a certain SIE-field – these can enable or impede social innovation in the energy sector (SIE). They can be from every sphere of society (community, market, state, third sector).
- Shared-aim*: An aim which was mentioned as a policy aim of the EU in official documents, and was also mentioned in the literature on SIE-initiatives as an SIE-aim.
- SIE: A social innovation in the energy sector (SIE) is a combination of ideas, objects and/or actions that change social relations and involve new ways of doing, thinking and/or organising energy.
- SIE-aim*: An aim which was found in the literature on SIE-initiatives and was not mentioned as a main policy aim of the EU in official documents.
- SIE-field: is an arena/ space that includes a specific SIE as well as SIE-actors working on it and field actors enabling and/or impeding it. In this space these actors take one another and their actions into account and have a shared (but not necessarily consensual) understanding of a SIE and of their relationship to other actors. They recognise (but not necessarily follow) shared norms, beliefs and rules.
- SIE-initiative: a localised version/ manifestation in time and space of an SIE. It includes SIE actors, as those actors working on SIE.
- SIE-members*: individuals that belong to an SIE-initiative, regardless of whether they are SIE-representatives or do not have an official role within the SIE-initiative.
- SIE-representatives*: individuals, that can speak for an SIE-initiative, such as the founders, president, program manager or spokesperson, or any other SIE-member that has an official role within the SIE-initiative.
- SIE-type: the SIE-fields were clustered into 12 different conceptually-informed types by using the two categories “Activity” and “Social relation” (cf. SONNET Deliverable D1.1). The applied activities are Doing, Thinking, Organizing, while the social relations (from now on relations) are Cooperation, Exchange, Competition, and Conflict.

² In line with SONNET deliverable D1.2; definitions which were not included in SONNET Deliverable D1.2 are marked with an asterisk*.



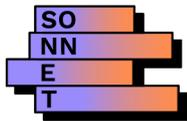
2 ORIGINAL EVALUATION APPROACH

2.1 Overview of SIE-aims, EU-aims and shared-aims

As described in further detail in SONNET deliverable D6.1, the following list of SIE-aims, EU-aims and shared-aims was identified based on a literature review and a series of workshops. This list of aims was used in all three surveys of WP6. Further details on how the list of aims was derived can be found in SONNET deliverable D6.1.

Table 1: Consolidated list of aims (in alphabetical order)

| Aim | Description | Type |
|-----------------------------|--|-------------|
| consumer bill | reduce energy bill for consumers | Shared |
| energy consumption | reduce energy consumption | Shared |
| energy efficiency | increase energy efficiency | Shared |
| greenhouse gas emissions | reduce greenhouse gas emissions | Shared |
| impact on environment | reduce impact on the environment | SIE |
| independence of supplies | increase independence of energy supplies | SIE |
| knowledge transfer | improve the transfer of knowledge in the energy sector | SIE |
| local community | strengthen local community | SIE |
| local economic development | increase local economic development | SIE |
| new renewable technologies | develop new renewable energy technologies | EU |
| policy processes | impact energy policy processes | SIE |
| quality of life | improve quality of life | SIE |
| regional renewable projects | advocate for regional renewable energy projects | SIE |
| renewables production | increase the production from renewable energy sources | Shared |
| renewables profitability | improve economic feasibility of renewable energy projects | SIE |
| security of supply | improve security of energy supply | EU |
| social acceptance | improve social acceptance of renewable energy production | SIE |
| support energy projects | provide support for other energy-related initiatives or projects | SIE |
| trade | increase trade of energy with neighbouring regions | EU |



2.2 Overview of surveys

Quantifying the aims and contributions of small actors such as SIE-initiatives is a difficult task because:

- Aims of SIE-initiatives are subjective and heterogeneous
- Contributions and success of SIE-initiatives are hard to quantify, as some of their aims relate to ways of “Thinking”, which cannot be inferred from objective actions (i.e. raising awareness and increasing acceptance)
- Data is scarce, as many SIE-initiatives will not have the time that is required to quantify their contributions towards different aims.

To overcome these problems, our original research approach consisted of 3 online-surveys described in Table 2 below.

In **survey 1 version 1**, we asked researchers and SIE-representatives to provide a subjective rating regarding the aims and contributions to these aims of specific SIE-initiatives

In **survey 1 version 2**, we used a slightly adjusted version of survey 1 to ask field-actors to provide a subjective rating regarding the aims and contributions of an SIE-field as a whole

In **survey 2**, we asked SIE-representatives to provide us with objective data (such as kWh renewables production, kg avoided CO₂-emissions etc.) regarding the contribution of their SIE-initiative towards EU-aims and shared-aims.

In **survey 3**, we asked the members of SIE-initiatives to tell us about their reasons for joining the SIE-initiative and to provide a subjective rating about how the SIE-initiative had affected their “Thinking”, “Doing” and “Organizing”.

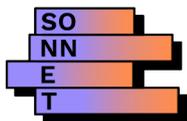
Surveys used a mix of closed and open questions. Based on our pretest, each survey should take about 10-15 minutes to answer. Screenshots from the survey questions can be found in Annexes 3 to 6.

The usage of overlapping surveys for different SIE fields, units of analysis and types of metrics has the following advantages:

Survey 1: Reveals the alignment between SIE-aims, EU-aims and shared-aims. It allows us to explore contributions of individual SIE-initiatives and effects that become salient at the level of SIE-fields, as well as to explore differences between the perspective of different respondent types.

Survey 2: Allows us to benchmark the subjective assessments of contributions in Survey 1 against objective (SMART) indicators, at least for some of the main EU-aims and shared-aims.

Survey 3: Reveals impacts of SIE-initiatives on its members that cannot be captured by SMART indicators, such as impacts on opinions (“Thinking”).



All Surveys: are supposed to allow us to assess the heterogeneity of aims between different members of the same SIE-initiative and explore biases of the subjective ratings depending on the type of respondent who carries out the assessment

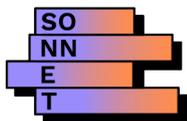
Table 2: Overview of surveys used in WP6.

| What instrument? | Who? | Type of metric | Aims | Contributions | Unit of analysis |
|--|---------------------|----------------|------|---------------|------------------|
| Survey 1 version 1 (Aims and Contributions) | Researcher | subjective | X | X | SIE-initiative |
| | SIE-representatives | | | | |
| Survey 1 version 2 (Aims and Contributions) | Field-actors | subjective | X | X | SIE-field |
| Survey 2 (SMART indicators) | SIE-representatives | objective | | X | SIE-initiative |
| Survey 3 (SIE-member views) | SIE-members | subjective | X | X | SIE-member |

2.3 Survey collection and response rates

Researchers from WP3 had been asked to fill in survey 1 prior to each interview with a SIE-representative or a field-actor. In addition to that, they should ask their interview partner to fill in survey 1 at the end of the interview. As part of survey 1, SIE-representatives were asked to specify suitable contact persons for the follow-up surveys 2 and 3.

To increase the likelihood of obtaining survey answers, during the SONNET meeting online at Warsaw on 7 July 2020 it was decided that the invitations to the follow-up surveys 2 and 3 should



be sent by the WP3 contact points that had interviewed each SIE-initiative³. The total sample that was invited to participate would thus consist of all the contact persons that had been specified as part of survey 1.

To assist WP3 researchers in this process, we thus compiled a one-page summary of the survey collection process, and drafted invitation emails which they could use at their convenience to invite SIE-representatives to answer the surveys. Between October 2020 and May 2021 we updated WP3 researchers four times regarding which of the SIE-initiatives had answered each of the surveys and reminding them to follow-up with SIE-initiatives that had not provided an answer.

The final number of respondents for each survey which was achieved is shown in Table 3. Unfortunately, despite several reminders, none of the SIE-initiatives had answered the survey number 2, and only 13 respondents from a single SIE-initiative had answered survey number 3.

Table 3: Number of survey responses.

| Survey | Who? | Number of Responses |
|----------------------------|---------------------|---------------------|
| Survey 1, version 1 | Researcher | 42 |
| | SIE-representatives | 18 |
| Survey 1, version 2 | Field-actors | 36 |
| Survey 2 | SIE-representatives | 0 |
| Survey 3 | SIE-members | 13 |

The analyses in the subsequent section 3 are therefore limited to the subjective contribution ratings in both versions of survey 1. More in detail, the number of survey 1 responses per SIE-type, respondent type and language⁴ are shown in

³ WP3 analysed different SIE-initiatives through interviews with representatives of the corresponding SIE-initiative.

⁴ Language is used as a proxy for the country.

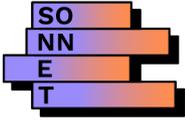


Table 4. The mapping between the SIE-initiatives and the corresponding SIE-types was derived as part of WP1 and is shown in Annex 7. The analysis of subjective importance ratings from survey 1 has already been published as part of SONNET Deliverable 6.1.

To identify the reasons behind the low response rates to surveys 2 and 3, we conducted 12 short follow-up interview with 10 SIE-initiatives. We also organized a workshop to explore alternative approaches for collecting SMART metrics from SIE-initiatives. Both are described in section 4.

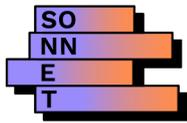
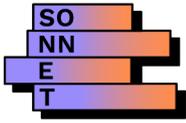


Table 4: Number of survey 1 responses per SIE-type, respondent type and language.

| Language | SIE-type | Field-actors | Researchers | SIE-representative | Total |
|--------------------|----------------------------|--------------|-------------|--------------------|-----------|
| de | Cooperative action | 10 | 2 | 4 | 16 |
| de | Cooperative framing | 0 | 1 | 1 | 2 |
| de | Cooperative organisation | 0 | 4 | 0 | 4 |
| de | Local electricity exchange | 2 | 1 | 1 | 4 |
| de | Organized competition | 3 | 5 | 3 | 11 |
| de | Total | 15 | 13 | 9 | 37 |
| en | Conflicting practices | 0 | 1 | 1 | 2 |
| en | Cooperative action | 1 | 0 | 0 | 1 |
| en | Cooperative framing | 0 | 1 | 0 | 1 |
| en | Local electricity exchange | 1 | 1 | 2 | 4 |
| en | Organized competition | 1 | 0 | 0 | 1 |
| en | Organized conflict | 0 | 1 | 1 | 2 |
| en | Organized exchange | 2 | 1 | 0 | 3 |
| en | Total | 5 | 5 | 4 | 14 |
| fr | Cooperative action | 4 | 6 | 0 | 10 |
| fr | Knowledge exchange | 0 | 3 | 0 | 3 |
| fr | Local electricity exchange | 3 | 3 | 0 | 6 |
| fr | Organized competition | 0 | 0 | 1 | 1 |
| fr | Total | 7 | 12 | 1 | 20 |
| nl | Conflicting practices | 2 | 0 | 0 | 2 |
| nl | Cooperative action | 2 | 0 | 0 | 2 |
| nl | Cooperative organisation | 2 | 1 | 0 | 3 |
| nl | Organized exchange | 0 | 1 | 0 | 1 |
| nl | Total | 6 | 2 | 0 | 8 |
| pl | Conflicting frames | 0 | 1 | 1 | 2 |
| pl | Conflicting practices | 0 | 1 | 1 | 2 |
| pl | Cooperative organisation | 0 | 2 | 1 | 3 |
| pl | Knowledge exchange | 0 | 1 | 0 | 1 |
| pl | Local electricity exchange | 0 | 1 | 0 | 1 |
| pl | Organized conflict | 0 | 3 | 1 | 4 |
| pl | Organized exchange | 3 | 1 | 0 | 4 |
| pl | Total | 3 | 10 | 4 | 17 |
| Grand Total | | 36 | 42 | 18 | 96 |

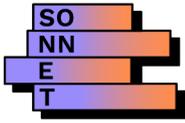


2.4 Analysis of survey responses

For the analysis of survey 1 responses, we use four main methods:

- **Average importance:** The importance rating of an aim measures how important a respondent perceives this aim to be for an SIE-initiative (in survey 1 version 1) or an SIE-field (in survey 1 version 2). For better interpretability, aims are sorted by average importance.
- **Average contribution:** The contribution rating of an aim measures how much a respondent thinks that an SIE-initiative (in survey 1 version 1) or an SIE-field (in survey 2 version 2) has contributed towards this aim. For better interpretability, aims are sorted by average contribution.
- **Correlations:** correlations between the average contribution rating by different respondent groups, as well as between the average importance rating and the average contribution rating for different aims.
- **Linear Regression:** explains the dependent variable importance/contribution by its explanatory variables. Ordinary Least Squares is the model used for this linear regression. This analysis will show the statistical significance of potential explanatory variables that were identified using the previous three methods.

Unless otherwise stated, importance and contribution ratings include the responses of all researchers, SIE-representatives, and field-actors that were provided using survey 1 (version 1 and version 2, respectively). Aims for which no rating was provided were assumed to have a low importance (Likert-scale rating 0="Not important").



3 RESULTS OF ORIGINAL EVALUATION APPROACH

This chapter will describe the perceived contribution of the SIE towards the aims. From here onwards, “contribution” will be used as a synonym for the “perceived contribution” which is derived from the responses of Survey 1 Version 1 and 2.

3.1 Perceived contribution towards different aims

To get a first impression of the perceived contribution towards different aims,

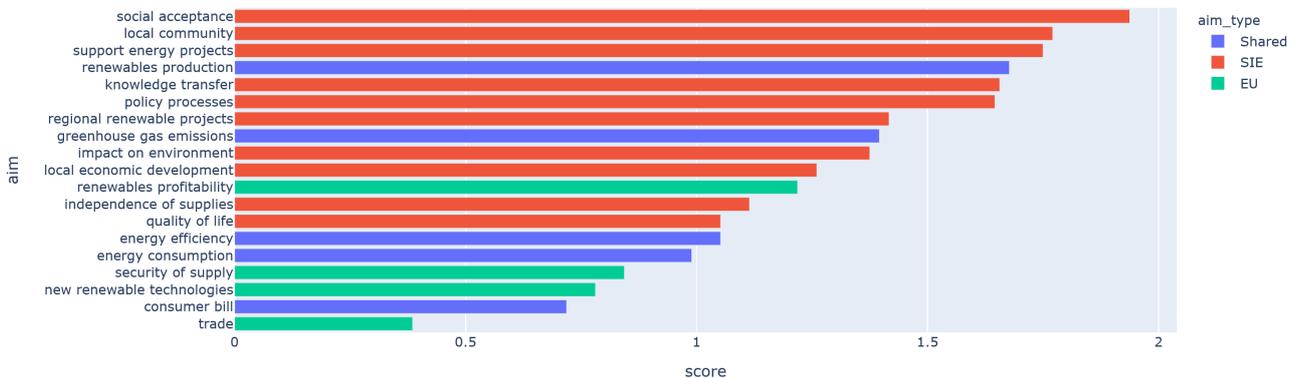


Figure 1 shows the average perceived contributions per aim. Aims are sorted in a descending order starting with the highest contribution. SIE-aims are coloured red, EU-aims green, and shared-aims in blue.

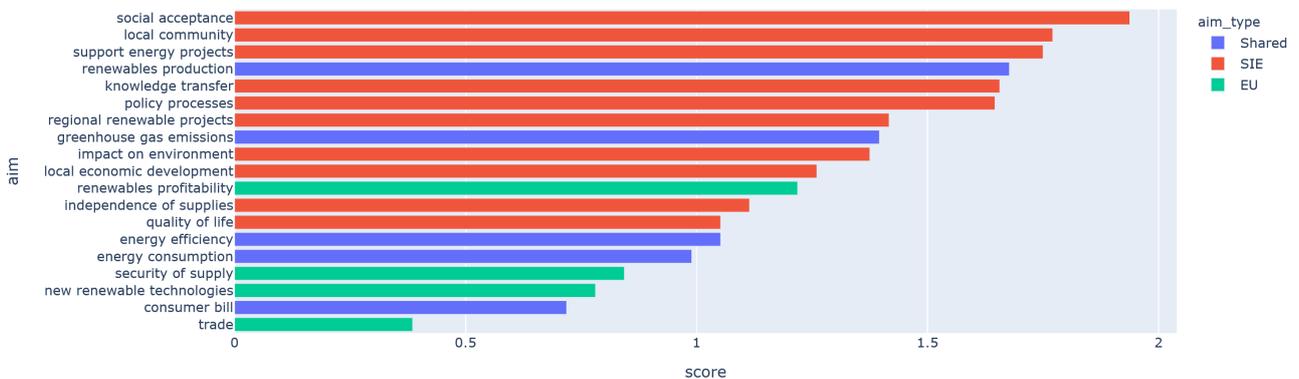
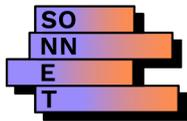


Figure 1: Average perceived contribution of aims for SIE-initiatives.

Average contribution ratings range between 0.4 and 2 on a 4-point Likert-scale (0= No effect, 1=Little effect, 2=Moderate effect, 3=Significant effect). All four aims with the highest perceived contributions are SIE-aims. Out of the shared-aims “renewables production” and “greenhouse gas emissions” show the highest contributions. The lower contributions towards the EU-aims and shared-aims compared to the SIE-aims align with the lower importance ratings of these aims (cf.



SONNET Deliverable D6.1⁵). On average the ten SIE-types we investigated seem to contribute little to “energy efficiency”, “energy consumption”, “security of supply”, “new renewables technologies”, “consumer bill” and “trade”, at least as indicated by our survey respondents. Given the small sample size these findings should be interpreted with caution.

3.2 Contribution rating by different respondent types

The perceived contribution that we asked for in our surveys is a subjective measure⁶. Therefore, we test the extent to which the average contribution of an aim for a SIE-initiative depends on the type of respondent that provides the rating.

For this purpose, Figure 2 shows the scatterplots of the average contribution ratings for different aims by SIE-representatives vs. researchers (left), SIE-representatives vs. field-actors (center) and researchers vs. field-actors (right) for each of the aims. For example, in the leftmost chart of Figure 2, the x-axis value of each dot corresponds to the average contribution rating which *SIE-representatives* provided for that aim across any of the SIE-fields. Likewise, the y-axis value of each dot in the leftmost chart corresponds to the average contribution rating which *researchers* provided for that aim across any of the SIE-fields. In the top-left corner of each scatterplot, we have displayed the correlation between the contribution ratings that are displayed in the x- and y axis of the respective chart. The blue diagonals visualise the case where the contribution rating by both respondent types is equal. The further the distance of a point from the diagonal, the bigger is the discrepancy of the average contribution ratings by the different respondent types.

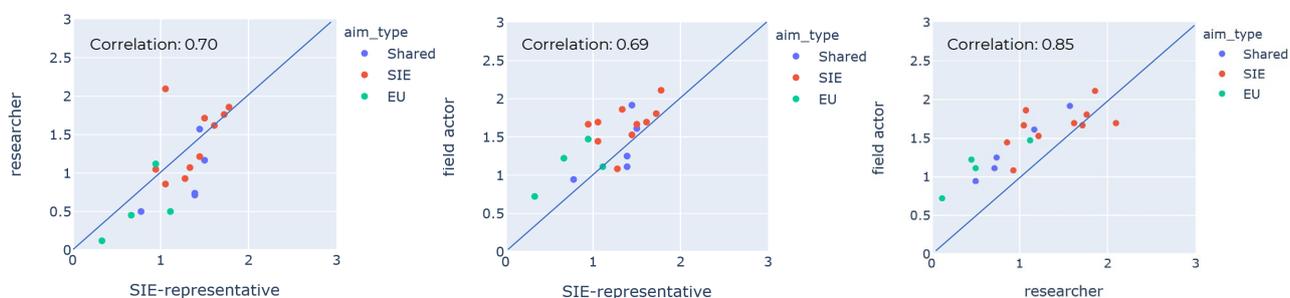
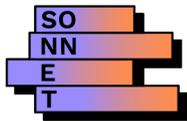


Figure 2: Average contribution rating by participants vs. researchers (left), participants vs. field-actors (center), and researchers vs. field-actors (right) for each aim

Overall, the correlation between the perceived contribution of different respondents is relatively high, which indicates a reasonable level of agreement about the contribution of different SIE-initiatives. The contribution ratings which are most strongly correlated are those of field-actors and researchers (Figure 2, right). In the chart on the left we see that for the majority of aims SIE-representatives provide a slightly higher estimate than researchers (dots on the right of the

⁵ In Deliverable D6.1, both the Shared-aims and the EU-aims were labelled as EU-aims.

⁶ The rating of the contribution towards each aim on a Likert scale is subjective to the respondent. The initial plan for Gathering objective measures is described in chapter 2, and potential adjustments for future projects in section 5.



diagonal); however, there are also some aims where the researchers assume a higher contribution (dots on the left of the diagonal). Likewise, in the middle chart we can see that for most aims, field-actors provide a higher contribution rating than SIE-representatives. There are only three dots on the right of the diagonal, indicating a higher contribution rating by SIE-representatives. In the chart on the right, the bias is even stronger: as we can see, field-actors provide a higher contribution rating for almost all aims than researchers. There is only one aim where the researchers provided a higher contribution rating than field-actors.

In summary we can see that for most aims the field-actors in survey 1v2 - which do not represent a specific SIE-initiative - seem to assume a slightly higher contribution than the SIE-representatives – which are official representatives of the SIE-initiative for which they provided the rating - or the researchers in survey 1v1. This could indicate the existence of field-effects, where the joined contribution of several SIE-initiatives exceeds the contribution of an individual SIE-initiative. We will test this hypothesis further in section 3.5.

3.3 Contribution rating for different SIE-types

In this section, we will explore whether the type of activity or social relation to which an SIE-initiative belongs has an effect on the average contribution rating across all respondents. The mapping between SIE-initiatives and the relevant SIE-types was derived by WPI researchers and is shown in Annex 7. An overview of the average contribution rating across all aims and for all combinations of activity and social relation is provided in Figure 3 together with the number of respondents for each SIE-type. For example, SIE-initiatives focused on SIE-type 1 “cooperative action” were evaluated by 29 respondents and achieved an average contribution rating across all aims and all survey respondents of 1.3. Note that SIE-types 7 and 8 were excluded from the analysis, as there were no responses for the corresponding types of SIE-initiative in the survey. Further information about the types of activity and social relation can be found in SONNET Deliverable D1.1.

As we can see from the column averages in Figure 3, SIE-initiatives focused on “Thinking” seem to achieve the lowest average contributions. This could indicate that the contribution made by SIE-initiatives that are focused on “Thinking” affects aspects such as opinions and attitudes, which are less visible, because they do not result in a direct output. Survey 3 would allow us to verify this hypothesis by asking whether an SIE-initiative only “convinced its members to support an aim” or actually “made them contribute to” an aim (cf. Annex 6).

With regards to the social relation, “Competition” seems to achieve the highest average contributions, while the other types of social relation achieve a similar average contribution rating.

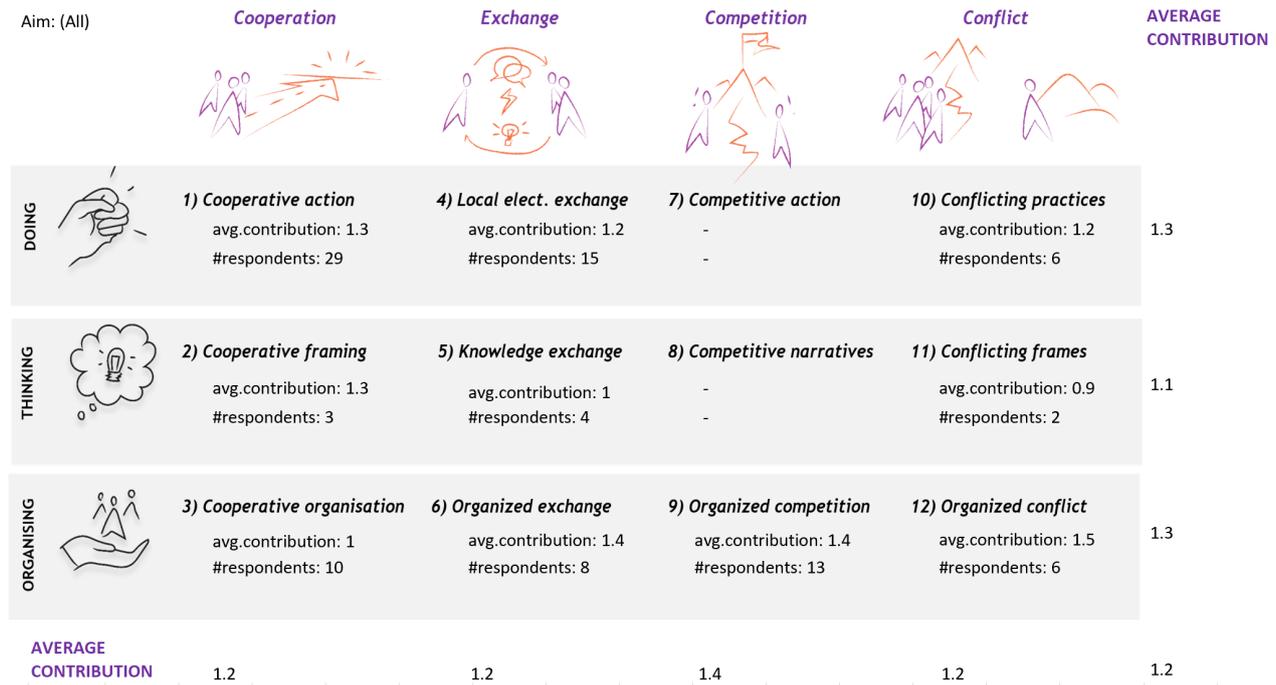
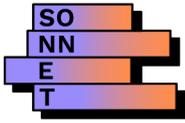
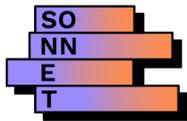


Figure 3: Average contribution by type of SIE (types from SONNET Deliverable D1.1) for all aims

To test to what extent the best performing type of activity depends on aim, Table 5 indicates which type of activity achieved the highest average contribution for each individual aim. SIE-initiatives focused on “Doing” and “Organizing” achieved the highest contribution for the majority of aims. However, for the aims of “social acceptance” and “support energy projects”, the highest contribution was achieved by initiatives focused on “Thinking”.

Table 5: Best performing type of activity for each aim.

| aim-type | aim | av. contribution | activity | aim group |
|----------|-----------------------------|------------------|------------|-----------|
| EU | new renewable technologies | 0.8 | Doing | 1 |
| EU | renewables profitability | 1.4 | Doing | 1 |
| EU | security of supply | 1.0 | Doing | 1 |
| EU | trade | 0.4 | Doing | 1 |
| SIE | independence of supplies | 1.3 | Doing | 1 |
| SIE | local community | 1.9 | Doing | 1 |
| SIE | local economic development | 1.4 | Doing | 1 |
| SIE | regional renewable projects | 1.5 | Doing | 1 |
| Shared | consumer bill | 0.8 | Doing | 1 |
| Shared | renewables production | 1.8 | Doing | 1 |
| SIE | impact on environment | 1.5 | Organising | 2 |
| SIE | knowledge transfer | 1.9 | Organising | 2 |
| SIE | policy processes | 1.8 | Organising | 2 |
| SIE | quality of life | 1.2 | Organising | 2 |
| Shared | energy consumption | 1.1 | Organising | 2 |



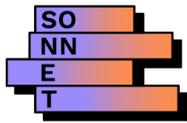
| | | | | |
|--------|--------------------------|-----|------------|---|
| Shared | energy efficiency | 1.2 | Organising | 2 |
| Shared | greenhouse gas emissions | 1.5 | Organising | 2 |
| SIE | social acceptance | 2.3 | Thinking | 3 |
| SIE | support energy projects | 2.2 | Thinking | 3 |

Likewise, Table 6 indicates which type of social relation achieved the highest average contribution for each individual aim. While SIE-initiatives in “Competition” (or more precisely, SIE-initiatives that focused on “Organized competition”) performed best for the majority of shared aims, SIE-initiatives in “Exchange” (i.e. SIE-initiatives that were either focused on “Local electricity exchange”, “Knowledge exchange” or “Organized exchange”) achieved the highest contribution scores for most EU-aims. By contrast, for the majority of SIE-aims, the highest average contribution score was achieved by SIE-initiatives in “Conflict” (i.e. SIE-initiatives that were focused on “Conflicting practices”, “Conflicting frames” or “Organized conflict”).

Table 6: Best performing type of social relation for each aim.

| aim-type | aim | av. contribution | relation | aim group |
|----------|-----------------------------|------------------|-------------|-----------|
| SIE | knowledge transfer | 2.2 | Competition | 4 |
| SIE | policy processes | 2.0 | Competition | 4 |
| SIE | social acceptance | 2.1 | Competition | 4 |
| Shared | energy consumption | 1.8 | Competition | 4 |
| Shared | energy efficiency | 1.8 | Competition | 4 |
| Shared | greenhouse gas emissions | 1.8 | Competition | 4 |
| Shared | renewables production | 1.9 | Competition | 4 |
| EU | new renewable technologies | 0.9 | Conflict | 5 |
| EU | trade | 0.6 | Conflict | 5 |
| SIE | impact on environment | 1.9 | Conflict | 5 |
| SIE | local community | 2.4 | Conflict | 5 |
| SIE | quality of life | 1.9 | Conflict | 5 |
| SIE | support energy projects | 2.0 | Conflict | 5 |
| EU | renewables profitability | 1.4 | Cooperation | 6 |
| SIE | independence of supplies | 1.2 | Cooperation | 6 |
| SIE | regional renewable projects | 1.7 | Cooperation | 6 |
| EU | security of supply | 1.1 | Exchange | 7 |
| SIE | local economic development | 1.4 | Exchange | 7 |
| Shared | consumer bill | 0.9 | Exchange | 7 |

While some of the correspondences between aims and best performing activities or social relations are intuitive (such as the link between “renewables production” and “Doing” or between “social acceptance” and “Thinking”), others are not self-evident (such as the link between “new renewable technologies” and “Conflict”). As any of the links may be an artefact of other factors – such as the type of respondent, or the importance of different aims for different SIE-initiatives, or



a result of the small sample size – we will use a linear regression to test the statistical significance of these associations in the subsequent section.

3.4 Contribution as a function of importance

In addition to the influencing factors that were identified in the previous sections, the contribution of an SIE-initiative towards an aim is likely to be influenced by the importance which the SIE-initiative attaches to the aim.

To verify this, Figure 4 shows the average contribution and importance ratings for each aim based on the 4-point Likert scale (0= Not important, 1=Hardly important, 2=Moderately important, 3=Very important). EU-aims are colour coded green, SIE-aims red, and shared-aims in blue. Points on the diagonal indicate the same average rating for the contribution and importance of an aim.

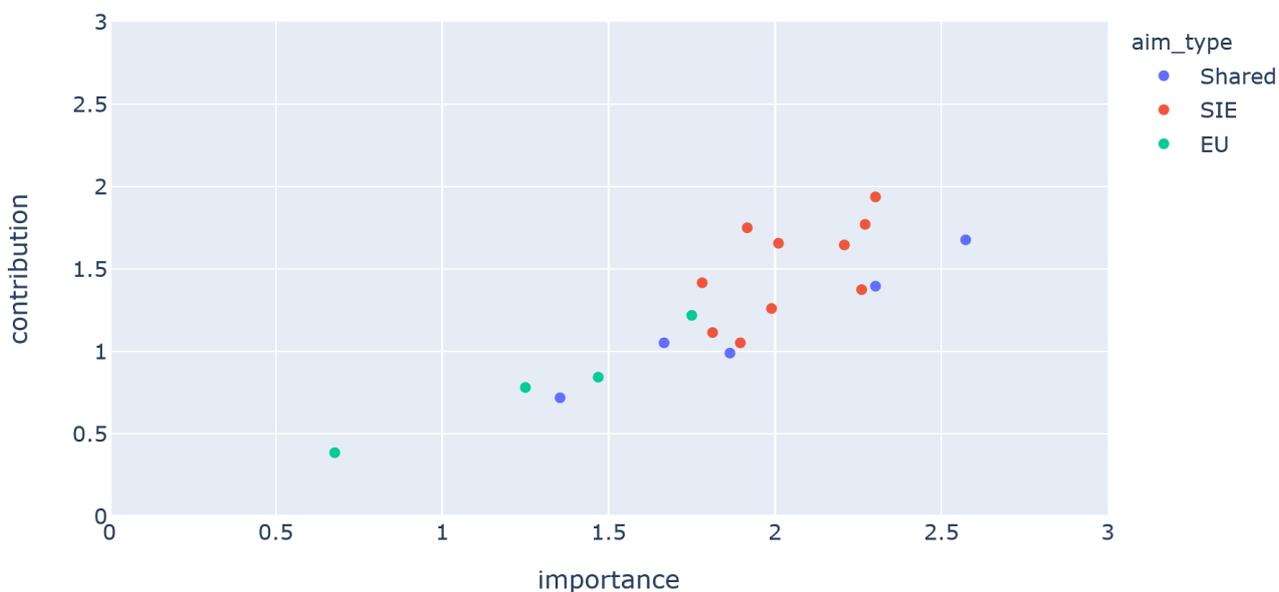


Figure 4: Average contribution vs. average importance for all aims

The high correlation of 0.87 (Figure 4) describes a strong alignment between the average contribution and average importance ratings across all aims. Considering the position of the rated aims below the diagonal, we conclude that in general the perceived importance of an aim for an SIE-initiative is higher than its contribution towards the same aim. The aims with the highest average contributions are SIE-aims. Despite the high importance for the shared-aims “renewables production” and “greenhouse gas emissions” (the 2 blue points furthest to the right), they receive significantly lower contribution than similarly rated SIE-aims. Overall, aims which were categorized as SIE-aims tend to receive a higher importance and a higher contribution than EU-aims or shared-aims (cf. section 3.1).

In Figure 5 we show the average perceived importance and contribution of shared-aim (left), SIE-aim (center) and each EU-aim (right) for each of the different types of “Activity” from section 3.3.

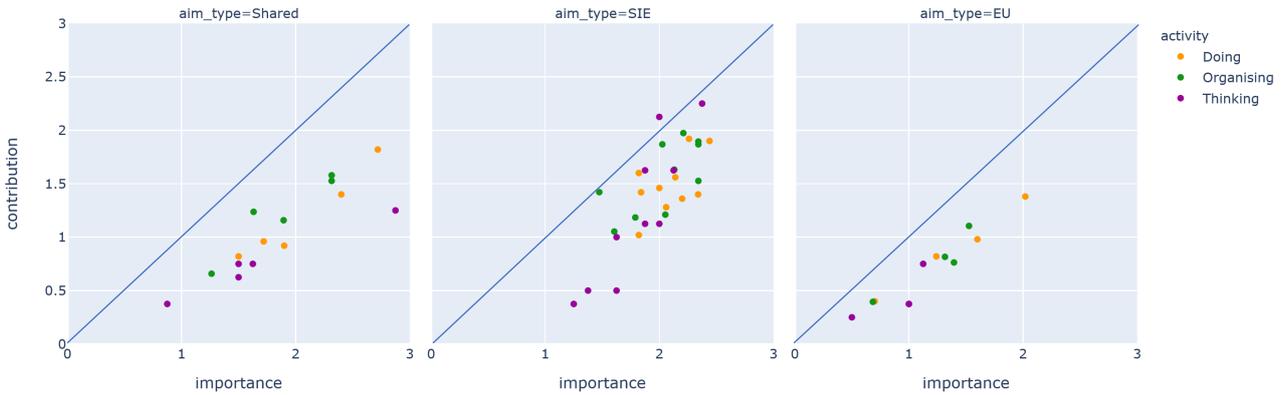
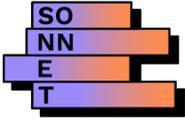


Figure 5: Average contribution vs. average importance for all aims and by activity type

This confirms the finding from the previous section 3.3 that the importance and contributions to EU-aims (=right) seems lowest for “Thinking” SIE types, while “Doing” clearly displays the highest contributions to EU-aims. Looking at SIE-aims (=center), it is less clear which “Activity” contributes the most. In case of shared-aims (=left) there is also no clear tendency, but SIE-types of “Organizing” still seem to achieve higher contribution ratings for the same importance rating than the other types of activities.

3.5 Linear regression of contribution ratings

In this section we report the results of two linear regressions of the perceived contribution towards different aim types:

$$\begin{aligned} contribution \sim & social_relation + activity + aim_type + lang + role \\ & + aim_type:activity + aim_type:social_relation \end{aligned} \tag{1}$$

$$\begin{aligned} contribution \sim & social_relation + activity + aim_type + lang + role + importance \\ & + aim_type:activity + aim_type:social_relation \end{aligned} \tag{2}$$

The only difference between these models is the inclusion of the perceived importance of an aim type as independent explanatory variable for the contribution towards the same aim type. As each respondent rated the perceived importance and perceived contribution towards all 19 aims from Table 1, the total number of observations (n=1’824) is 19 times the number of survey 1 respondents. However, to account for the fact that the ratings by the same respondent may suffer from the same bias, we used standard errors that were clustered by respondents to avoid artificial increases of the significance levels.

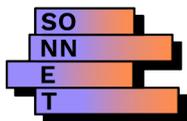


Table 7: Regression of contribution on potential explanatory variables.

| | Regression Coefficients | |
|---|-------------------------|-----------|
| | Model (1) | Model (2) |
| Intercept | 0.710*** | -0.06 |
| activity[T.Organising] | -0.21 | -0.13 |
| activity[T.Thinking] | -0.30 | -0.04 |
| aim_type[T.SIE] | 0.943*** | 0.410** |
| aim_type[T.SIE]:activity[T.Organising] | 0.07 | 0.08 |
| aim_type[T.SIE]:activity[T.Thinking] | 0.26 | 0.11 |
| aim_type[T.SIE]:social_relation[T.Conflict] | -0.15 | -0.05 |
| aim_type[T.SIE]:social_relation[T.Cooperatio | -0.26 | -0.13 |
| aim_type[T.SIE]:social_relation[T.Exchange] | -0.599*** | -0.364** |
| aim_type[T.Shared] | 1.050*** | 0.408* |
| aim_type[T.Shared]:activity[T.Organising] | -0.07 | 0.04 |
| aim_type[T.Shared]:activity[T.Thinking] | 0.09 | 0.00 |
| aim_type[T.Shared]:social_relation[T.Conflict | -0.921*** | -0.651*** |
| aim_type[T.Shared]:social_relation[T.Cooper | -0.689*** | -0.402* |
| aim_type[T.Shared]:social_relation[T.Exchan | -0.836*** | -0.538** |
| importance | | 0.537*** |
| lang[T.en] | 0.03 | -0.05 |
| lang[T.fr] | -0.25 | -0.18 |
| lang[T.nl] | -0.05 | -0.01 |
| lang[T.pl] | 0.39 | 0.04 |
| role[T.field_actor] | 0.33 | 0.496** |
| role[T.researcher] | -0.02 | 0.369** |
| social_relation[T.Conflict] | -0.04 | -0.11 |
| social_relation[T.Cooperation] | 0.03 | -0.14 |
| social_relation[T.Exchange] | 0.23 | 0.02 |
| Observations | 1824 | 1824 |
| R2 | 0.13 | 0.37 |
| Adjusted R2 | 0.12 | 0.36 |
| Residual Std. Error | 1.004 | 0.856 |
| F Statistic | 19.287*** | 41.569*** |

Note: *p<0.1; **p<0.05; ***p<0.01

As we can see in Table 7, model (1), the perceived contribution of SIE-initiatives towards shared-aims and SIE-aims is about 1 point higher than for EU-aims (=baseline category), which confirms the hypothesis from section 3.1 that SIE-initiatives contribute more to their own aims than to EU-aims or shared-aims.

Regarding the interaction between the contribution towards different aim-types and the social relation, in which an SIE-initiative is engaged, we find that SIE-initiatives engaged in “Conflict” contribute significantly less towards shared aims, than the other types of SIE-initiatives. Likewise, SIE-initiatives engaged in “Competition” (=baseline category) contribute significantly more towards shared aims, than SIE-initiatives engaged in any other type of social relation. In addition to that we can see from the interaction plot in Figure 6, that the difference between contributions towards EU-aims and shared-aims is least strong for SIE-initiatives engaged in “Exchange”.

Interactions between the contribution towards different aim-types and the activity, in which an SIE-initiative is engaged are not significant.

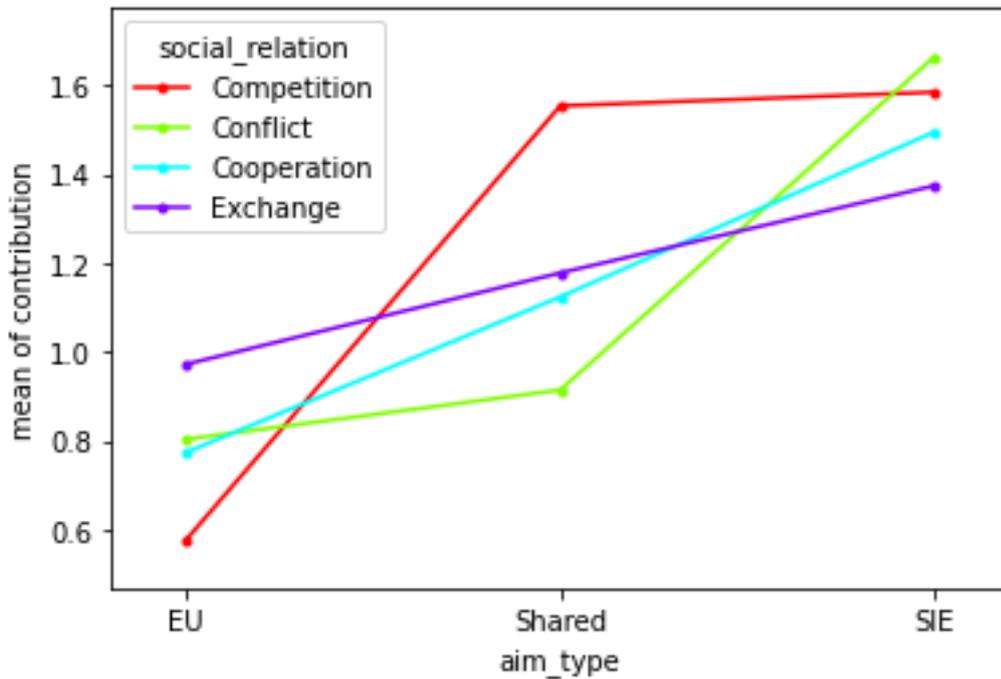


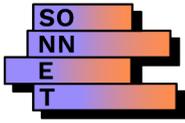
Figure 6: Interaction between the perceived contribution towards different aim-types, and the social relation, in which an SIE-initiative is engaged.

As we can see from Table 7, model (2), if we include the perceived importance of an aim as an explanatory variable, the impact of the explanatory variables we discussed so far reduces by roughly 50%. However, the coefficients remain statistically significant.

In addition to that, we can see that the contribution rating by field-actors and researchers is 0.496 and 0.369 points higher than what is explained by the importance rating and the other independent variables, and this difference is significant at the 5% level. This could indicate a slight respondent bias. However, due to the small sample size, the effect should be interpreted with caution. Rather than a field-effect it could also be the result of a bias of the respondents.

3.6 Correlation between contribution ratings

In addition to the independent variables that were identified in sections 3.1 to 3.4 and tested in section 3.5, the contribution towards any one aim could also be the result of spillover-effects from the contribution towards another aim. The pairwise correlations of contributions toward the different aims can help to identify such spill-over effects. To calculate the correlation between two aims a1 and a2, we used all 96 contribution ratings for aim a1 (i.e. including all respondent types and SIE-initiatives) and correlated them with the 96 contribution ratings by the same respondents for aim a2. If the contribution ratings for a1 and a2 do not exhibit a positive correlation, then it is unlikely that there is a spill-over effect between these aims, as we expect the spill-over effect to generate a high positive correlation between the contribution score of these aims. However, it is important to keep in mind that the reverse is not true. A positive correlation



between the contribution score of two aims may also be caused by other reasons. For example, SIE-initiatives that contribute towards one aim could simply happen to care about the other aim as well. A positive correlation between two aims should thus only be interpreted as a necessary and not as a sufficient condition to confirm the existence of spill-over impacts between two aims.

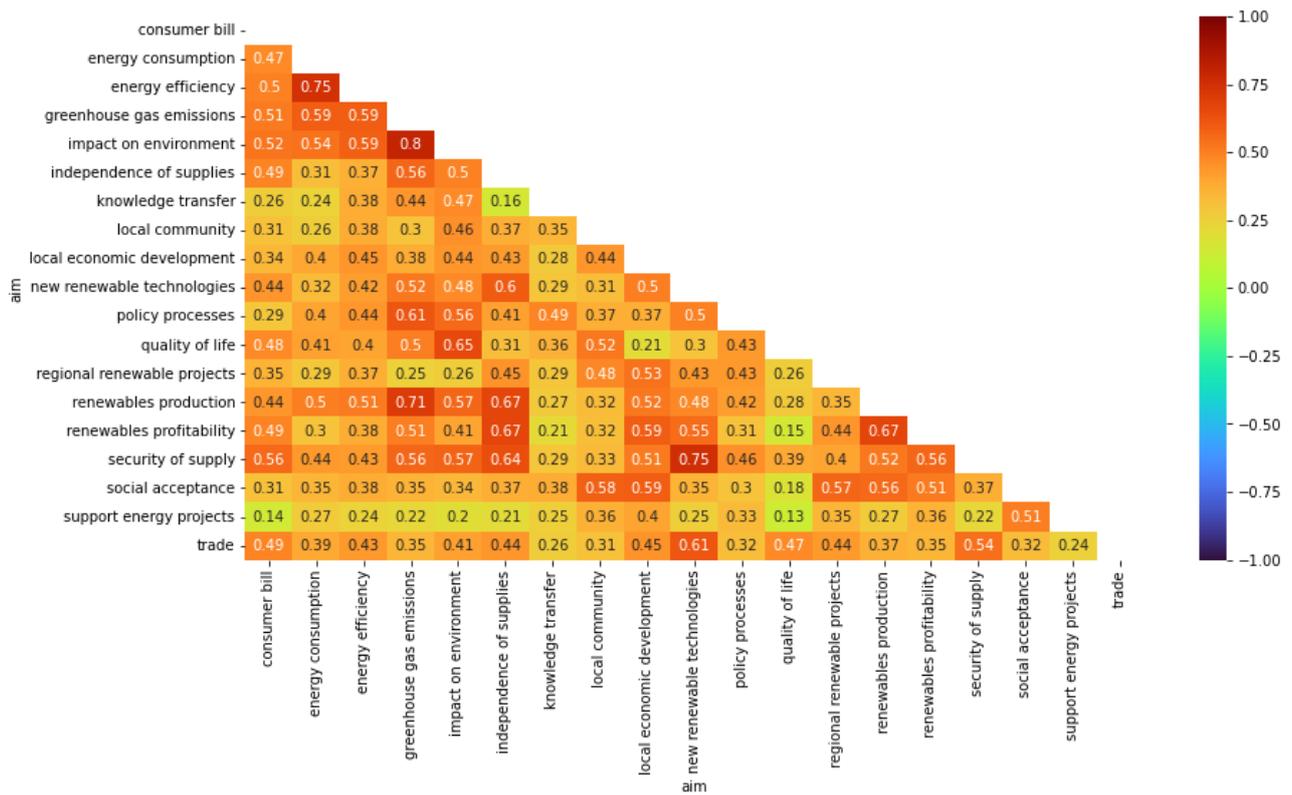


Figure 6 provides this overview in form of a heatmap. Higher correlations indicate a stronger alignment between the contribution rating for two aims.

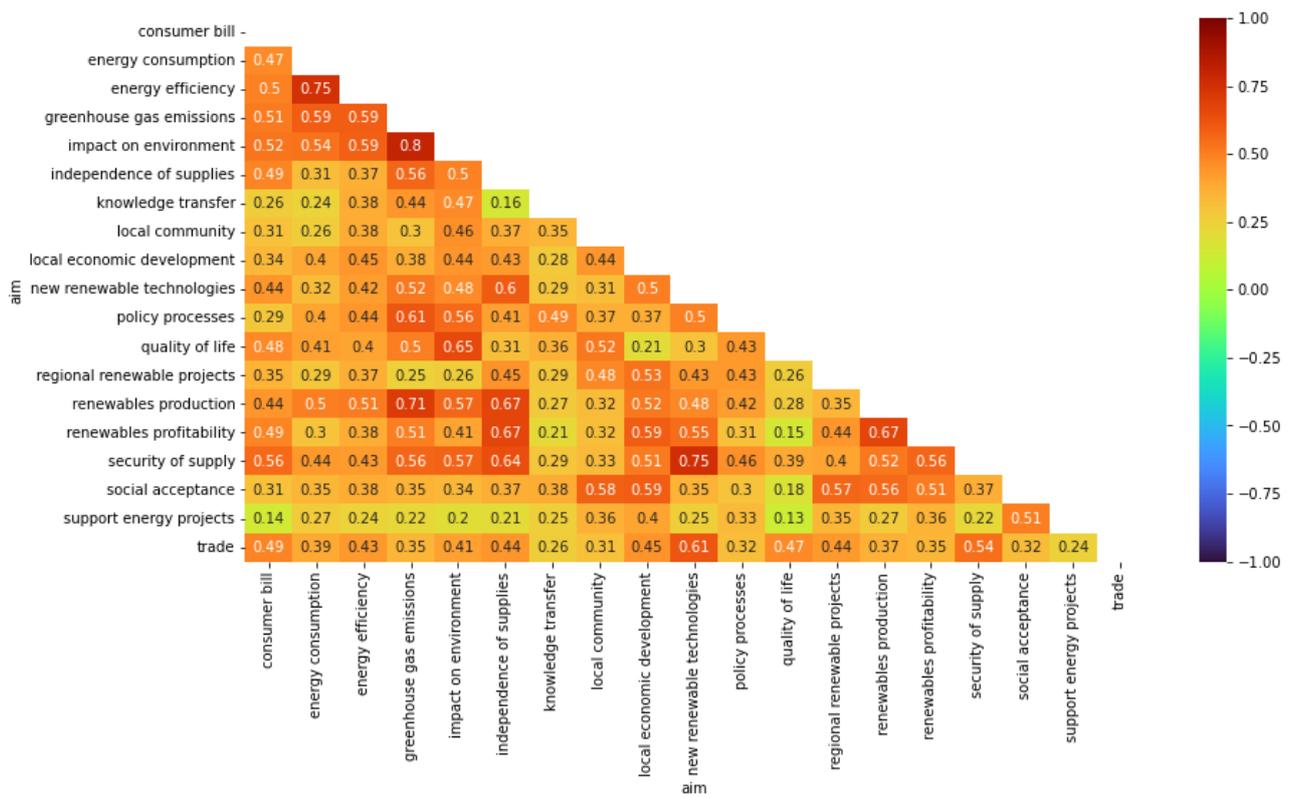
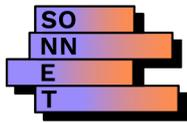


Figure 7: Heatmap of correlations between contribution ratings for different EU-aims, SIE-aims and shared-aims (aims are in alphabetical order).

In Table 8 we display the most important pairwise correlations of

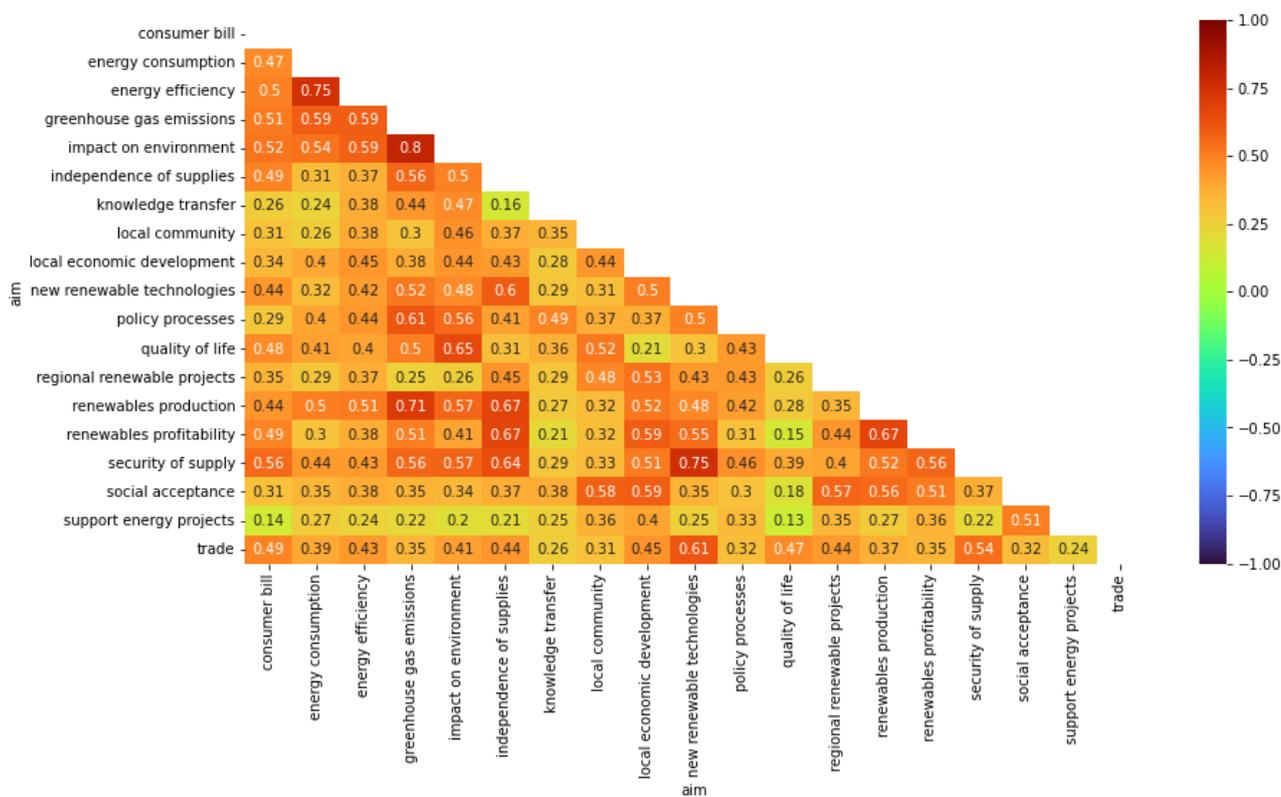


Figure 6, which achieved a Pearson correlation coefficient larger than 0.6.

A clear outcome is that the achievement of lower impacts on the environment is associated with reducing greenhouse gases, which makes intuitive sense, as greenhouse gas emissions are one of the most discussed environmental impacts.

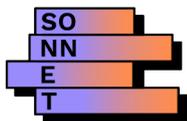
Following that, the highest correlations are between the aims of “energy efficiency” and (lower) “energy consumption”, which makes sense as a higher energy efficiency will automatically help to achieve the aim of a lower energy consumption.

“Security of supply” and “new renewable technology” also show a high correlation, which could be due to the fact that new *decentral* renewables contribute towards a larger security of supply, by making countries and regions less dependent on imports.

Next, contributions also seem somewhat aligned between “renewables production” and “greenhouse gas emissions” with a fairly high correlation of 0.71. A possible explanation could be that at least some SIE-initiatives reduce greenhouse gas emissions by substituting fossil energy production with renewable energy.

The aims of “renewables production” and “renewables profitability” appear most often in Table 8. This could indicate that new renewable technologies are a key enabler for contributions to other aims.

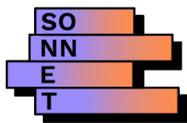
Regarding the types of aims, it is striking that almost all of the correlations above 0.6 are between aims of the same type, between SIE-aims and shared-aims or between shared-aims and EU-aims. The only correlations between an SIE-aim and an EU-aim are between the aim of “independence



of supplies” and “security of supply” or “new renewable technologies”. This could mean that the SIE-aim of “independence of supplies” creates spill-over impacts towards these two EU-aims, as the increasing independence of local energy communities and prosumers increases the supply security of countries as a whole and may contribute to a demand for new renewable technologies.

Table 8: Pairs of aims which achieved the highest contribution rating (above 0.6).

| correlation of contribution | first aim | | second aim | |
|-----------------------------|----------------------------|--------|----------------------------|--------|
| | aim | type | aim | type |
| 0.8 | impact on environment | SIE | greenhouse gas emissions | Shared |
| 0.75 | energy efficiency | Shared | energy consumption | Shared |
| 0.75 | security of supply | EU | new renewable technologies | EU |
| 0.71 | renewables production | Shared | greenhouse gas emissions | Shared |
| 0.67 | renewables profitability | SIE | renewables production | Shared |
| 0.67 | renewables production | Shared | independence of supplies | SIE |
| 0.67 | renewables profitability | SIE | independence of supplies | SIE |
| 0.65 | quality of life | SIE | impact on environment | SIE |
| 0.64 | security of supply | EU | independence of supplies | SIE |
| 0.61 | policy processes | SIE | greenhouse gas emissions | Shared |
| 0.61 | trade | EU | new renewable technologies | EU |
| 0.6 | new renewable technologies | EU | independence of supplies | SIE |



4 SHORTCOMINGS OF ORIGINAL EVALUATION APPROACH AND ALTERNATIVE APPROACHES

4.1 Follow-up Interviews

In view of the low response rate for survey 2 and survey 3 (cf. section 2.3), we decided to run a series of follow-up interviews with the SIE-representatives that had filled in survey 1 and had subsequently been invited to answer surveys 2 and 3.

The aim of these interviews was to help answer the research questions:

- Q1: *“Which types of SIE-initiatives achieve the biggest contribution towards the EU-aims in different countries?”*
... by asking what SMART / objective data they could provide regarding their contribution towards EU-aims, and
- Q2: *“Why have the surveys achieved such a low number of responses”*
... by asking why they had not answered survey 2

In total we conducted 12 interviews with representatives from 10 SIE-initiatives in Germany, France and Switzerland in June and July 2021 (i.e. about 10% of the respondents to survey 1).

In the following sections, we will explain the interview protocol that we used and discuss the results of the interviews.

Interview Protocol

All interviews followed the same protocol, which was defined before the start of the interviews to make sure that the interview covers all relevant points as well as to reduce interview duration. The interview protocol is shown in Table 9 below.

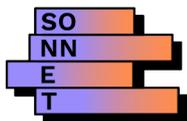
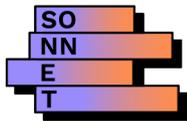


Table 9: Different steps of the expert interview from preparations to post-interview data collection

| | |
|--|--|
| Preparation | <ul style="list-style-type: none"> • Research of available online data • Check of importance of EU aims from Survey 1 |
| 1) Surveys | "Do you remember having received the survey links?; If yes: Do you know why you have not participated?" |
| 2) Perceived importance and perceived contribution | <p>"How important are the following aims for your organization?", Scale: 0: not important; 3: very important (only fill this in, if survey 1 has not been answered by an SIE-representative)</p> <ul style="list-style-type: none"> • Lower energy consumption? (% reduction per year) • Increase production of renewable energy? (kWh per year) • Lower CO₂-emissions? (avoided kg CO₂-equivalent) • Other:... <p>"What impact has your organization had on the energy system / society as a whole?" Scale: 0: no effect; 3: significant effect (only fill this in, if survey 1 has not been answered by an SIE-representative)</p> <ul style="list-style-type: none"> • Lower energy consumption? (% reduction per year) • Increase production of renewable energy? (kWh per year) • Lower CO₂-emissions? (avoided kg CO₂-equivalent) |
| 3) Impact Data | <p>"Do you have any data to measure how well you have achieved the above aims?"</p> <ul style="list-style-type: none"> • Lower energy consumption? (% reduction per year) • Increase production of renewable energy? (kWh per year) • Lower CO₂-emissions? (avoided kg CO₂-equivalent) |
| 4) Calibration | "To put the above numbers into perspective, we need to know the approximate size of your organization: members / energy consumption / annual budget." |
| 5) Post Interview | <ul style="list-style-type: none"> • Collection of the data that was mentioned in step 3 (above) • Re-invite SIE-initiatives to circular survey 03 among their members |

Before the start of the interview, researchers reviewed the data which was available on the homepage of the respective SIE-initiative and verified which of the EU-aims or shared-aims (cf. Table 1) the SIE-representatives had rated as important in survey 1.



Following the question in step 1) regarding reasons for not answering the surveys 2 and 3, in step 2) we asked any participants that had not answered survey 1 to provide the corresponding importance and contribution ratings for the 3 EU-aims or shared-aims, that had most often been stated as important by SIE-initiatives.

In step 3) we then asked what SMART / objective data they could provide us regarding their contribution towards the EU-aims and shared-aims which they had rated as being important for their SIE-initiative. The reason for focusing only on the EU-aims and shared-aims which they perceived as important was that it is very unlikely organisations will collect data to quantify their contribution towards an aim which they do not even perceive as important. This step can be considered as the main point of the interview series.

With only the data from step 3 a direct comparison of the success of SIE-initiatives would not be meaningful as the comparison would disregard the differences in size, performed working hours or available budget etc of different SIE-initiatives. The data from step 4 delivers the means to normalize the gathered data in step 3 and make the datasets of different SIE-initiatives comparable. Following the end of the interviews, in step 5) we were planning to gather the data and treat them for a data analysis as well as to re-invite the SIE-initiatives to circulate survey 3 among their members (cf. section 2.2).

Interview results

The answers regarding the reasons for not participating in the surveys 2 and 3 are displayed in Figure 7 below. Based on these results it seems that the main reason for the low survey attendance was the lack of awareness about the surveys. This seems rather surprising, given the number of invitations and reminders that they should have received a few months earlier (cf. section 2.3). This shows that the recruitment via email may not have been the right strategy, and that recruitment efforts could have been intensified even more without upsetting the email recipients.

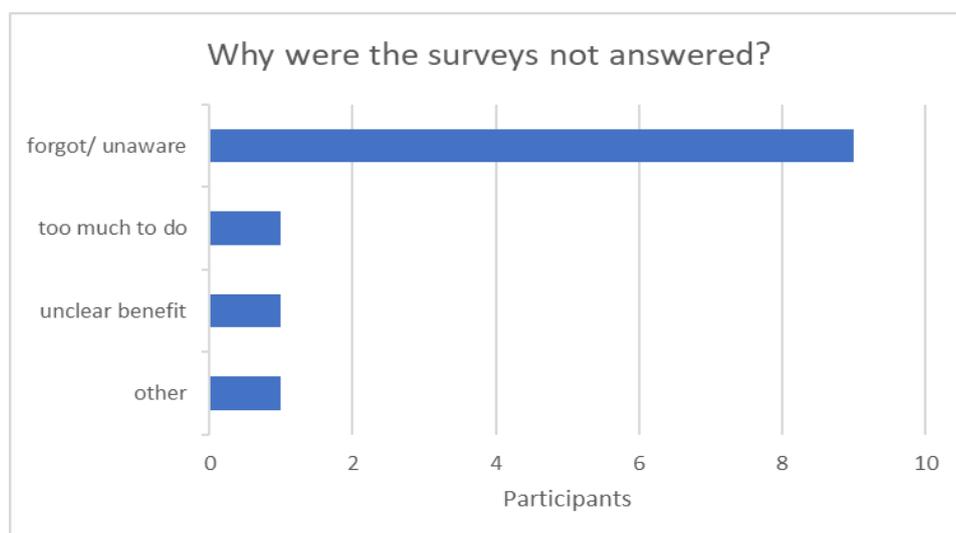


Figure 8: The distribution of received answers for not answering survey 2.

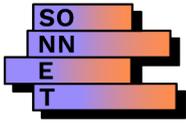


Figure 8 shows how many of the SIE-initiatives interviewed had collected SMART/objective data regarding their contribution towards EU-aims and shared-aims, which they had rated as important. While most of the SIE-initiatives we interviewed had collected data regarding their contribution towards renewable energy production, very few of them had collected data to estimate their contribution towards other EU-aims or shared-aims in a quantitative way. In addition, the little data we received proved to be difficult to normalize, as in SONNET we are analysing a diversity of social innovation in energy, making it impossible to compare the contributions across different types of SIE-initiatives in a meaningful way (e.g. the members of one initiative were “city councils”, while members in other initiatives were the “investors”; a comparison normalized to the number of members would thus not make sense, while the raw numbers themselves were also not comparable as they differed by orders of magnitude).

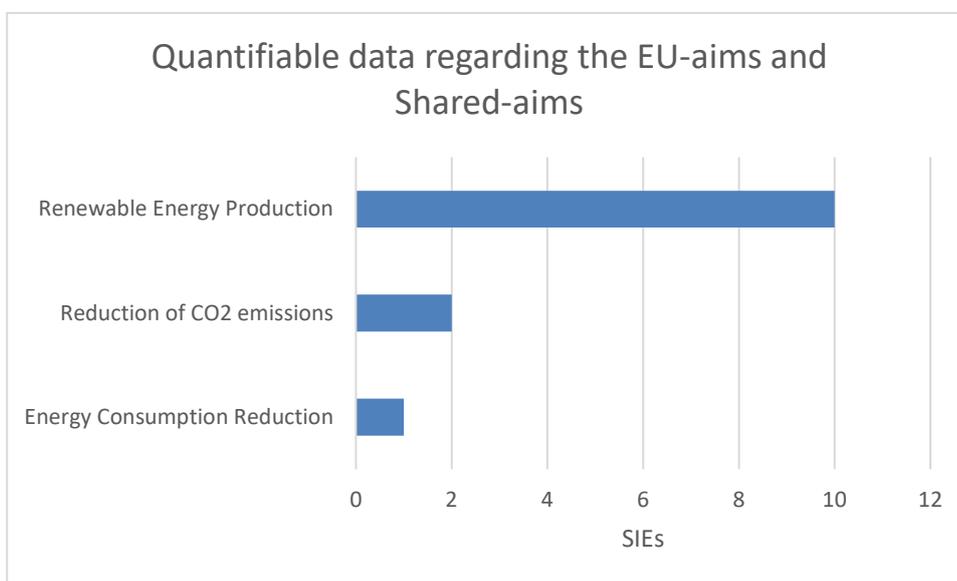
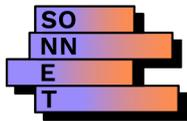


Figure 9: The distribution of quantifiable data availability of the 12 interviewed SIE-initiatives.

Based on the findings from these interviews, during the SONNET meeting on 21 July 2021 it was decided to stop the interviews prematurely⁷, as it seemed unlikely, that further interviews would allow us to compare the contributions towards other policy aims, and the data we had collected regarding contribution towards “renewable energy production” was hard / impossible to compare in a meaningful way. Instead, it was decided that we should use the remaining time to collect ideas regarding alternative approaches for quantifying the contribution of SIE-initiatives towards EU-aims and shared-aims and discuss these during a workshop.

⁷ Originally we were planning to interview all 30 SIE-initiatives that had been interviewed in WP3 (in addition to the surveys sent out to them).



4.2 Workshops

On 13 October 2021, we organized a workshop with the SONNET research team and city partners to discuss alternative approaches for measuring the contribution of SIE-initiatives towards EU-aims and shared-aims in a SMART and objective way.

The workshop was split in 3 sessions of 30-45 minutes, one for each of the following alternatives, which had been identified during brainstorming sessions of the WP6 team:

- **Media analysis:** using machine-learning techniques to automatically evaluate large text corpora such as news databases, websites and /or social media.
- **Webtracking:** using the information provided by tracking providers such as google analytics and facebook to analyse user behaviour for specific websites, or data donations by web-users to analyse their behaviour across multiple websites
- **EEA Database:** using the data collected by the European Energy Award (EEA) regarding the approaches used by partnering cities in different EU countries and the resulting impacts on EU-aims and shared-aims.

At the beginning of each session, we had invited an expert to give us a short 10-15 min presentation to introduce the approach, before discussing if / how the approach could be used to measure the contribution of SIEs and/or SIE-initiatives towards EU-aims and shared-aims. Following the workshop, the workshop notes and recordings were made available to all SONNET researchers who had not been able to attend for a period of 2 weeks in order to allow them to listen to the discussions and add their conclusions to the workshop notes.

In the following sections we summarize the main conclusions for each of these approaches in a separate section.

Media Analysis

As explained by [Prof. Stuecheli-Hertach](#), media analysis, or digital discourse analysis can be used to automatically extract specific information from very large text corpora. Examples of information that could be extracted include – but are not limited to - the frequency of mutual references by different organisations (left part of Figure 9), the frequency of mentioning different hashtags by different organisations (central part of Figure 9) and the frequency and location where different terms had been used (right part of Figure 9). In addition to simple frequency counts, evaluations of the context where a word is used can be used to determine whether it is used in a positive or a negative context, or even more advanced questions, such as whether an organization X was cited in support of a certain activity Y (so-called “relations”, although this may require human interpretation).

Algorithms can be programmed to process any text sources which are provided (e.g. websites, social media, news archives). Data can be read from files or be collected from websites and online archives through web scraping. Due to the automatic data collection and evaluation, the results can easily be updated when new information becomes available.

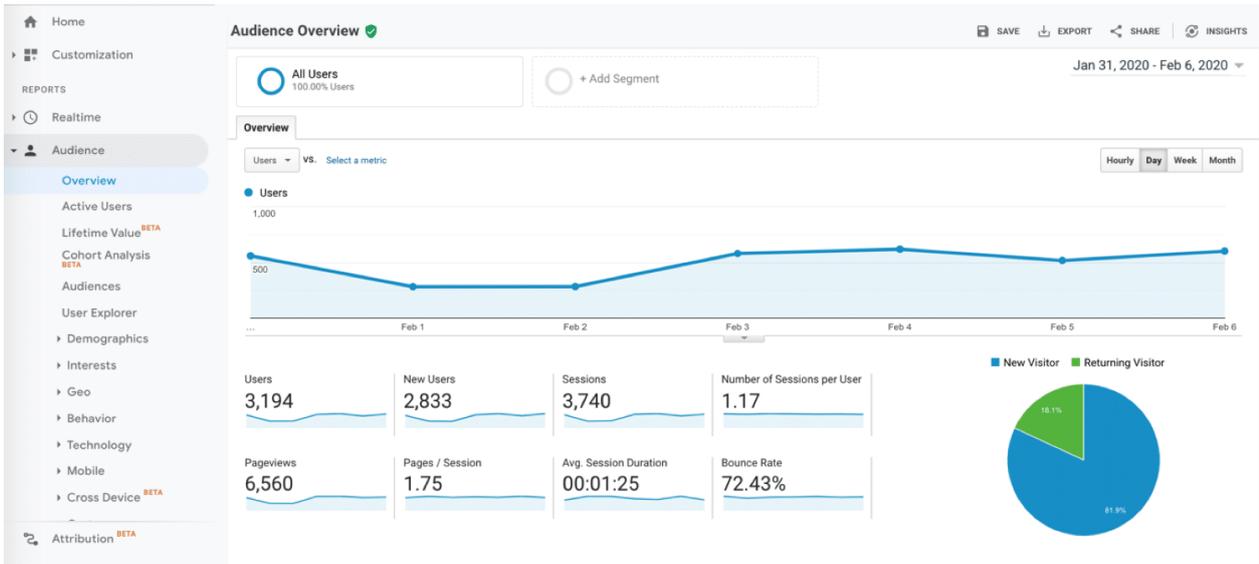
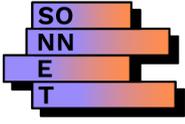
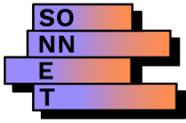


Figure 11: Webtracking example for an individual website (Source: Nico Ebert).

However, obtaining webtracking data may be very challenging. Information about website visitors is often considered as confidential and SIE-initiatives are unlikely to have obtained the consent from their users to collect, process and forward more detailed data (e.g. regarding the websites visited before coming to their page). An approach to solve this problem could be to ask webusers to make their data available in the form of voluntary data donations. However, even if the data is obtained, it may not include too much information, as it could be limited to the browsing history. Due to the concerns about confidentiality, data access, and the potentially limited value of the data, webtracking seems to be the least promising of the alternatives that we investigated for quantifying the impact of SIEs or SIE-initiatives on EU-aims and shared-aims.

EEA Database

As explained by [Charlotte Spoerndli](#), Manager of the European Energy Awards (EEA), the EEA database covers 18 European countries and 1,700 authorities with a total of 65 million inhabitants. It includes very rich information regarding both the types of activities and initiatives that were undertaken by different municipalities, and their performance with regards to the number of EU-aims and shared-aims, such as per capita CO₂-emissions, heat energy consumption, share of renewable heat, renewable energy production etc. To ensure data quality, the figures reported by the municipalities are regularly audited by a team of external experts.



**18 European countries,
1700 local authorities
65 million people**

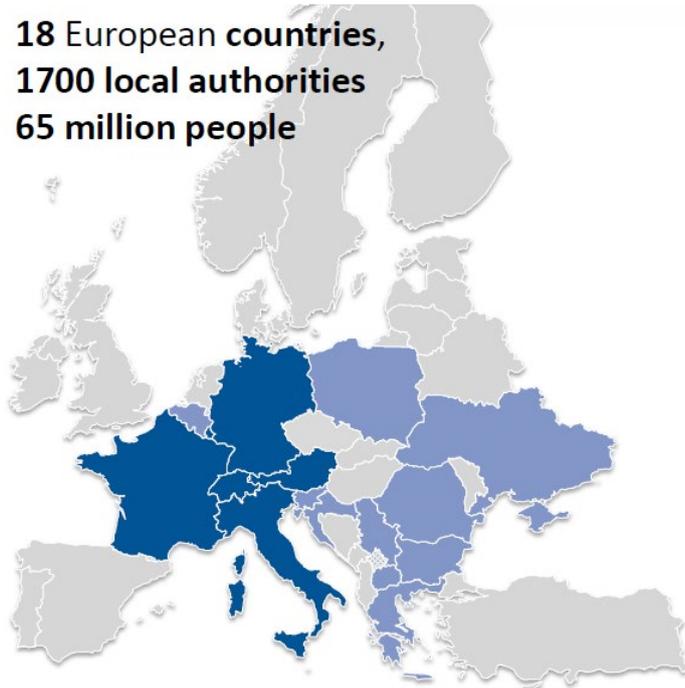
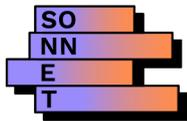


Figure 12: Countries covered by EEA database (Source: EEA).

One of the main challenges of the EEA database is that data is often provided in the form of reports using different languages and deviating formulations, making it hard to extract detailed information on specific measures across larger number of countries' authorities.

However, during the workshop we came up with the following promising ideas:

- Discourse analysis: the EEA database could be parsed using the automatic language processing tools that were presented by Prof. Stuecheli-Hertach in the first part of the workshop (cf. section on Media Analysis above).
- Student projects: quantitative information could be manually extracted from the EEA database and made available for quantitative analysis by students, e.g. in master theses or research seminars.



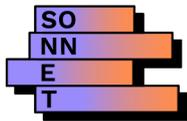
5 LIMITATIONS

Contributions of SIE-initiatives towards EU-aims and shared-aims are hard to measure because many SIE-initiatives do not monitor their impacts, some of the impacts they create occur in people's mind (such as impacts on "Thinking"), and even the impacts which can and have been monitored are hard to compare across different initiatives due to their diversity.

In WP6 of the SONNET project we had planned to address this challenge through a series of 3 surveys. However, due to low response rates, the conclusions in this deliverable are limited to the subjective contribution ratings from the first survey with a total of 101 respondents. By contrast to SMART metrics, subjective contribution ratings are dimensionless and may suffer from respondent biases. In addition to that, our findings should be interpreted with the necessary caution due to the small sample size.

In section 3.6, we calculated the correlation between the contribution rating for different aims and have mentioned some of the explanations regarding the high correlations between importance ratings which seem most plausible. However, it should be noted that apart from these reasons, high correlations may also be caused by other factors. Instead of spill-overs between the aims, or a similarity of the different concepts, correlations could also be due to personality traits and the response strategy of survey respondents. For example, respondents that care about or contribute to one aim (e.g. security), could simply happen to care more about or contribute more to another aim (e.g. consumer bills), even though these two aims do not create synergies, and may even require a trade-off. To account for this possibility, we therefore talked about "potential explanations", to indicate that some of the results may also have been driven by other reasons.

The high correlation between the importance and perceived contribution ratings by researchers, SIE-representatives and field-actors are an encouraging sign, and indicate that the perceptions of different actors regarding the importance of different aims for an SIE-initiative are robust across respondents. However, for many of the SIE-initiatives and SIE-fields the number of respondents that have provided an assessment is very small. To obtain a statistically more robust result would require a larger number of respondents for each SIE-initiative and SIE-field.



6 CONCLUSIONS

Based on our survey, SIE-initiatives achieved significantly higher contributions towards SIE-aims than towards EU-aims or shared-aims. The SIE-aims with the highest contributions were “social acceptance”, “local community” and “support energy projects”. The shared-aims (i.e. aims identified for SIE and EU) with the highest contributions were “increased renewables production” and “reduced greenhouse gas emissions”. The perceived contribution towards other EU-aims or shared-aims was rather low in our sample (i.e. below 1.2 points on a 4-point Likert-scale of 0= No effect, 1=Little effect, 2=Moderate effect, 3=Significant effect). To a large extent, the contribution scores reflect the importance which the SIE-initiatives attach to these aims (cf. SONNET Deliverable D6.1).

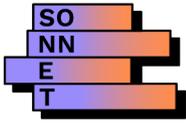
Looking at the different SIE-types, in general SIE-initiatives focusing on “Doing”-type of activities seem to achieve higher contributions for many of the aims we assessed than the other types of activities (“Organizing”, “Thinking”). However, for aims that require a change of mind, such as “social acceptance” and “regional renewables projects”, SIE-initiatives focused on “Thinking”-type activities achieved a higher contribution.

Regarding the social-relations, SIE-initiatives engaged in “Competition” achieve higher average contribution scores than SIE-initiatives engaged in other types of social-relations (i.e. “Cooperation”, “Exchange” or “Conflict”), in particular for shared-aims.

Contribution ratings for several of the aims were strongly correlated, which could indicate the presence of spill-over effects between these aims (e.g. “higher energy efficiency” will help to “reduce energy consumption”, or an “increasing renewables production” could help to “lower CO₂-emissions” etc.).

Regarding the original research design, our follow-up interviews revealed that most participants had not been aware of the additional surveys despite repeated email reminders. However, even if they had filled in these surveys, the interviews revealed that most SIE-initiatives would not have been able to provide any data regarding their contribution towards EU-aims or shared-aims (apart from the aim of renewables production), and that the data which they could provide is very difficult to compare across different initiatives.

During the subsequent workshop we identified a number of research approaches that could be used to overcome these problems. The most promising approaches would be a media analysis of news archives, webpages and/or the database of the European Energy Awards, which includes a rich dataset regarding both the measures taken by different municipalities and the resulting impacts regarding several of the EU-aims or shared-aims such as CO₂-emissions, energy consumption and renewables production.



Annex 1: EC Summary Requirements

Changes with respect to the DoA

The deliverable was submitted with a delay of 3 months. As a result of the low response rate to Surveys 2 and 3, the deliverable includes a section describing the challenges and potential alternative approaches for quantifying success of SIE-initiatives, instead of the SMART metrics that were to be collected through these surveys.

Dissemination and uptake

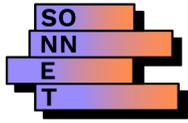
This deliverable extends the empirical work within WP3 (SIE case studies) and WP2 (SIE in SONNET cities) and complements the qualitative analysis in these work packages with quantitative findings. Results will be discussed with SONNET's city partners and will be used in SONNET's dissemination activities.

Short Summary of results

Based on a survey with more than 100 SIE-representatives, field-actors and researchers, we find that SIE-initiatives seem to contribute more to their own aims than to EU-aims or shared-aims. Controlling for other relevant factors, such as the respondent type and the country, we find that the average contribution towards shared-aims is significantly higher for SIE-initiatives engaged in the social relation of "Competition" and significantly lower for SIE-initiatives engaged in the social relation of "Conflict" than for SIE-initiatives engaged in other types of social relation (i.e. "Cooperation" or "Exchange"). Regarding spill-over effects between contribution ratings for different aims, most aims were positively correlated. One reason for this could be that some of these aims are fairly similar concepts (such as "energy efficiency" and "reduced energy consumption") or that there are spill-overs between these aims (such as in case of "independence of supplies" and "security of supply").

Evidence of accomplishment

This document and underlying data. In line with our data management plan, anonymized survey results and scripts will be made available on Zenodo after completion of WP6 analysis to the extent consent procedures allow to do so.



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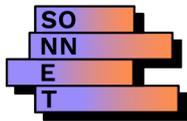
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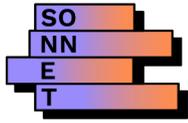
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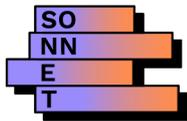
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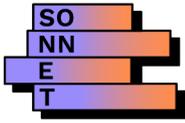
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Annex 3: WP6 Survey 1, version 1

Language: English Change the language

Aims and Contributions of energy-related initiatives/ projects

Thank you for starting the survey. In the SONNET research project, we study the aims and contributions of various energy-related initiatives/ projects throughout Europe. We are interested particularly in the intended and unintended aims of these initiatives/ projects on both individuals and the larger energy system and society, as well as how the achievement of an aim is measured.

The research is conducted as part of the Horizon 2020 call: 'Building a low carbon, climate resilient future: secure, clean and efficient energy' call and thus funded by the EU Horizon 2020 programme. For more information about the wider project please visit the SONNET website: <https://sonnet-energy.eu/>.

We would appreciate if you would take 10 minutes to answer the following questions about the initiative you are engaged in within the next week so we can use your responses in our work.

The questions are not sensitive in nature, but ask about your perspectives on the energy-related initiatives/ projects that you are familiar with.

Some questions may be challenging to precisely answer. Just give us your best guess. There are no right or wrong answers.

Your answers will be treated confidentially and will only be accessed by researchers of the SONNET project.

We hope that the results will contribute to open and informed debate on the subject of social innovation in energy transitions.

If you have any questions or concerns, please contact Sabine Hielscher (s.hielscher@sussex.ac.uk) or Christian Winzer (winc@zhaw.ch).

Thank you for your support.

As part of this research project, we need your consent to collect data on your Organization/ project.

The personal data related to this survey includes your name, affiliated initiative/ project, and your email address. Personal data is used only for the survey invitation and tracking of survey completion. Any data that is provided by you is used as research data and will remain strictly confidential, will not be shared with third parties, nor transferred outside of the SONNET project team, and will be stored on institutional servers and retained for 10 years after completing the project.

The research data is not stored with personal data, thus responses are not connected to individuals, and will be analyzed and presented in an anonymized way that does not allow someone to trace the responses back to an individual.

We would like to reassure you that as a participant in this project you have very definite rights: your participation is entirely voluntary and you are free to withdraw your provided information at any time without giving a reason.

Do you consent to the collection, storage and use of the data you provide in the survey as described above?

Yes I consent.

Next

***On behalf of which energy-related initiative/ project do you answer the survey?**

***In which role do you answer the survey?**

Choose one of the following answers

- SONNET Researcher
- Representative of

***Please provide your last name to help us know who has completed the survey.**

Previous

Next

***From your perspective, how important are the following aims to ORGANISATION-NAME?**

| | Very important | Moderately important | Hardly important | Not important | I don't know |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| improve quality of life | <input type="radio"/> |
| impact energy policy processes | <input type="radio"/> |
| increase independence of energy supplies | <input type="radio"/> |
| reduce energy consumption | <input type="radio"/> |
| reduce greenhouse gas emissions | <input type="radio"/> |
| increase the production from renewable energy sources | <input type="radio"/> |
| reduce impact on the environment | <input type="radio"/> |
| improve the transfer of knowledge in the energy sector. | <input type="radio"/> |
| improve social acceptance of renewable energy production | <input type="radio"/> |
| increase local economic development | <input type="radio"/> |
| improve economic feasibility of renewable energy projects | <input type="radio"/> |
| provide support for other energy-related initiatives or projects | <input type="radio"/> |
| improve security of energy supply | <input type="radio"/> |
| develop new renewable energy technologies | <input type="radio"/> |
| advocate for regional renewable energy projects | <input type="radio"/> |
| increase energy efficiency | <input type="radio"/> |
| strengthen local community | <input type="radio"/> |
| reduce energy bill for consumers | <input type="radio"/> |
| increase trade of energy with neighbouring regions | <input type="radio"/> |

Are there any additional aims which are very important to ORGANISATION-NAME but were not included in the above list? Please list (max. 5) here:

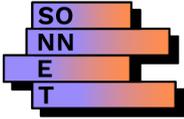
1)

***Do you monitor the achievement of any of the previously mentioned aims in ORGANISATION-NAME?**

- yes
- no
- I don't know

Previous

Next

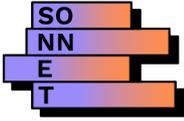


***When you think about the energy system or society in general, how would you assess the effect ORGANISATION-NAME has had so far in the following areas?**

| | Significant effect | Moderate effect | Little effect | No effect | I don't know |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| an improved quality of life | <input type="radio"/> |
| energy policy processes | <input type="radio"/> |
| the increased independence of energy supplies | <input type="radio"/> |
| the reduction of energy consumption | <input type="radio"/> |
| the reduction of greenhouse gas emissions | <input type="radio"/> |
| the increase of production from renewable energy sources | <input type="radio"/> |
| the reduction of impact on the environment | <input type="radio"/> |
| improved knowledge on the energy sector | <input type="radio"/> |
| social acceptance of renewable energy production | <input type="radio"/> |
| the increase of local economic development | <input type="radio"/> |
| the economic feasibility of renewable energy projects | <input type="radio"/> |
| the availability of support for other energy-related initiatives or projects | <input type="radio"/> |
| improved security of energy supply | <input type="radio"/> |
| the development of new renewable energy technologies | <input type="radio"/> |
| advocacy for regional renewable energy projects | <input type="radio"/> |
| the increase of energy efficiency | <input type="radio"/> |
| the strength of local community | <input type="radio"/> |
| the reduction of energy bill for consumers | <input type="radio"/> |
| the increase of trade of energy with neighbouring regions | <input type="radio"/> |

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Next



***We are interested in further information on the aims and contributions of ORGANISATION-NAME.**

We would like to know more about the data collected to measure achievement of the aims of ORGANISATION-NAME. Considering this might require some time to look up, we have made a separate online survey for these questions.

Would you be able to answer such questions, if not, could you provide us with a contact person from ORGANISATION-NAME?

Choose one of the following answers

- I am the contact person
- Other contact person
- We do not collect any data and/or are not able to disclose data

***We would also like to ask the individuals engaged in ORGANISATION-NAME (e.g. members, participants, collaborators, stakeholders, etc.) about:**

- what motivates them to participate in ORGANISATION-NAME
- what impact ORGANISATION-NAME has had on them

Who is the best person to contact these individuals with a separate online survey?

Choose one of the following answers

- I am the contact person
- Other contact person
- We do not wish to participate

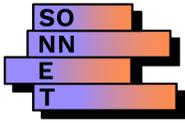
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Do you have any additional comments, questions, or concerns you would like to share?

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Submit



Annex 4: WP6 Survey 1, version 2

Language: English

Aims and Contributions of energy-related initiatives

Thank you for starting the survey. In the SONNET research project, we study the aims and contributions of various energy-related initiatives/ projects throughout Europe. We are interested particularly in the intended and unintended aims of these initiatives/ projects on both individuals and the larger energy system and society, as well as how the achievement of an aim is measured.

The research is conducted as part of the Horizon 2020 call: 'Building a low carbon, climate resilient future: secure, clean and efficient energy' call and thus funded by the EU Horizon 2020 programme. For more information about the wider project please visit the SONNET website: <https://sonnet-energy.eu/>.

We would appreciate if you would take 10 minutes to answer the following questions about the initiative you are engaged in within the next week so we can use your responses in our work.
The questions are not sensitive in nature, but ask about your perspectives on the energy-related initiatives/ projects that you are familiar with.

Some questions may be challenging to precisely answer. Just give us your best guess. There are no right or wrong answers.

Your answers will be treated confidentially and will only be accessed by researchers of the SONNET project.

We hope that the results will contribute to open and informed debate on the subject of social innovation in energy transitions.

If you have any questions or concerns, please contact Sabine Hielscher (s.hielscher@sussex.ac.uk) or Christian Winzer (winc@zhaw.ch).

Thank you for your support.

As part of this research project, we need your consent to collect data on your Organization/ project.

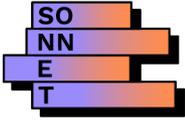
The personal data related to this survey includes your name, affiliated initiative/ project, and your email address. Personal data is used only for the survey invitation and tracking of survey completion. Any data that is provided by you is used as research data and will remain strictly confidential, will not be shared with third parties, nor transferred outside of the SONNET project team, and will be stored on institutional servers and retained for 10 years after completing the project.

The research data is not stored with personal data, thus responses are not connected to individuals, and will be analyzed and presented in an anonymized way that does not allow someone to trace the responses back to an individual.

We would like to reassure you that as a participant in this project you have very definite rights: your participation is entirely voluntary and you are free to withdraw your provided information at any time without giving a reason.

Do you consent to the collection, storage and use of the data you provide in the survey as described above?

Yes I consent.



***Please indicate the subject area on which you were interviewed by the SONNET researchers to help us classify your answers more easily**

(this should be stated in the E-mail in which the link to this survey was provided)

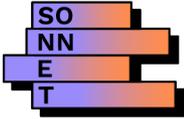
- Cooperative organisational models for renewable energy
- City-level competitions for sustainable energy
- Participatory incubation and experimentation
- Investment and finance mechanisms
- Framings against specific energy pathways (with a focus on fossil fuel)
- Local electricity exchange

 If you are not sure which answer to select, please contact the person who send you the invitation for this survey.

***Please provide your last name to help us know who has completed the survey.**

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Next



***When you think about initiatives/ projects within “Cooperative organisational models for renewable energy” in your country, how important do you think are the following aims to these initiatives/ projects?**

| | Very important | Moderately important | Hardly important | Not important | I don't know |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| improve quality of life | <input type="radio"/> |
| impact energy policy processes | <input type="radio"/> |
| increase independence of energy supplies | <input type="radio"/> |
| reduce energy consumption | <input type="radio"/> |
| reduce greenhouse gas emissions | <input type="radio"/> |
| increase the production from renewable energy sources | <input type="radio"/> |
| reduce impact on the environment | <input type="radio"/> |
| improve the transfer of knowledge in the energy sector. | <input type="radio"/> |
| improve social acceptance of renewable energy production | <input type="radio"/> |
| increase local economic development | <input type="radio"/> |
| improve economic feasibility of renewable energy projects | <input type="radio"/> |
| provide support for other energy-related initiatives or projects | <input type="radio"/> |
| improve security of energy supply | <input type="radio"/> |
| develop new renewable energy technologies | <input type="radio"/> |
| advocate for regional renewable energy projects | <input type="radio"/> |
| increase energy efficiency | <input type="radio"/> |
| strengthen local community | <input type="radio"/> |
| reduce energy bill for consumers | <input type="radio"/> |
| increase trade of energy with neighbouring regions | <input type="radio"/> |

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Next

***How would you assess the effect these initiatives/ projects within “Cooperative organisational models for renewable energy” have had all together in the following areas, considering the energy system or society in general?**

Example answer: *So far, these initiatives / projects have had a ... effect on ...*

| | Significant effect | Moderate effect | Little effect | No effect | I don't know |
|--|-----------------------|-----------------------|-----------------------|-----------------------|----------------------------------|
| an improved quality of life | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| energy policy processes | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| the increased independence of energy supplies | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| the reduction of energy consumption | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| the reduction of greenhouse gas emissions | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| the increase of production from renewable energy sources | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| the reduction of impact on the environment | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| improved knowledge on the energy sector | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| social acceptance of renewable energy production | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| the increase of local economic development | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| the economic feasibility of renewable energy projects | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| the availability of support for other energy-related initiatives or projects | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| improved security of energy supply | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| the development of new renewable energy technologies | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| advocacy for regional renewable energy projects | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| the increase of energy efficiency | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| the strength of local community | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| the reduction of energy bill for consumers | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| the increase of trade of energy with neighbouring regions | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |

Previous

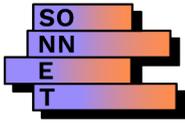
Next

Please name up to 10 energy-related initiatives/projects within the field of “Cooperative organisational models for renewable energy” which seem most effective and/or well known to you.

1.

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Submit



Annex 5: WP6 Survey 2

Language: [Change the language](#)

Measuring Achievements

Thank you for starting the survey. In the SONNET research project, we study the aims and contributions of various energy-related initiatives/ projects throughout Europe. We would appreciate if you would take the time to answer the following questions about how your energy-related initiative/ project measures the achievement of its aims. Depending on the data you collect, the questions may take 15-45 minutes to answer. It would be great if you could answer the survey within the next week so we can use your responses in our work. Some questions may be challenging to precisely answer. Just give us your best guess. There are no right or wrong answers.

Your answers will be treated confidentially and will only be accessed by researchers of the SONNET project. If you have any questions or concerns, please contact the person who sent you the invitation for this survey.

Thank you for your support.

We would like to outline the survey data collection, storage and use for your approval before you start the survey. The personal data related to this survey includes your name, affiliated initiative/ project, and your email address. This data is used only for the survey invitation and tracking of survey completion. The research data is not stored with personal data, thus responses are not connected to individuals, and will be analyzed and presented in a way that does not allow someone to trace the responses back to an individual. Please refer to the information sheet provided in the invitation email for further information. Data collected through this survey is kept strictly confidential and will only be available to the research team. The data is stored on institutional servers which are only accessible to team members. At any time, you may contact us by email to view the data or ask for it to be withdrawn without having to give a reason.

Do you consent to the collection, storage and use of the data you provide in the survey as described above?

Yes I consent.

Next

In which year was ORGANISATION-NAME established?

ⓘ If not precisely known, please give your best estimate.

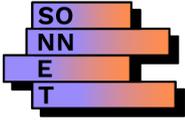
***What are the main participants of ORGANISATION-NAME? Here we refer to the main people involved in ORGANISATION-NAME, thus please identify these.**

**How many does ORGANISATION-NAME have at the moment?
If not precisely known, please give your best estimate.**

How many employees (in full-time equivalent) does ORGANISATION-NAME have at the moment?

ⓘ Only an integer value may be entered in this field.

ⓘ If not precisely known, please give your best estimate.



***Does ORGANISATION-NAME have a website?**

- Yes
- No
- I don't know

How many times was the website of ORGANISATION-NAME visited in...?

| | |
|------|----------------------|
| 2017 | <input type="text"/> |
| 2018 | <input type="text"/> |
| 2019 | <input type="text"/> |

What was the annual budget of ORGANISATION-NAME for 2019?

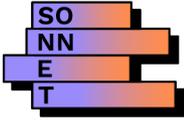
i Only an integer value may be entered in this field.

i The next question will ask you for the currency of this answer.

What is the currency of the budget entered?

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Next



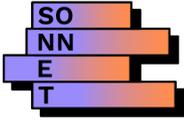
The following questions will ask you about the different activities of ORGANISATION-NAME. Choose all answers that apply. If the question does not apply or is not relevant, please choose "none". If you choose "Other:" please specify in the text field.

***A) What activities does ORGANISATION-NAME do to reduce the energy consumption?**

- none
- provide general advice (e.g. information on consumption of different appliances).
- provide personalized advice (e.g. energy audit).
- grant discounts on new devices (e.g. more efficient heating).
- give financial support (e.g. loans).
- give financial rewards
- invest in retrofits
- invest in new devices
- give social incentives (e.g. reflect savings in reputation to community)
- Other:

***B) What activities does ORGANISATION-NAME do to increase renewable energy production?**

- none
- provide general advice (e.g. on existing support schemes)
- provide personalized advice (e.g. cost-benefit calculation for concrete investment location)
- give financial support (e.g. loans)
- give financial rewards
- invest in renewables production
- match renewable energy producers to buyers of certificates
- Other:



***C) What activities does ORGANISATION-NAME do to reduce the greenhouse gas emissions?**

- none
- activities to reduce consumption (such as listed in question A)
- activities to promote renewable energy production (such as listed in question B)
- invest in electromobility
- switch to electric or gas heating
- purchase certificates to compensate emissions
- Other:

***D) What activities does ORGANISATION-NAME do to promote trade between its members and other customers and regions?**

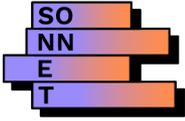
- none
- improve and/or create a regional market-place
- improve and/or create a national market-place
- create a connection to national electricity market operators
- maximize local consumption, rather than promoting trade
- Other:

***E) What activities does ORGANISATION-NAME do to increase the security of energy supply for its members?**

- none
- increase local production (such as listed in question B)
- increase local storage
- increase available back-up power
- Other:

***F) What activities does ORGANISATION-NAME do to reduce the price which its members pay for electricity?**

- none
- activities to reduce consumption (such as listed in question A)
- increase local production (such as listed in question B)
- reduce imports from the grid (such as listed in question C)
- use group purchasing to reduce prices
- sell flexibility/ available capacity
- facilitate local trade
- Other:



***G) What activities does ORGANISATION-NAME do to promote the development of new technologies?**

- none
- participate in pilot projects with new technologies
- invest in research and development
- facilitate exchange about best practices
- Other:

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The following questions ask about the measured impact of ORGANISATION-NAME in different areas as a result of their activities.

***Does ORGANISATION-NAME measure their impact on energy consumption?**

Choose one of the following answers

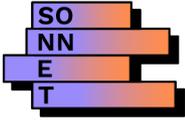
- Yes, by specifying the yearly percentage (%) reduction of energy consumption as a result of activities.
- Yes, with an alternative way to measure the yearly energy consumption reduction. For example, kWh.
- No, there is no impact and/or measure in this area.

Please specify the units of the alternative measure.

Annual consumption in kWh

The above-mentioned measurement had the following values in 2018 and 2019. If unknown, please leave blank.

| | Value and Unit |
|------|----------------------|
| 2018 | <input type="text"/> |
| 2019 | <input type="text"/> |



***Does ORGANISATION-NAME measure their impact on renewable energy production?**

Choose one of the following answers

- Yes, by specifying how many kWh per year of energy ORGANISATION-NAME, or its participants, produced from renewable sources.
- Yes, with an alternative way to quantify the yearly impact on renewable energy production.
- No, there is no impact and/or measure in this area.

***Does ORGANISATION-NAME measure their impact on greenhouse gas emissions?**

Choose one of the following answers

- Yes, by specifying the reduction of (in tonnes) of CO2 per year as a result of activities.
- Yes, with an alternative way to measure the yearly CO2 reduction. (For example, transportation with bike instead of car)
- No, there is no impact and/or measure in this area

***Does ORGANISATION-NAME measure their impact on energy imports?**

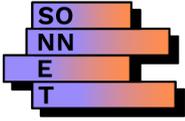
Choose one of the following answers

- Yes, by specifying the percentage (%) of the total yearly electricity of the members of ORGANISATION-NAME bought from providers outside the initiative each year.
- Yes, with an alternative measure for the electricity bought from external providers. (For example, total kWh)
- No, there is no impact and/or measure in this area

***Does ORGANISATION-NAME measure their impact on energy exports?**

Choose one of the following answers

- Yes, by specifying the percentage (%) of the total yearly produced electricity members of ORGANISATION-NAME sold to customers outside the initiative each year.
- Yes, with an alternative measure for the electricity sold to external customers. (For example, total kWh)
- No, there is no impact and/or measure in this area.



***Does ORGANISATION-NAME measure their impact on supply security?**

Choose one of the following answers

- Yes, by specifying the total storage in kWh, as there is local electricity to provide continued supply in case of a power outage from the utility supplier on a winter day, for example.
- Yes, with an alternative measure for the local storage available during power outages. (For example, number of minutes of available power)
- No, there is no impact and/or measure in this area.

***Does ORGANISATION-NAME measure their impact on electricity price?**

Choose one of the following answers

- Yes, by specifying the average price per kWh of electricity for members of ORGANISATION-NAME for each year (including grid charges, taxes etc.).
- Yes, with an alternative measure for the average electricity price of customers. (For example, % of income paid for electricity)
- No, there is no impact and/or measure in this area.

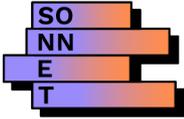
***Does ORGANISATION-NAME measure their impact on innovation?**

Choose one of the following answers

- Yes, by specifying how many patents have been filed due to activities.
- Yes, with an alternative way of measuring the innovation generated from activities. (For example, number of new technologies developed)
- No, there is no impact and/or measure in this area.

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Next



***Are there additional ways you measure the achievement of ORGANISATION-NAME?**

- Yes, there are additional measures.
- There are no additional measures
- I don't know

In which additional ways do you measure the achievement of ORGANISATION-NAME?

Examples could be the number of events organized, the number of petitions signed, the number of articles published etc. Please specify the most relevant ways (max. 3) for which you have data available.

Measure 1:

Measure 2:

Measure 3:

Please let us know what you have measured in the last two years.

If you only have data for one of the years or if you don't know the value, just leave the space blank; You may use the comment field to provide further information about how the metric was calculated.

| | 2018 | 2019 | Comment |
|---------------|----------------------|----------------------|----------------------|
| Custom Metric | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Previous

Next

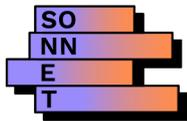
If you have any further information about the activities and impacts of ORGANISATION-NAME - such as an annual report, brochure, project presentation or other - feel free to upload the relevant document(s) here.

Please upload at most 10 files

[Upload files](#)

Previous

Submit



Annex 6: WP6 Survey 3

Language: English Change the language

Participants of energy-related initiatives and projects

Thank you for starting the survey. In the SONNET research project (running from 2019-2022), we study the aims and contributions of energy-related initiatives/projects throughout Europe. We would appreciate if you could take 15 minutes to answer the following questions about a specific project you are involved in. In order for us to use your responses for our research, it would be great if you could complete the survey latest by 31st December 2020.

Some questions may be challenging to answer precisely. If this is the case, just give us your best guess. There are no right or wrong answers.

Your answers will be treated confidentially and will only be accessed by researchers of the SONNET project. Only the aggregate results over several respondents will be reported, in an anonymized form that does not allow identification of individual respondents. If you have any questions or concerns, please contact the person who sent you the invitation for this survey.

Thank you for your support.

We would like to outline the survey data collection, storage and use for your approval before you start the survey.

The personal data related to this survey include your name and your email address. This data is used only for the survey invitation and tracking of survey completion. The research data collected in the survey asks about basic socio-demographic information (such as age, gender, education, employment and living situation), your role within the initiative/ project that you are involved in, and your perception of specific environmental aims. Personal data are stored separately from the research data. Thus, responses are not connected to individuals, and will be analyzed and presented in a way that does not allow to trace responses back to an individual. Data collected through this survey is kept strictly confidential and will only be available to the research team. The data is stored on institutional servers which are only accessible to team members, and will be destroyed 10 years after the project ends.

At any time, you may contact us by email to view the data or ask for it to be withdrawn without having to give a reason.

Do you consent to the collection, storage and use of the data you provide in the survey as described above?

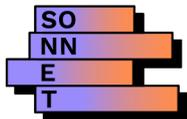
Yes I consent.

Next

***On behalf of which energy-related initiative/project are you answering the survey?**

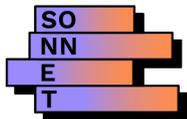
Previous

Next



***How important are the following reasons for your decision to be involved in ORGANISATION-NAME?**

| | Very important | Moderately important | Hardly important | Not important | I don't know |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| increase independence of energy supplies | <input type="radio"/> |
| reduce energy bill for consumers | <input type="radio"/> |
| improve quality of life | <input type="radio"/> |
| increase the production from renewable energy sources | <input type="radio"/> |
| reduce energy consumption | <input type="radio"/> |
| increase energy efficiency | <input type="radio"/> |
| improve social acceptance of renewable energy production | <input type="radio"/> |
| reduce greenhouse gas emissions | <input type="radio"/> |
| strengthen local community | <input type="radio"/> |
| increase local economic development | <input type="radio"/> |
| improve security of energy supply | <input type="radio"/> |
| improve the transfer of knowledge in the energy sector. | <input type="radio"/> |
| impact energy policy processes | <input type="radio"/> |
| improve economic feasibility of renewable energy projects | <input type="radio"/> |
| advocate for regional renewable energy projects | <input type="radio"/> |
| increase trade of energy with neighbouring regions | <input type="radio"/> |
| develop new renewable energy technologies | <input type="radio"/> |
| provide support for other energy-related initiatives or projects | <input type="radio"/> |
| reduce impact on the environment | <input type="radio"/> |

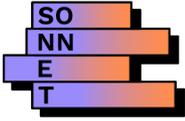


How has ORGANISATION-NAME affected you with regard to the following aims? Please indicate all relevant impacts by ticking the box in the column.

ORGANISATION-NAME has:

| | Reminded or made me aware of this aim. | Convinced me to support this aim. | Explained how I could contribute to this aim. | Made me contribute to this aim. | Not applicable |
|--|--|-----------------------------------|---|---------------------------------|--------------------------|
| improve social acceptance of renewable energy production | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| increase independence of energy supplies | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| improve quality of life | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| advocate for regional renewable energy projects | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| reduce energy bill for consumers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| improve security of energy supply | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| increase energy efficiency | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| increase local economic development | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| provide support for other energy-related initiatives or projects | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| increase the production from renewable energy sources | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| improve the transfer of knowledge in the energy sector. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| increase trade of energy with neighbouring regions | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| reduce impact on the environment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| improve economic feasibility of renewable energy projects | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| develop new renewable energy technologies | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| reduce greenhouse gas emissions | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| reduce energy consumption | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| impact energy policy processes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| strengthen local community | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Do you have any suggestions, how ORGANISATION-NAME could improve its contribution to the above aims?



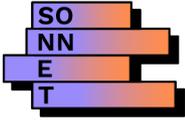
Hereafter you will find statements about different aspects of your personality. There are no right or wrong answers. Different people have different personalities and none is better or worse than others. They are just different. Please answer spontaneously and tick the answer that you feel best describes your personality.

***To what extent do you agree to the following statements describing your personality?**

| | Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| My life would be better if I owned certain things I don't have. | <input type="radio"/> |
| I admire people who own expensive homes, cars, and clothes. | <input type="radio"/> |
| I like to own things that impress people. | <input type="radio"/> |
| I'd be happier if I could afford to buy more things. | <input type="radio"/> |
| I like a lot of luxury in my life. | <input type="radio"/> |
| I try to keep my life simple, as far as possessions are concerned. | <input type="radio"/> |
| It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like. | <input type="radio"/> |
| Buying things gives me a lot of pleasure. | <input type="radio"/> |
| The things I own say a lot about how well I'm doing in life. | <input type="radio"/> |

***To what extent do you agree to the following statements describing your personality?**

| | Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| My purchase habits are affected by my concern for our environment. | <input type="radio"/> |
| I am willing to be inconvenienced in order to take actions that are more environmentally friendly. | <input type="radio"/> |
| I am concerned about wasting the resources of our planet. | <input type="radio"/> |
| I would describe myself as environmentally responsible. | <input type="radio"/> |
| I consider the potential environmental impact of my actions when making many of my decisions. | <input type="radio"/> |
| It is important to me that the products I use do not harm the environment. | <input type="radio"/> |



In which year did you start participating in ORGANISATION-NAME?

Format: yyyy

*How well do the following describe your current role/ activity in ORGANISATION-NAME?

| | Very fitting description | Somewhat fitting description | Does not fit at all |
|-----------------------|--------------------------|------------------------------|-----------------------|
| Customer | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Employee | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| App user | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Participant | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Member | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Supported institution | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Supporter | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Website visitor | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Manager | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Please provide the best description for your role/activity in ORGANISATION-NAME, if it was not already mentioned above.

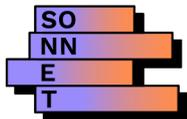
How old are you (in years)?

*Please indicate your gender.

- Male
- Female
- Prefer not to say
- Other

*Please indicate your status in your current primary residence.

- Married or living as a couple (with or without children)
- Living with parents or other relatives
- Living alone
- Living as a single parent
- Sharing the primary residence with non-family members
- Living in a hostel type accommodation, e.g., university dormitory, army base



Including yourself, how many people of each age group live in your household?

i Only numbers may be entered in these fields.

Children under 6 years old

Children between 6 and 17 years old

Adults between 18 and 65 years old

Seniors more than 65 years old

*What is your highest level of education?

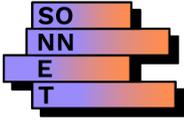
- No degree or certificate
- Trade/Vocational certificate or equivalent
- High school or equivalent
- Higher education degree or equivalent (College, University...)
- Don't know

*How would you best describe the area in which you live?

- Centre of a major town / city
- Suburban (fringes of a major town / city)
- Small town or village
- Isolated dwelling (Not in a town or village)

*What is your current employment status?

- Self-employed
- Employee (full time, part time or on temporary leave)
- Retired
- Homemaker - househusband/wife
- Seeking a job/unemployed
- Student
- Unable to work, e.g., disability
- Other:



***What is your household's approximate annual income, after tax? (Please include income from everyone in your household from all sources, including wages, government and company pensions and benefits, and investments dividends, rents)**

If you do not know the exact figure, please estimate.

- 1€ - 3 600€ (approx. 1€ - 300€ monthly)
- 3 601€ - 7 200€ (approx. 301€ - 600€ monthly)
- 7 201€ - 12 000€ (approx. 601€ - 1 000€ monthly)
- 12 001€ - 24 200€ (approx. 1 001€ - 2 000€ monthly)
- 24 201€ - 34 400€ (approx. 2 001€ - 2 850€ monthly)
- 34 401€ - 41 800€ (approx. 2 851€ - 3 500€ monthly)
- 41 801€ - 49 000€ (approx. 3 501€ - 4 100€ monthly)
- 49 001€ - 56 700€ (approx. 4 101€ - 4 700€ monthly)
- 56 701€ - 65 200€ (approx. 4 701€ - 5 450€ monthly)
- 65 201€ - 75 200€ (approx. 5 451€ - 6 350€ monthly)
- 75 201€ - 88 800€ (approx. 6 251€ - 7 400€ monthly)
- More than 88 800€ (more than approx. 7 400€ monthly)
- Don't know / no answer

Previous

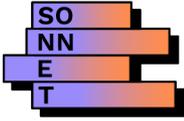
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***Is your current primary residence ...**

- A detached house (with just 1 or 2 dwellings, e.g., house/apartments)
- A semi-detached house/terraced house (with just 1 - 2 dwellings)
- An apartment in a building with 3-6 dwellings
- An apartment in a building with 7-15 dwellings
- An apartment in a building with more than 15 dwellings

***Do you and/or other members of your household own your primary residence (with or without a mortgage)?**

- Yes, I/we own the house
- Yes, I/we own the apartment but not the entire building
- Yes, I/we own the apartment and the whole building (incl. other apartments I don't live in)
- No



***To what extent do you agree with the following statements?**

| | Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| To save energy is an important part of who I am. | <input type="radio"/> |
| I think of myself as an energy conscious person | <input type="radio"/> |
| I think of myself as someone who is very concerned with environmental issues | <input type="radio"/> |
| Being environmentally friendly is an important part of who I am | <input type="radio"/> |

***Do any of your friends, family or colleagues buy energy-efficient products?**

Yes No

***How much influence do your family, friends and colleagues have on your decision to purchase - or not purchase - energy efficient products?**

- No influence
- Slight influence
- Some influence
- Moderate influence
- Large influence

***In general, what do you think your family's, friends' or colleagues' views would be of you purchasing energy efficient products?**

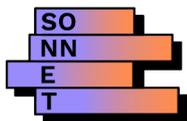
- Very unfavourable
- Somewhat unfavorable
- Indifferent
- Somewhat favorable
- Very favourable

***To what extent do you agree with the following statements?**

| | Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| It makes me feel good to contribute to lowering global energy consumption. | <input type="radio"/> |
| I feel responsible for making a contribution to lowering global energy consumption. | <input type="radio"/> |

Previous

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Annex 7: List of all mapped SIEs and their typology

Clustered typology of all 18 socio-technical configurations by WPI

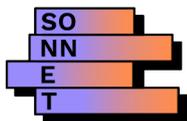
(Source: SONNET cloud\01_WPI frame_concept_synthesis\02_T1_2 Mapping\04_Mapped_SIE)

| | <i>cooperation</i> | <i>exchange</i> | <i>competition</i> | <i>conflict</i> |
|-------------------|--|---|---|---|
| <i>Doing</i> | 1 Local energy production and consumption (n = 113) 2 Cooperative energy production & consumption (n = 105) 3 Collaborative eco-efficient housing (n = 22) | 4 Local peer-to-peer electricity exchange (n = 13) | 5 For profit services and technologies (n = 48) | 6 Action against specific energy pathways (n = 3) |
| <i>Thinking</i> | 7 Advocacy for specific energy pathways (n = 50) | 8 Energy education (n = 49) 9 Non-profit consulting (n = 47) 10 Peer to peer learning (n = 32) | 11 For-profit consulting (n = 13) | 12 Campaigns against specific energy pathways (n = 8) |
| <i>Organising</i> | 13 Participatory energy dialogues (n = 20) 14 Participatory experimentation and incubation (n = 28) | 15 Platforms for direct energy transactions (n = 14) 16 Investment and finance mechanisms (n = 43) | 17 Energy gamification & nudges (n = 19) | 18 Networks against specific energy pathways (n = 4) |

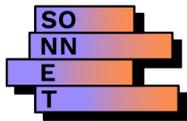
Clustering of socio-technical configurations by WPI

(Source: SONNET cloud\01_WPI frame_concept_synthesis\02_T1_2 Mapping\04_Mapped_SIE)

| Name | Social relation | Activity | Type number |
|--|-----------------|----------|-------------|
| <i>Local energy production and consumption</i> | Cooperation | Doing | 1 |
| <i>Cooperative energy production & consumption</i> | Cooperation | Doing | 1 |
| <i>Collaborative eco-efficient housing</i> | Cooperation | Doing | 1 |
| <i>Local peer-to-peer electricity exchange</i> | Exchange | Doing | 4 |
| <i>For profit services and technologies</i> | Competition | Doing | 7 |
| <i>Action against specific energy pathways</i> | Conflict | Doing | 10 |
| <i>Advocacy for specific energy pathways</i> | Cooperation | Thinking | 2 |

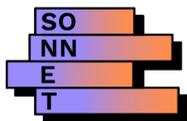


| | | | |
|---|-------------|------------|----|
| <i>Energy education</i> | Exchange | Thinking | 5 |
| <i>Non-profit consulting</i> | Exchange | Thinking | 5 |
| <i>Peer to peer learning</i> | Exchange | Thinking | 5 |
| <i>For-profit consulting</i> | Competition | Thinking | 8 |
| <i>Campaigns against specific energy pathways</i> | Conflict | Thinking | 11 |
| <i>Participatory energy dialogues</i> | Cooperation | Organising | 3 |
| <i>Participatory experimentation and incubation</i> | Cooperation | Organising | 3 |
| <i>Platforms for direct energy transactions</i> | Exchange | Organising | 6 |
| <i>Investment and finance mechanisms</i> | Exchange | Organising | 6 |
| <i>Energy gamification & nudges</i> | Competition | Organising | 9 |
| <i>Networks against specific energy pathways</i> | Conflict | Organising | 12 |



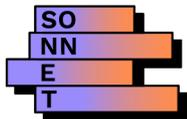
Survey responses: SIEs of WP1 with their mapped socio-technical configuration and typology type

| Survey | Role | SIE-initiative | Field | Lang | SIE-type |
|--------|------------|---|--|------|----------------------------|
| 1v1 | researcher | 100 Prozent erneuerbar stiftung | Advocacy for specific energy pathways | de | Cooperative framing |
| 1v1 | researcher | Abundance | Financing and subsidies for RE (solar and wind) | en | Organized exchange |
| 1v1 | researcher | ACOPREV | Local electricity exchange | fr | Local electricity exchange |
| 1v1 | researcher | ADEV Energiegenossenschaft | Cooperative energy production & consumption | de | Cooperative action |
| 1v1 | researcher | Begawatts | Cooperative energy production & consumption | fr | Cooperative action |
| 1v1 | researcher | Bündnis Bürgerenergie | Participatory energy dialogues | de | Cooperative organisation |
| 1v1 | researcher | Buxia Energies | Cooperative energy production & consumption | fr | Cooperative action |
| 1v1 | researcher | Buxia Energies | Cooperative energy production & consumption | fr | Cooperative action |
| 1v1 | researcher | Centrales villageoises | Non-profit consulting | fr | Knowledge exchange |
| 1v1 | researcher | Centrales villageoises | Non-profit consulting | fr | Knowledge exchange |
| 1v1 | researcher | Deutscher Nachhaltigkeitspreis (DNP) | City level competition for sustainable energy | de | Organized competition |
| 1v1 | researcher | Dr Watt | Energy education | fr | Knowledge exchange |
| 1v1 | researcher | DuurzaamInvesteren | Financing and subsidies for RE (solar and wind) | nl | Organized exchange |
| 1v1 | researcher | Dynamis | Participatory experimentation and incubation | de | Cooperative organisation |
| 1v1 | researcher | Enercoop | Cooperative energy production & consumption | fr | Cooperative action |
| 1v1 | researcher | Enercoop | Cooperative energy production & consumption | fr | Cooperative action |
| 1v1 | researcher | EPV | Cooperative organisation models for renewable energy | fr | Cooperative action |
| 1v1 | researcher | European Energy Award | City level competition for sustainable energy | de | Organized competition |
| 1v1 | researcher | European Energy Award | City level competition for sustainable energy | de | Organized competition |
| 1v1 | researcher | Frack Off | Networks against specific energy pathways | en | Organized conflict |
| 1v1 | researcher | Interdisciplinary Division for Energy Analyses | Non-profit consulting | pl | Knowledge exchange |
| 1v1 | researcher | JPI Urban Europe | Participatory incubation and experimentation | de | Cooperative organisation |
| 1v1 | researcher | Klimaschutzagentur Mannheim | City level competition for sustainable energy | de | Organized competition |
| 1v1 | researcher | LaNEG Rheinland-Pfalz | Cooperative organisation models for renewable energy | de | Cooperative organisation |
| 1v1 | researcher | Młodzieżowy Strajk Klimatyczny | Campaigns against specific energy pathways | pl | Conflicting frames |
| 1v1 | researcher | Narodowy Fundusz Ochrony Środowiska i Gospodarki Wodnej (The National Fund for Environmental Protection and Water Management) | Financing and subsidies for renewable energy | pl | Organized exchange |
| 1v1 | researcher | Optima Solar Schweiz Genossenschaft | Cooperative energy production & consumption | de | Cooperative action |



| | | | | | |
|----|--------------------|---|---|----|----------------------------|
| IV | researcher | Pitch Your Green Idea! | City level competition for sustainable energy | de | Organized competition |
| IV | researcher | project 'Step by step commitments for energy-saving' | Participatory incubation and experimentation | pl | Cooperative organisation |
| IV | researcher | Rozwój TAK - Odkrywki NIE | Framings against fossil fuel energy pathways | pl | Organized conflict |
| IV | researcher | Rozwój TAK - Odkrywki NIE | Framings against fossil fuel energy pathways | pl | Organized conflict |
| IV | researcher | Spółdzielnia Nasza Energia - Sieć Biogazowni Rolniczych | Local peer-to-peer electricity exchange | pl | Local electricity exchange |
| IV | researcher | Stadslab2050 | Participatory experimentation and incubation | nl | Cooperative organisation |
| IV | researcher | Stowarzyszenie Akcja Konin | Framings against fossil fuel energy pathways | pl | Organized conflict |
| IV | researcher | Stowarzyszenie Zielony Imielin | Framings against fossil fuel energy pathways | pl | Conflicting practices |
| IV | researcher | the municipality of la Motte-Servolex | Local electricity exchange | fr | Local electricity exchange |
| IV | researcher | the municipality of Penestin | Local electricity exchange | fr | Local electricity exchange |
| IV | researcher | Weald Action Group | Framings against fossil fuel energy pathways | en | Conflicting practices |
| IV | researcher | Wohngenossenschaft Rossfeld | Local electricity exchange | de | Local electricity exchange |
| IV | researcher | WREN | Local electricity exchange | en | Local electricity exchange |
| IV | researcher | zklaster | Participatory incubation and experimentation | pl | Cooperative organisation |
| IV | researcher | Community Energy Coalition | Advocacy for specific energy pathways | en | Cooperative framing |
| IV | SIE-representative | 100 procent erneuerbar stiftung | Advocacy for specific energy pathways | de | Cooperative framing |
| IV | SIE-representative | ADEV Energiegenossenschaft | Cooperative energy production & consumption | de | Cooperative action |
| IV | SIE-representative | ADEV Energiegenossenschaft | Cooperative energy production & consumption | de | Cooperative action |
| IV | SIE-representative | Cornwall Local Energy Market | Local peer-to-peer electricity exchange | en | Local electricity exchange |
| IV | SIE-representative | Erlenmatt Ost EVG | Collaborative eco-efficient housing | de | Cooperative action |
| IV | SIE-representative | European Energy Award | City level competition for sustainable energy | de | Organized competition |
| IV | SIE-representative | European Energy Award | City level competition for sustainable energy | fr | Organized competition |
| IV | SIE-representative | European Energy Award | Energy gamification & nudges | de | Organized competition |
| IV | SIE-representative | Frack Off | Networks against specific energy pathways | en | Organized conflict |
| IV | SIE-representative | Młodzieżowy Strajk Klimatyczny | Campaigns against specific energy pathways | pl | Conflicting frames |
| IV | SIE-representative | Optima Solar Schweiz Genossenschaft | Cooperative energy production & consumption | de | Cooperative action |
| IV | SIE-representative | Rozwój TAK - Odkrywki NIE | Framings against fossil fuel energy pathways | pl | Organized conflict |
| IV | SIE-representative | Spiel Energie | City level competition for sustainable energy | de | Organized competition |
| IV | SIE-representative | Stowarzyszenie Zielony Imielin | Framings against fossil fuel energy pathways | pl | Conflicting practices |

| | | | | | |
|-----|--------------------|---------------------------------|--|----|----------------------------|
| 1v1 | SIE-representative | Wałbrzyski Klaster Energetyczny | Participatory incubation and experimentation | pl | Cooperative organisation |
| 1v1 | SIE-representative | Weald Action Group | Framings against fossil fuel energy pathways | en | Conflicting practices |
| 1v1 | SIE-representative | Wohngenossenschaft Rossfeld | Local electricity exchange | de | Local electricity exchange |
| 1v1 | SIE-representative | WREN | Local electricity exchange | en | Local electricity exchange |
| 1v2 | field actor | (blank) | Action against specific energy pathways | nl | Conflicting practices |
| 1v2 | field actor | (blank) | Action against specific energy pathways | nl | Conflicting practices |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | de | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | de | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | de | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | de | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | de | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | de | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | de | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | de | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | de | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | de | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | de | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | en | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | fr | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | fr | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | fr | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | fr | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | fr | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | nl | Cooperative action |
| 1v2 | field actor | (blank) | Cooperative energy production & consumption | nl | Cooperative action |
| 1v2 | field actor | (blank) | Energy gamification & nudges | de | Organized competition |
| 1v2 | field actor | (blank) | Energy gamification & nudges | de | Organized competition |
| 1v2 | field actor | (blank) | Energy gamification & nudges | de | Organized competition |
| 1v2 | field actor | (blank) | Energy gamification & nudges | en | Organized competition |
| 1v2 | field actor | (blank) | Investment and finance mechanisms | en | Organized exchange |
| 1v2 | field actor | (blank) | Investment and finance mechanisms | en | Organized exchange |
| 1v2 | field actor | (blank) | Investment and finance mechanisms | pl | Organized exchange |
| 1v2 | field actor | (blank) | Investment and finance mechanisms | pl | Organized exchange |
| 1v2 | field actor | (blank) | Investment and finance mechanisms | pl | Organized exchange |



| | | | | | |
|-----|-------------|---------|--|----|----------------------------|
| lv2 | field actor | (blank) | Local peer-to-peer electricity exchange | de | Local electricity exchange |
| lv2 | field actor | (blank) | Local peer-to-peer electricity exchange | de | Local electricity exchange |
| lv2 | field actor | (blank) | Local peer-to-peer electricity exchange | en | Local electricity exchange |
| lv2 | field actor | (blank) | Local peer-to-peer electricity exchange | fr | Local electricity exchange |
| lv2 | field actor | (blank) | Local peer-to-peer electricity exchange | fr | Local electricity exchange |
| lv2 | field actor | (blank) | Local peer-to-peer electricity exchange | fr | Local electricity exchange |
| lv2 | field actor | (blank) | Participatory experimentation and incubation | nl | Cooperative organisation |
| lv2 | field actor | (blank) | Participatory experimentation and incubation | nl | Cooperative organisation |

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