SMARTEES: Deliverable 2.4 (Report)

Report on Workshops

February 2021 (M34)

The SMARTEES inter- and transdisciplinary team at the General Assembly in A Coruna, Spain. June 27th, 2019.

Project Full Title	Social innovation Modelling Approaches to Realizing Transition to Energy Efficiency and Sustainability	
Project Acronym	SMARTEES	
Grant Agreement No.	763912	
Coordinator	Norwegian University of Science and Technology (NTNU)	
Project Duration	May 2018 – October 2021	
Project website	www.local-social-innovation.eu	
Work Package	Theoretical Framework	
Deliverable	D2.4 Report on workshops	
Delivery Date	26.02.2021 (month 34)	
Author(s)	Jed J. Cohen; Ryan O'Reilly; Andrea Kollmann EI-JKU	
Contributor(s)		
Reviewer(s) (if applicable)	Gabriele Quinti; Christian Klöckner K&I; NTNU	
Dissemination level:	Public (PU)	**X**
	Confidential, only for members of the consortium (CO)	

Keywords
Interdisciplinary; Transdisciplinary; Workshops

This document has been prepared in the framework of the European project SMARTEES – Social Innovation Modelling Approaches to Realizing Transition to Energy Efficiency and Sustainability. This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 763912.

Table of Contents

Executive summary

Task 2.4 “Interdisciplinary research workshops on theory and methods,” is the final task of the WP2 “Theoretical framework” in the SMARTEES project. This task was planned to hold three workshops relating to the SMARTEES research agenda, in order to foster cooperation amongst project research teams and represented disciplines.
In actuality, T2.4 consisted of four workshops during its runtime. The brief details of each workshop are given below, and the outcomes and details of each workshop are described in their own section in this report.

- **Workshop 1**: Held in Groningen on the 25th and 26th of February, 2019, this workshop served the purpose of setting the collaborative stage for the joint research effort in the SMARTEES project, and was aligned to the objectives of Deliverable 2.1 (Integrated Research White Paper - Version 1) and Deliverable 2.3 (Integrated Research White Paper – Final Version).
- **Workshop 2**: Held virtually on June 4th, 2019, this workshop helped to define the specific linkages between WPs relating to the SMARTEES case studies and case clusters.
- **Workshop 3**: Held virtually on October 19th, 2020, this workshop aimed to develop a unified concept of social innovation that encapsulates the efforts of the SMARTEES’ project and also had a session relating to the details and fine tuning of the Sandbox Tool.
- **Workshop 4**: Held virtually on January 15th, 2021, this extra workshop was dedicated to promoting co-authorship in SMARTEES scientific outputs and creating more holistic research outputs through increased inter-group, international, and interdisciplinary cooperation.

Overall, the SMARTEES workshop series was a key part in fostering broader collaboration amongst research teams. Takeaways from this process include the importance of setting out basic rules and awareness-raising for the interdisciplinary nature of the meetings, and the engaging potential of collaborations in academic papers fostered through workshops to exchange ideas.

List of abbreviations

WP	Work Package
ABM	Agent-based model
SI	Social Innovation

Glossary

Interdisciplinary	involving two or more different subjects or areas of knowledge related to various disciplines
Transdisciplinary	interaction between researchers/experts and applied practitioners[1]
Sandbox Tool	a tool that allows users to explore results of various ABM model runs in detail; a major output of the SMARTEES project
Energy System	the agents and infrastructure involved with the production, supply, manage and consumption of energy related services
Superblocks	an urban area typically bounded by roads that is the combination of multiple city blocks
District Regeneration	transforming a district or urban area through energy efficiency measures, urban green spaces, transport improvements, etc.
Energy Poverty	occurs when lack of money/resources prevents access to modern energy services
Energy Justice	occurs when barriers that limit access to modern energy services are eliminated

[1] Steiner, G. and A. Posch (2006) Higher education for sustainability by means of transdisciplinary case studies: an innovative approach for solving complex, real-world problems, Journal of Cleaner Production, Volume 14, Issues 9–11, pp 877-890.

Overview of Task 2.4 Workshops

Planned activities: Task 2.4 "Interdisciplinary research workshops on theory and methods," is the final task of the WP2 "Theoretical framework" in the SMARTEES project. This task was planned to hold three workshops relating to the SMARTEES research agenda. From the plan in the Grant Agreement, the first workshop was to relate to D2.1 (Integrated Research White Paper), the second workshop was to relate to the SMARTEES' cases, and the third workshop was to adapt theories based on SMARTEES' work.

Activities carried out: T2.4 consisted of four workshops during its runtime. The brief details of each workshop are given below, and the outcomes and details of each workshop are described in their own section in this report.

- **Workshop 1**: Held in Groningen on the 25th and 26th of February, 2019, this workshop served the purpose of setting the collaborative stage for the joint research effort in the SMARTEES project, and was aligned to the objectives of Deliverable 2.1 (Integrated Research White Paper - Version 1) and Deliverable 2.3 (Integrated Research White Paper – Final Version).
- **Workshop 2**: Held virtually on June 4th, 2019, this workshop helped to define the specific linkages between WPs relating to the SMARTEES case studies and case clusters.
- **Workshop 3**: Held virtually on October 19th, 2020, this workshop aimed to develop a unified concept of social innovation that encapsulates the efforts of the SMARTEES' project and also had a session relating to the details and fine tuning of the Sandbox Tool.
- **Workshop 4**: Held virtually on January 15th, 2021, this extra workshop was dedicated to promoting co-authorship in SMARTEES scientific outputs and creating more holistic research outputs through increased inter-group, international, and interdisciplinary cooperation.

As such, all initially planned themes were addressed with Workshop 1 dealing with key aspects of the Integrated Research White Paper, Workshop 2 related to tying together the case studies in SMARTEES with the policy analysis and the Sandbox Tool, and Workshop 3 dealt with a SMARTEES concept of social innovation. Additionally to the themes planned, based on the work of T2.1, the WP2 leader created Workshop 4 to promote interdisciplinary collaboration in project academic outputs.

Workshop 1

This section details the outcome and process of Workshop 1, which had the goal of supporting the development of D2.1 and D2.3, the Integrated Research White Paper.

Summary of Workshop 1

This two-day in-person workshop was held in Groningen on the 25th and 26th of February, 2019. This workshop served the purpose of setting the collaborative stage for the joint research effort in the SMARTEES project, and was aligned to the objectives of Deliverable 2.1. The agenda included the major research themes of SMARTEES, which fed into the D2.1 construction of interdisciplinary research questions and methods. Topics included: social innovation, social networks, public policy analysis, agent-based models (ABM), the Sandbox Tool, and case study planning. The full agenda for this workshop is given in the Appendix

While all of these sessions were relevant to the updating of D2.1 into D2.3, the most critical session related to social innovation. As this is a central term in the project and one that requires a common, interdisciplinary understanding to make communication and project execution smooth, the discussion

here focused on building a project definition of the term 'social innovation'. The sections below detail this process.

Participation: Representatives were present from all T2.4 participating organizations. The participants from UOT participated virtually. Additionally, the city of Groningen was represented at the workshop.

The social innovation session

At the Groningen meeting a discussion was held in an attempt to determine a working definition of 'social innovation' to be used throughout the SMARTEES project. The discussion was led by EI-JKU with inputs from K&I.

A short primer presentation introduced the concept of social innovation and showed the results of an internal survey that was completed before the Groningen meeting. The results of the pre-survey are presented and discussed below under "Pre-survey of Workshop 1".

The primer presentation was followed by a stage of group work, where workshop participants sat in groups and each group developed their own definition of social innovation for the SMARTEES project. Four groups developed four different definitions of social innovation. Each group then briefly presented their definition and the workshop participants were able to anonymously rate each definition using the Slido website. The results of this process are presented below under "Groningen meeting group exercise".

Summary of social innovation outcomes

From the group workshop, a phase one definition emerged as the preferred one. This definition is labelled Definition 3, and is reproduced verbatim below.

> **Definition 3:** Local social innovation for energy transition may be defined as a process of change in social relationships, interactions, configurations, and/or the sharing of knowledge leading to or based on new environmentally sustainable ways of producing, managing, and consuming energy.

This definition did not suffer from strong opposition, as only 2 of 14 participants gave it a ranking of 1 or 2, on a scale from 1 to 5. However, still over 50% of the votes regarding Definition 3 were in the 3-4 range, suggesting that this definition should be improved upon before being fully accepted as the SMARTEES definition of social innovation.

Key issues that emerged during this process when considering a definition are:

1. Is social innovation a tangible thing (e.g. new technology, physical change, change in rules, etc.), or is it a process of social change?
2. Is social innovation by definition required to be a beneficial thing?
3. Should the SMARTEES definition of social innovation be constrained to the energy space?

The results of the pre-survey and workshop round offer some insights into the SMARTEES response to these crucial aspects of the definition of social innovation.

As the two most preferred definitions from this exercise did not define social innovation as a strictly positive thing, nor as a tangible thing, it is reasonable to conclude that SMARTEES shall consider social innovations in a broader sense. That is, social innovation is a process, which encompasses social

changes around which tangible changes to the energy system occur. This would imply that the tangible changes in the case studies (e.g. road closures, wind farm installation, etc.) are **not** social innovations per se, and that the social innovations are the processes of social change that lead to, enable, or come out of these tangible changes.

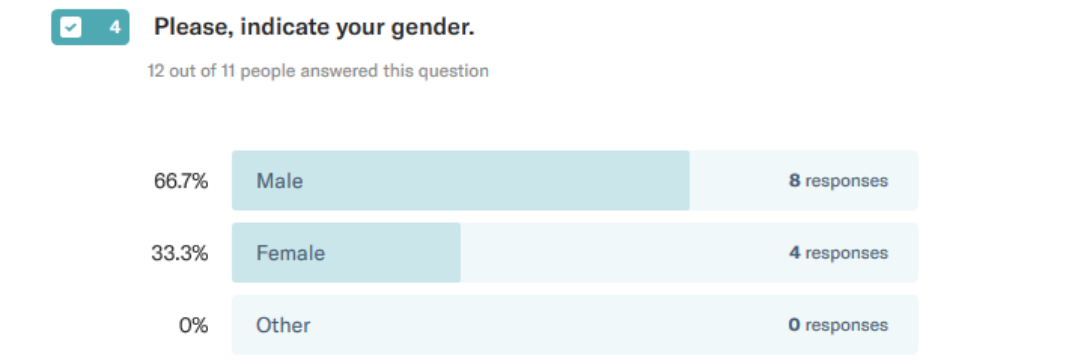
A promising combination of the two favored definitions from this exercise, Definition 3 and Definition 4, presented below under "Groningen meeting group exercise", would be to add a problem statement (as is focused on in Definition 4) to Definition 3. This would also reflect the European Commission definition, the preferred definition from the pre-survey, which includes a statement about meeting social challenges. Based on these insights, the following **Suggested SMARTEES Definition** is presented. This definition of social innovation also appears in D5.1 as the 'SMARTEES working definition,' and is the final product of a further round of workshopping and group approval that occurred at the General Assembly in A Coruna, which fell outside the purview of Workshop 3.

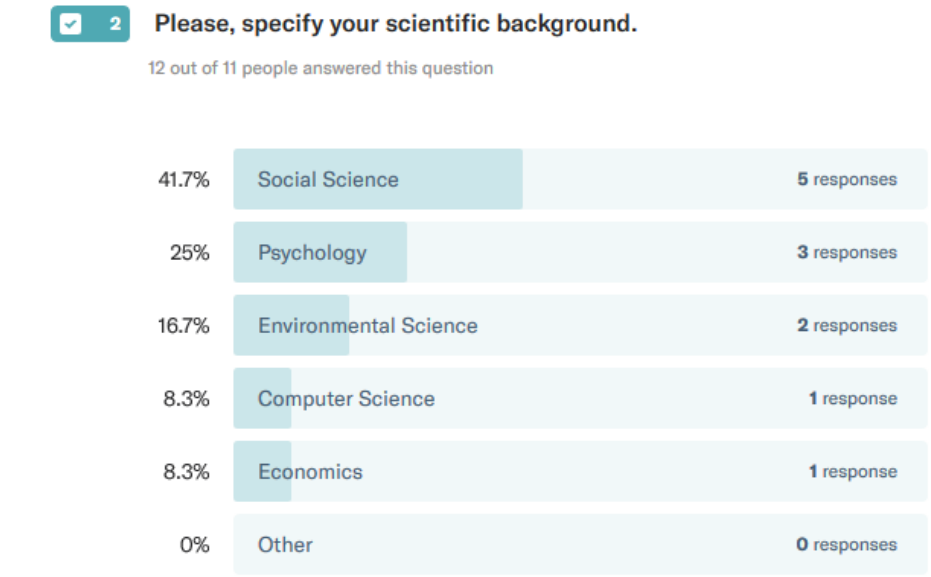
Suggested Definition of 'social innovation': Social innovation is a process of change in social relationships, interactions, and/or the sharing of knowledge that broadens/deepens the engagement of individual stakeholders with energy topics and leads to, or is based on, new environmentally sustainable ways of producing, managing and consuming energy to meet societal challenges.

Pre-survey for Workshop 1 – discussion of social innovation

The pre-survey took place one week before the Groningen meeting and was accessible to the consortium members online. The purpose of the pre-survey was to make an initial assessment of the cohesion or dissonance of the consortium research groups regarding the definition of social innovation and to see if existing definitions were seen as fitting the project well. In total, 12 responses to the pre-survey were received. The sample contains observations representing all research partners in SMARTEES except for UOT.

Demographic information regarding the survey respondents was also collected in the dimensions of scientific discipline and gender, as inter-disciplinarity and gender issues are key foci of the SMARTEES research process. Below we see the breakdown of these demographics across the survey sample, showing that social science and psychology disciplines are strongly represented, as are males, in the responses.





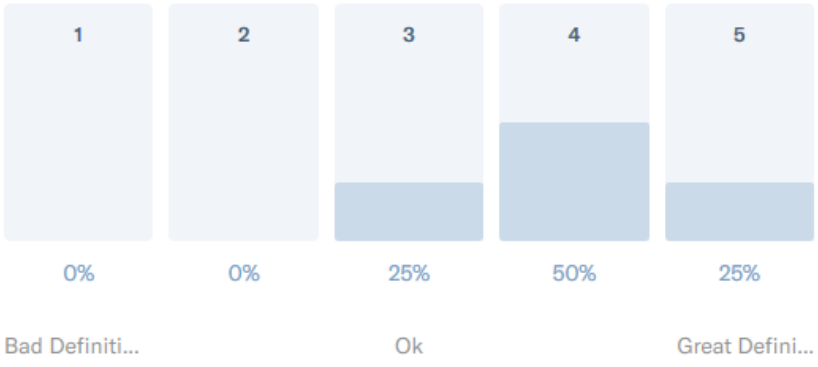
Next, survey respondents were presented with 8 definitions of social innovation. These definitions originate from various authors and sources, and have been collected by the EU Social Innovation Academy as "popular social innovation definitions"[2], and the definition used by the European Commission (the first among the eight presented below)[3]. Respondents were asked to rank each definition on a scale from 1-5, where 5 represents a "great definition" and 1 represents a "bad definition". The results of this exercise and the 8 definitions tested are presented below.

[2] http://www.socialinnovationacademy.eu/8-popular-social-innovation-definitions/
[3] As used in: REGULATION (EU) No 1296/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 on a European Union Programme for Employment and Social Innovation ("EaSI") and amending Decision No 283/2010/EU establishing a European Progress Microfinance Facility for employment and social inclusion

12 **Social innovations are "innovations that are social both as to their ends and their means and in particular those which relate to the development and implementation of new ideas (concerning products, services and models), that simultaneously meet social needs and create new social relationships or collaborations, thereby benefiting society and boosting its capacity to act".**

Avg. 4

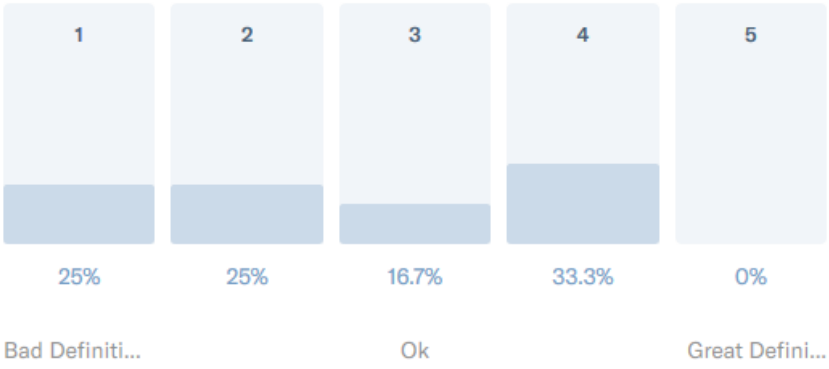
12 out of 11 people answered this question



11 **Social innovation is "distinctive both in its outcomes and in its relationships, in the new forms of cooperation and collaboration that it brings. As a result, the processes, metrics, models and methods used in innovation in the commercial or technological fields, for example, are not always directly transferable to the social economy".**

Avg. 2.6

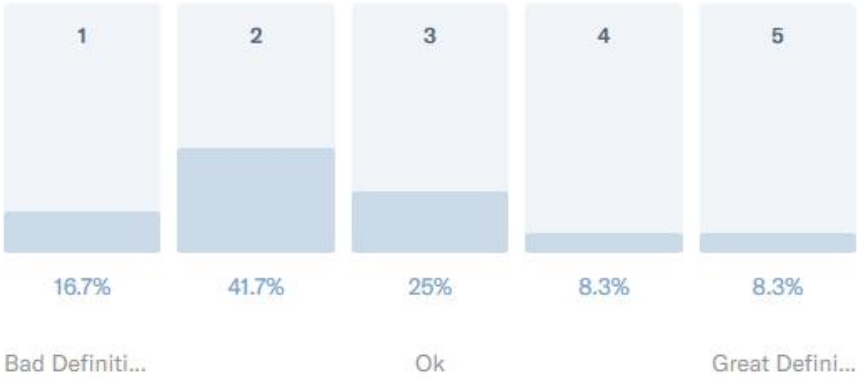
12 out of 11 people answered this question



10 **Social innovation is "a conceptual, process or product change, organisational change and changes in financing, and new relationships with stakeholders and territories".**

Avg. 2.5

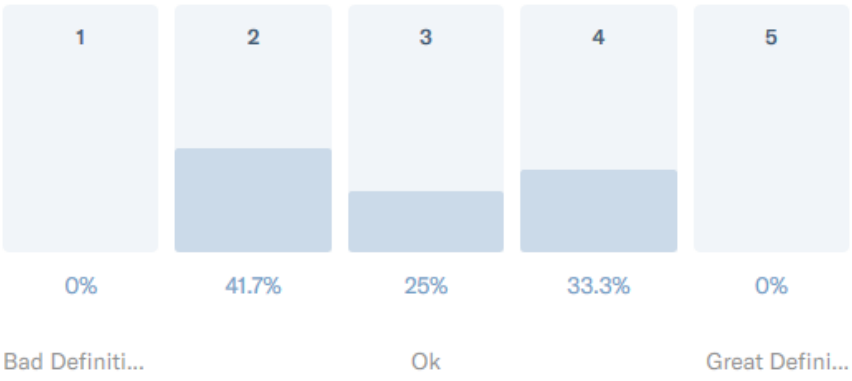
12 out of 11 people answered this question



9 **Social innovation is "a complex process through which new products, processes or programmes are introduced, leading to a deep change in daily routines, resources' streams, power relations or values within the system affected by the innovation".**

Avg. 2.9

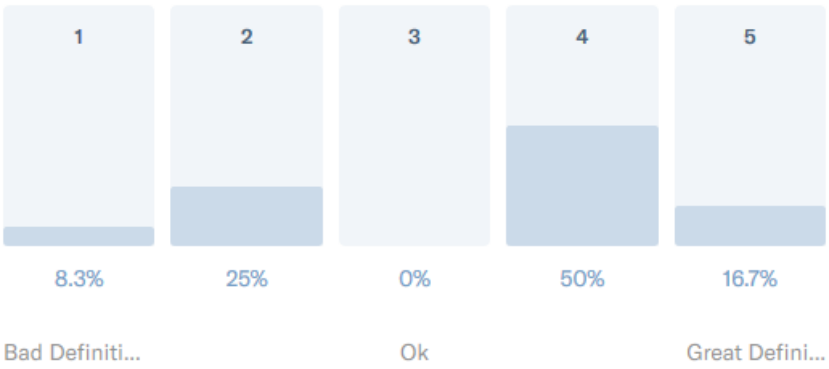
12 out of 11 people answered this question



8 **Social innovations are "new solutions (products, services, models, markets, processes etc.) that simultaneously meet a social need (more effectively than existing solutions) and lead to new or improved capabilities and relationships and better use of assets and resources. In other words, social innovations are both good for society and enhance society's capacity to act".**

Avg. 3.4

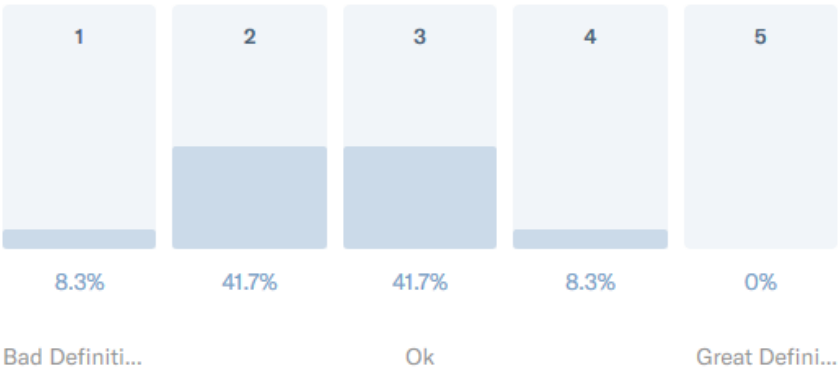
12 out of 11 people answered this question

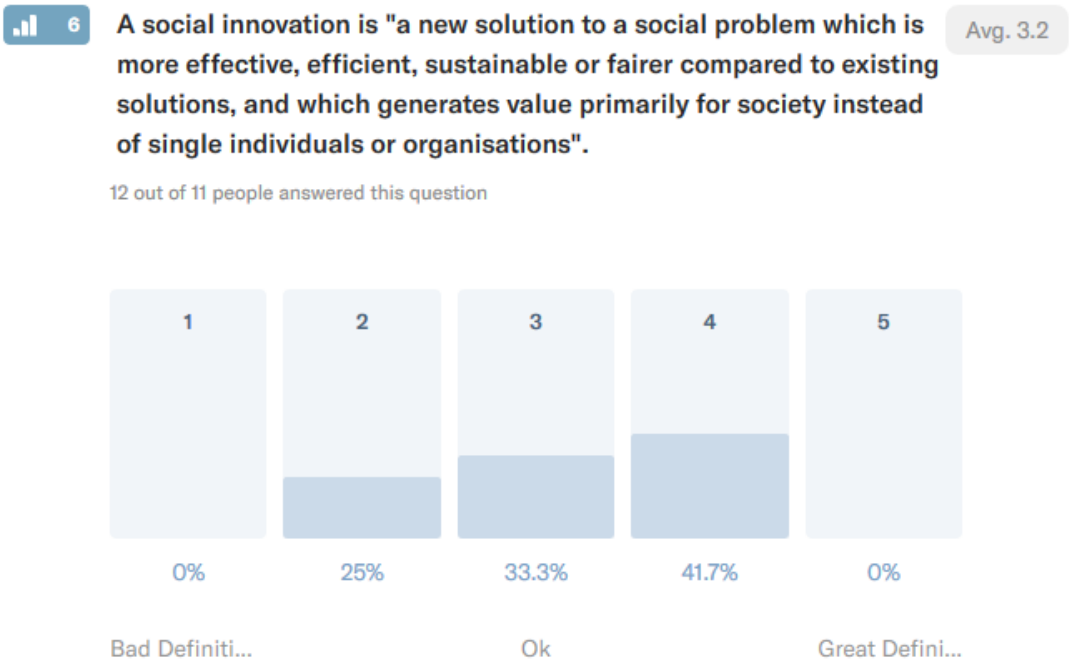


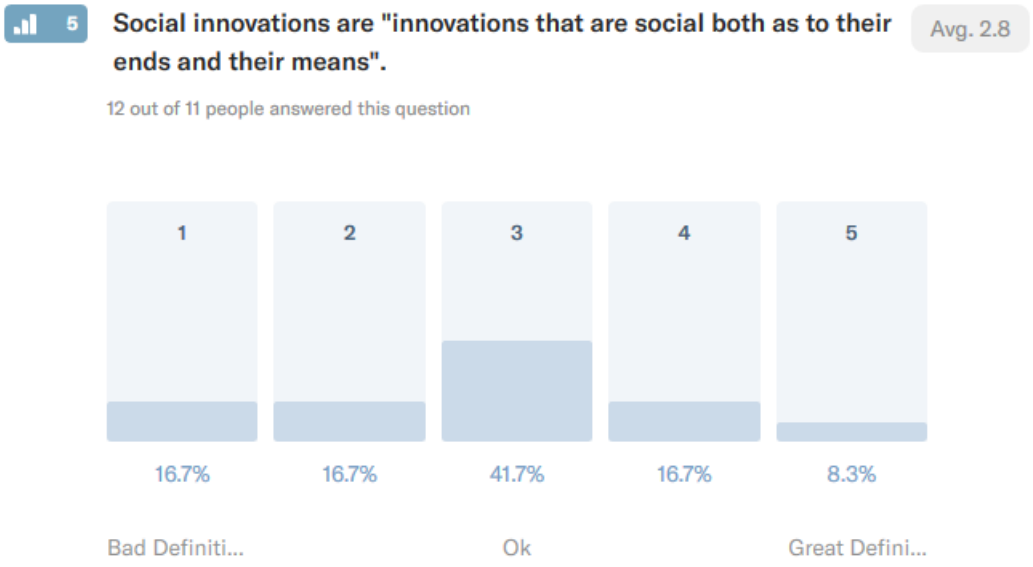
7 **Social innovation is "a process of empowerment and political mobilisation targeting a bottom-up transformation of the functioning of a social system, in terms of stakeholders and in terms of distribution of material and immaterial resources".**

Avg. 2.5

12 out of 11 people answered this question







The first takeaway from this exercise is that most popular definitions of social innovation were not preferred by the consortium members, with many of the suggested definitions receiving mean ratings lower than an 'average' score of 3. Furthermore, the consortium is relatively polarized on this topic, with many definitions receiving some high and some low ratings. However, a favored definition does emerge with a mean rating of 4, which is the definition used by the European Commission:

> "Innovations that are social both as to their ends and their means and in particular those which relate to the development and implementation of new ideas (concerning products, services and models), that simultaneously meet social needs and create new

social relationships or collaborations, thereby benefiting society and boosting its capacity to act".

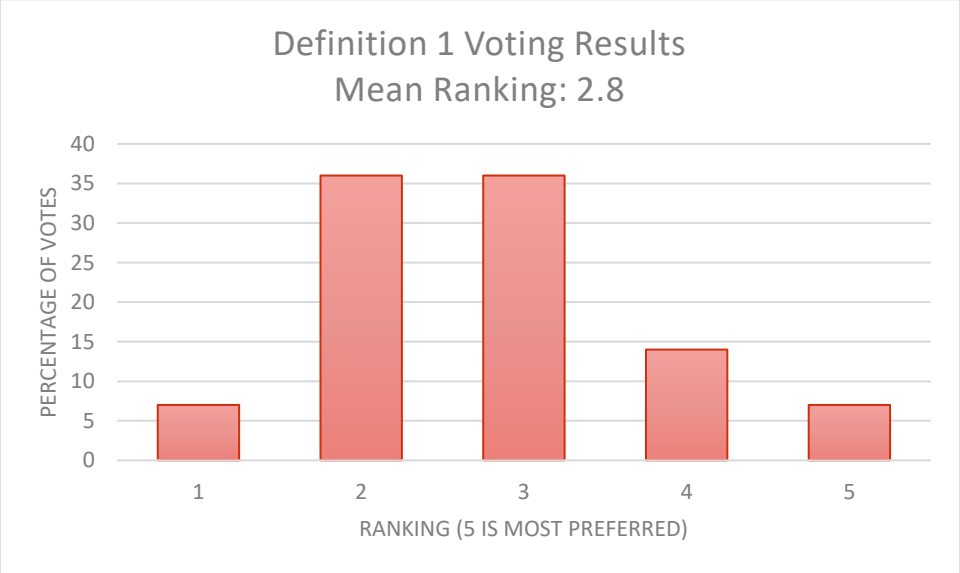
We note two facts about this definition. Firstly, the core being of a social innovation is defined loosely (and in a circular way) as an 'innovation'. Thus, this definition avoids a core question of whether a social innovation is a specific thing, or if it is a process around/relating to other technical or tangible changes. Secondly, this definition takes the route of presupposing social innovation is a positive thing, as it is defined to benefit society and boost its capacity to act. A definition based on the subjective outcome of "benefiting society" could be problematic if benefits, and the positive direction of societal change, are not widely agreed upon within the consortium or innovation community.

Groningen Meeting Group Exercise – defining social innovation

Given the lack of a widely endorsed definition within the pre-survey candidates, the participants of the Groningen research meeting were broken up into four working groups. Each group discussed and developed their own definition of social innovation to be applied to the SMARTEES project. Each group then presented his definition, and participants were able to anonymously rate each definition on a scale from 1-5 using the Slido online interface. Again, a rating of 5 signaled a great definition that could be adopted by SMARTEES and a rating of 1 signaled a poor definition. Each definition received between 14 and 16 ranking votes.

Below each of the definitions developed by each group is presented and the results from the anonymous voting rounds are shown. A brief analysis of each definition is also included.

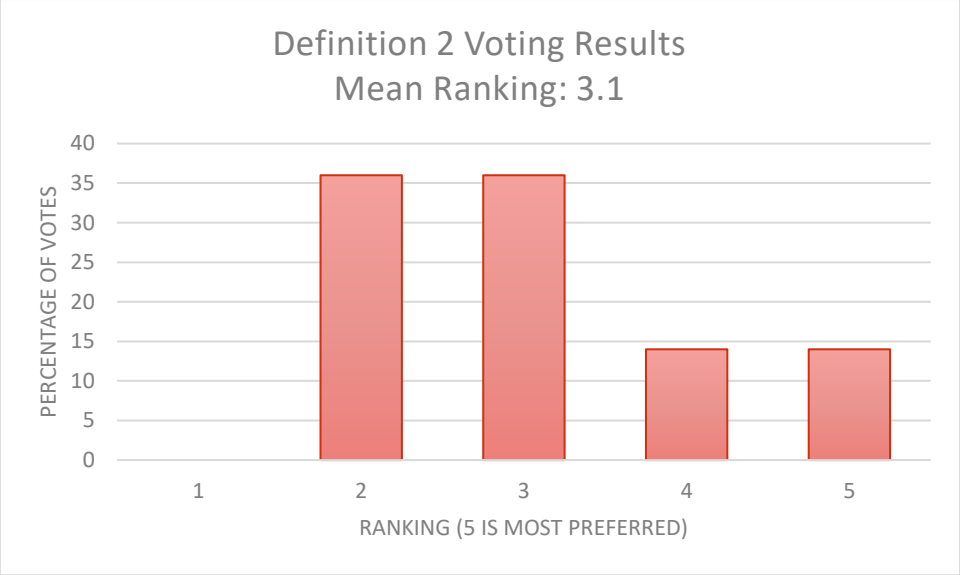
Definition 1: Innovative activities and services that are motivated by the goal of meeting a social need and that are predominantly developed and diffused through organisations whose primary purposes are social.



The group responsible for this definition had previous knowledge of other research into social innovation that also defined the term. They agreed that a pre-existing definition would be a good one

for the SMARTEES project, and thus this definition was used verbatim from existing literature[4]. This definition received a mean rating of 2.8, which was the lowest of the four definitions developed. Something to note about this definition is that it is very general in one dimension, as it does not presuppose social innovation is positive. In the dimension of the core being of social innovation it is much more specific than the European Commission definition presented in Section 1, as here a social innovation is defined as a tangible thing being an activity or service.

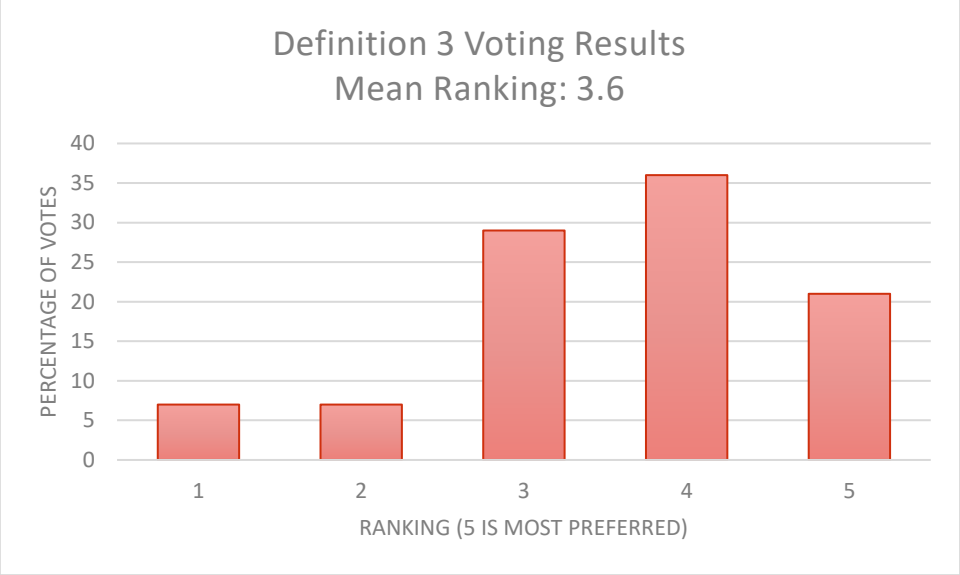
Definition 2: Innovations that are social both as to their ends and their means and in particular those that relate to the development and implementation of new solutions based on new ideas (concerning frames, products, services, and models or paradigms) that meet social challenges / problems and create new social relationships of collaboration (or valorizing existing ones), and thereby are supposed to benefit society. Social innovation should be considered a process towards a social based energy transition



This group used the most preferred definition from the pre-survey, the one used by the European Commission, as a template and added/changed words in an attempt to make this definition better fit to the SMARTEES concept of social innovation. The mean ranking make this definition the third favorite among those presented at the Groningen workshop, though it should be noted that this definition is not very polarizing, with a high density of votes in the 2-3 range.

[4] Mulgan, Geoff, Simon Tucker, Rushanara Ali and Ben Sanders. Social Innovation: Why it matters and how it can be accelerated. Oxford SAID Business School Working Papers. 2007.

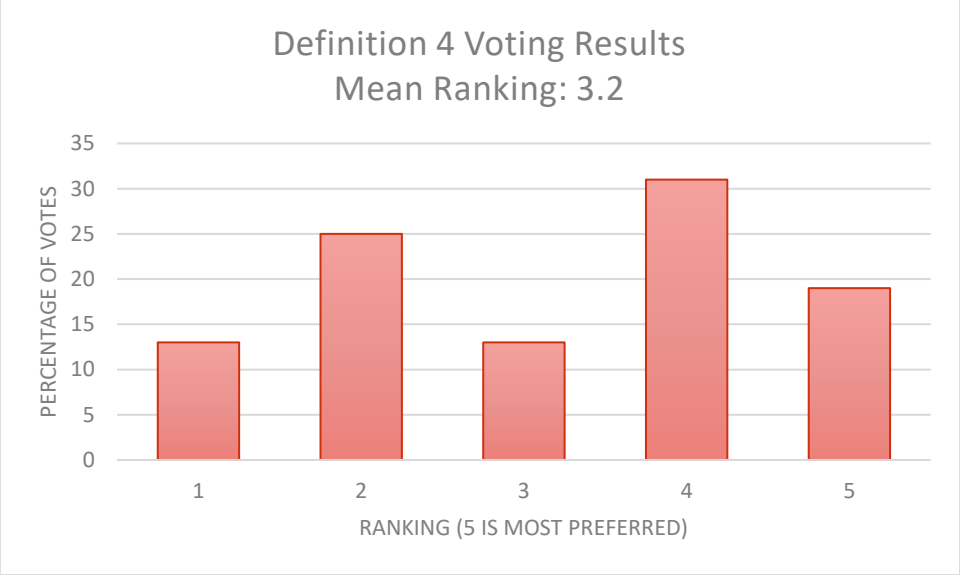
Definition 3: Local social innovation for energy transition may be defined as a process of change in social relationships, interactions, configurations, and/or the sharing of knowledge leading to or based on new environmentally sustainable ways of producing, managing, and consuming energy.



This group developed a definition from scratch, specifically shaping it to fit the SMARTEES concept of a local and energy-related social innovations. As such, it is a much more targeted definition than the two presented previously and those presented in the pre-survey. This definition received the highest ranking in terms of mean ranking and only had two votes out of 14 in the 1-2 range. This suggests that this definition is already well accepted by the SMARTEES group, with over 50% of the meeting participants giving it a score of 4 or 5.

One critical point to note about this definition is that it defines social innovation as a process of changing social structures that is related then to tangible outcomes. This differs from Definition 2, and the European Commission definition, which sidestep a core issue of whether or not a social innovation is a process or a tangible thing. Secondly, this definition is framed directly in terms of the sustainable energy transition, and could not be applied in broader contexts without revision. Finally, the definition is left open on the point of whether or not social innovation is necessarily a positive thing.

Definition 4: Society has a wicked problem, no group, individual, or organization can solve it alone; they get together to create new links, new relationship types, new meanings, behaviors, organizations and groups, to articulate the problem and experiment with solutions.



This group also developed their own definition from scratch and broke from the classic template of definitions of social innovation. The innovative nature of this definition may be reflected in the wide range of rankings it received. However, in the end, the mean ranking of this definition was the second highest among the four presented.

In this definition, social innovation is defined as something that arises when a problem is encountered in society, and when this problem is solved via social changes. Regarding the key issues within the definitions, this one defines social innovation, not as a process, but as a social change. This is also a bit different from most definitions where social innovation is defined either as a process or as a tangible thing. This definition also does not require social innovation to be beneficial.

The key result from this exercise is that Definition 3 was the most preferred definition, and did not suffer from strong opposition, as only 2 of 14 participants gave it a ranking of 1 or 2. A combination of the two favored definitions from this exercise (Definition 3 and Definition 4) that reflects the European Commission definition, which was the preferred one from the pre-survey, is given as the Suggested SMARTEES Definition of social innovation at the beginning of the Workshop 1 section above.

Workshop 2

This section details the outcome and process of Workshop 2, which had the goal of supporting the development of the SMARTEES case studies.

Summary of Workshop 2

Held virtually on June 4th, 2019, this workshop helped to define the specific linkages between WPs relating to the SMARTEES case studies and case clusters. A critical issue in the SMARTEES project, and especially in the execution of the case studies, are the linkages across WPs and working groups as to how they approach, design, and complete a given case study. Specifically, WP 5 must define policy scenarios and input parameters for the analysis of ABM in WP7. The input parameters defined in WP 5 must be feasible to implement, and interesting, to the ABM efforts. The ABM outputs then feed into WP8 as the main analysis and interaction dataset for the Sandbox Tool. The purpose of the workshop was to define these linkages and discuss input/output parameters. As such, this workshop directly addressed the goal stated in the Grant Agreement, to help with the execution of the case studies. Figure 1 below summarizes the outcome of this process.

Participation: Representatives from ICLEI, UG, UDC, JH, and EI-JKU were present at this workshop.

Details of Workshop 2 process and outcomes

Workshop 2 had a narrow scope, to define the linkages between WPs and working groups relating to the execution of the SMARTEES case studies. The links between WPs are significant in the SMARTEES project, and while the Project Handbook details these links in an exhaustive fashion, project scientists felt the need to translate this exhaustive list into shorter summaries and talk through the process to gain a common understanding of these linkages.

The workshop lasted for two hours. After some introductory information given by EI-JKU regarding terminology to be used, and the objectives of the workshop, the rest of the time was spent actively discussing and writing down summaries of the linkages between the WPs, as shown in Figure 1.

Regarding the terminology, as discussed in D2.1, there was a 'terminology gap' in SMARTEES, whereby researchers understand key words differently. To being this discussion then we clearly defined some terms that are very relevant to the case studies. These terms are shown below:

Policy goals = general objective(s) of actions taken by public entities, e.g. increase bicycle usage as a means of transportation

Intervention = a type of action taken in an attempt to satisfy policy goals, e.g. close roads to car traffic

Implementation = a specific intervention action taken, e.g. forbid car traffic for 1 year on a specific road, e.g. "Akerhof road"

Figure 1 defines and summarizes the key linkages between WPs in the project in relation to the case studies. The strongest link is shown by the highlighted boxes of WP5, WP7 and WP8, where WP5 defines specific interventions and policy goals, and then WP7 models these interventions and various implementations of them in ABM. The outputs from these ABMs are given as inputs into WP8's development of the Sandbox Tool, which allows users to explore the results of various ABM model runs in detail and to tune the results based on parameters defined in the WP5 policy interventions. Given the tight connection between these three efforts, linkages need to be clear to all parties.

The other WPs are feeding data, conceptual frameworks or literature reviews into this central interlinkage. WP2 contributes social innovation concepts, overarching research questions, and background literature review, including D2.2 the Catalogue of Elements that can be considered in ABM

models of the various social innovation cases. WP3 inputs case cluster definitions and details to be used in tuning the ABM models of different cities and social innovation cases. WP4 inputs data definitions and metadata, including the survey data from the various cases, which is aggregated in WP6. At the end of the process, WP2 will contribute an overview of how the process functioned, interdisciplinary challenges and the practices used to overcome then, and a comparison of the modelling theory and contexts.

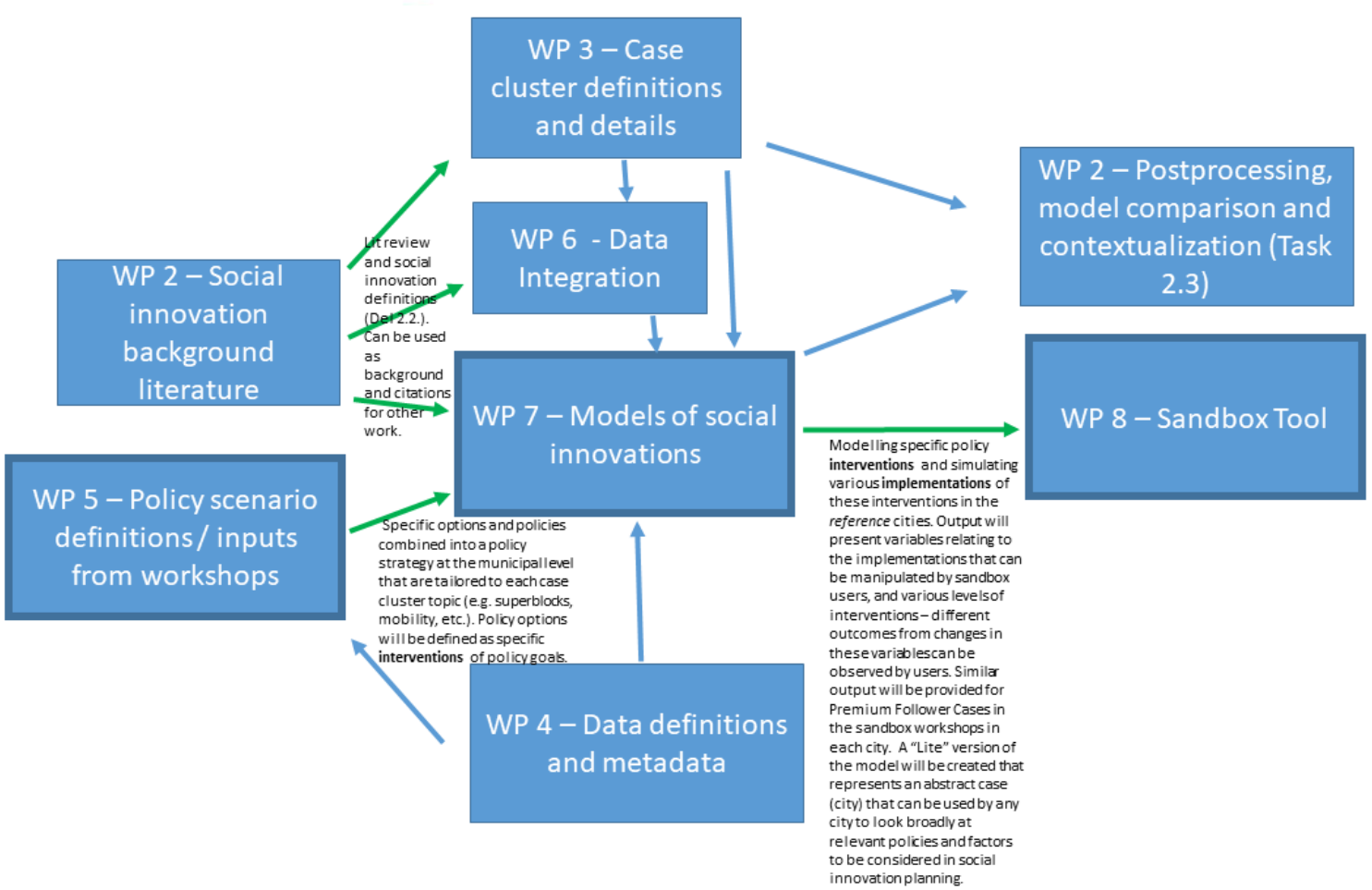


Figure 1: Linkages between WPs relating to the case studies, outcome of Workshop 2

Workshop 3

This section details the outcome and process of Workshop 3, which had the goal of unifying the theories and concepts used in SMARTEES research activities.

Summary of Workshop 3

Held virtually on October 19th, 2020, as the third workshop under Task 2.4 in SMARTEES, the research team met virtually to discuss two main points. The first was fine-tuning the Sandbox Tool and discussing its scope, messaging, and the technical details of transferring data from agent-based models (ABM) to the tool's online interface. The second purpose of the workshop was to begin the process of creating a unified concept of the SMARTEES project, under which all outputs and deliverables can be described. The first step here, taken at the workshop, was to create an interdisciplinary concept of 'social innovation'. The agenda of this workshop is reproduced in the Appendix.

Participation: EI-JKU, NTNU, JH, K&I, UDC, UOT, UG and ICLEI were represented in the workshop

Workshop 3 session on defining the Sandbox Tool

The first session of Workshop 3 was a joint effort between ICLEI and EI-JKU teams. Two main objectives were addressed in this first session of Workshop 3: developing saleable messages to communicate the Sandbox Tool, and the details of executing the tool, and the remaining inputs needed from modelling and scientific partners to produce the tool's content.

The Sandbox Tool has two versions of delivery, as described in the Grant Agreement. The Pro version gives a deep-dive into ABM models of potential energy-related social innovations in the context of a specific client municipality. The Lite version is openly available online and allows any interested person to explore ABM and social innovation insights in a more generic municipal context. The messaging and development of both versions of the tool were discussed in detail in the first session of T2.4 Workshop 3. What follows are the notes and outcomes from this session.

Notes from Workshop 3 on the Pro version of the Sandbox Tool:

With respect to the Pro version of the Sandbox Tool, the term 'client' refers to a specific municipality who is interested in using the tool to plan, execute, or understand energy-related social innovations. The Pro version of the Sandbox Tool involves direct discussions between the client and the research team. Much of what follows reflects on possible frameworks for these discussions.

- Structure of the tool: Experiment with varying concepts: could be a multiple part discussion between client and research team. For example, two parts, with the first part to collect the interest in the topic and policy options from the client and the second part shows the model results to the city.
    - A more flexible structure is a good idea, where the discussions are a series of teleconferences. The 'on the fly' computing is completed then in the time in between these discussions to offer specific ABM answers to client queries.
    - In the WP5 'policy workshops' various concepts for the Pro version of the Sandbox Tool can be explored and tested. Thereby, feedback can be gathered from the participants in order to find the preferred Pro Tool concept.

- Relation between Lite and Pro tools: WP5 policy workshops will exhibit the Lite version of the tool to participants and collect feedback on interesting cases or policy combinations that would be of interest for the follow-up Pro version of the tool, which will take place in a subsequent WP5 policy workshop.
    - The feasible policy options to analyze that are offered to the cities in the Lite version of the tool need to be carefully presented so as not to offer them something that the model cannot deliver in a reasonable time frame.
    - The Pro version of the WP5 policy workshop will allow the modelers to present the requested results to the cities and go through these results with them. The goal is to note policy implications, areas where unintended consequences are possible, identify barriers and drivers to a behavior of interest, identify societal groups that benefit or lose out from a social innovation process of interest, and note interactions between policy measures.
- Testing of Pro tool concepts: WP5 should run these testbed discussions in multiple ways so various concepts can be explored. At least one of these concepts should be the multi-day meeting where 2-3 sessions are held over a period of 2-3 weeks.

Notes from Workshop 3 on the Lite version of the Sandbox Tool:

The Lite version of the Sandbox Tool is housed online and available to the public. Much of what follows reflects on what should be presented and how to present it.

- Results page of the Lite tool: It should present 5-10 meaningful scenarios, per case, that are simulated in the ABMs. These 'preset' scenarios will be chosen as those that produce interesting, thought provoking results. For these presets, videos and explanations of what they mean should be included to get Lite tool users thinking about the intricacies and potential of social innovation. In addition, there should be an option to test some variations from these presets by making key sliders available to show what happens when a scenario deviates from the preset. This functionality will be based on pre-run ABM results housed in a database. However, for these variations, only numerical outputs / diagrams that were pre-produced and stored in the database will be available.
- Model sensitivity must be described carefully as, e.g., "out of X runs of this scenario Y had this outcome and Z had this other outcome…" in order to be precise. These words should be adopted for the Lite tool description page.
- A pre-selection of parameters to choose from should be given by the ABM modelers. These parameter options will be those used in the WP5 policy workshops in testing the Pro tool concept – see above.
- Lite tool should not have 'future' used as a term as ABM does not predict the future, 'alternative' or 'counterfactual' are words used in WP5 for this concept.
    - The light tool should have a 'wow'-factor. It should show that the simulation of social dynamics is a new ballgame for policy planning and get people excited about the possibilities.

Another purpose of the Lite version of the Sandbox Tool is to exhibit the explanatory power of ABM and to offer the Pro version of the tool to interested clients. To this end, the following points were discussed in Workshop 3 pertaining to marketing the Sandbox Tool, potential messages, and more broadly explaining ABM to municipalities.

- The Lite tool should show that ABM can simulate what happened in successful cases of Social Innovation.

    - The tool shows how social simulations can help showing which effects decisions/behaviors of key actors can have on outcomes of social innovation processes in complex situations.
    - On the other hand, ABM shows what could have happened if another route had been chosen or another policy suite had been in place.
- Key questions for users of the Lite tool: Can I bring these insights into my city? What is relevant here for my city?
    - Lite tool is an advertisement for the Pro tool, so the big question for a potential Pro tool client is - can you get the data needed for ABM from your city?
    - Stress that these ABM models have succeeded at recreating reality of cases in the past and that this method has a long(ish) tradition. Create trust in the method.
- From the perspective of a policymaker, it would be very useful if the tool would deliver awareness on how varying some key parameters in specific cases might lead to very different outcomes. How can different variables influence the success of your targeted social innovation?
- Policymakers want to know which key factors they need to take into account when a social innovation is to be implemented. For example, in superblocks, they were interested in how to replicate a superblock and how the ABM can help them to decide the best strategies and policies to implement.
    - ABM tools can improve the process and implementation of social innovations, for example using participatory processes. ABM can help with anticipating the social dynamics, and including these in the planning process, such as thinking about effective participatory strategies.

Workshop 3 session on a unified concept of 'social innovation'

This second session of Workshop 3 continued the discussion of a common framing for the SMARTEES project and its outputs. This follows from the work implemented during Workshop 1 (see above) and its exploitation in the SMARTEES activities implemented between the Workshop 1 and the Workshop 3. To give this discussion itself a boundary, it had the stated goal of developing an interdisciplinary concept of social innovation that expands upon the SMARTEES definition of social innovation and makes this definition more concrete. The process culminated in Figure 2, and the outputs discussed below.

An anonymous Slido poll was also given to the participants of the workshop to assess their interest and confidence in the topic. To the question, *"is it useful to try to create a unified concept of social innovation?"* 88% of workshop participants answered "yes, very much", with only 1 vote for "not sure". Similarly, to the question, *"is it feasible to create a unified interdisciplinary concept of social innovation?"* 73% responded "Yes" and 27% respondent "not sure". This reflects the SMARTEES' consortium viewpoint that a unified concept of social innovation would be very useful, but the group is a bit less sure that the aim is achievable.

Parallels were drawn between previous work in SMARTEES Deliverable D3.3 entitled "Policy brief on social innovation in energy transition in action", which explains how social innovations come about and are executed in practice.

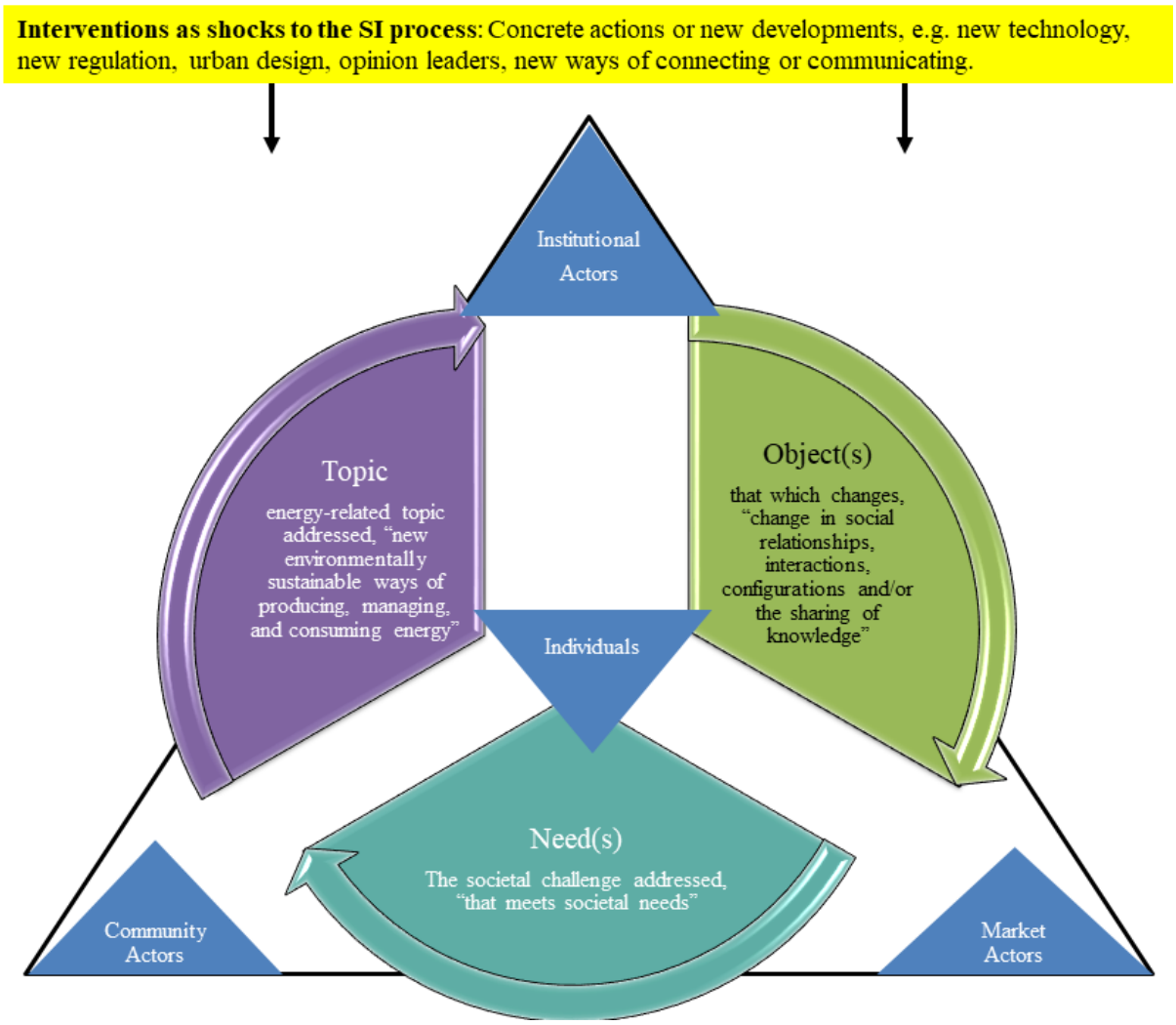


Figure 2 – An illustrative concept of social innovations in energy. The inner circle shows the three elements that define a SI process. The small triangles define the four types of actors that can be involved in a mutually influencing way as they accept, resist or otherwise partake in the SI process. Interventions may be introduced by any actor group to change the trajectory or dynamics of the SI.

Workshop 4

This section details the outcome and process of Workshop 4, which had the goal of supporting co-authorship across research groups and disciplines within SMARTEES and thereby delivering more holistic research outputs.

Summary of Workshop 4

Held virtually on January 15th, 2021, this workshop was dedicated to promoting co-authorship in SMARTEES scientific outputs and creating more holistic research outputs through increased inter-group, international, and interdisciplinary cooperation. The agenda of this workshop is included in the Appendix.

The meeting provided project partners an update on each other's ongoing publication efforts and allowed discussion of new research ideas and areas for potential collaborations. Another critical point was to define some research ideas more clearly to prevent duplicative work within the consortium. Sixteen different research publication were presented, and all of them received constructive feedback and opportunities for collaboration.

17 SMARTEES scientists attended the meeting and 16 potential publications and interested collaborators were identified for each case. The summary of potential academic output is presented in Table 1 below.

Participation: EI-JKU, K&I, JH, NTNU, UDC, and UG

Prior to the workshop a brief survey was disseminated to the workshop's participants in order to understand the ongoing research themes and what disciplines make up the SMARTEES consortium. The first part of the workshop conveyed the survey's results and presented an overview of the SMARTEES consortium. The consortium covers over 5 disciplines: Psychology, Social Sciences, Computer Sciences, Economics, Environmental Science, and "Other". Additionally, the overview showed the different dimensions of social innovation covered by ongoing SMARTEES research such as: sustainable mobility, renewable energy adoption, district regeneration, superblocks and urban planning, energy efficiency and energy poverty/justice.

The second part of this interdisciplinary meeting allowed members to present their ongoing research in order to identify research overlap and areas where collaboration or interdisciplinary cooperation could be utilized. The team members presented their research themes/central questions, motivations for questions and methods/data. These ideas are presented in the form of potential academic publications. Following the insights of Henson et al. (2020)[5], we use the tactic of promoting co-authorship across disciplines as a way to increase the holistic aspects of SMARTEES research and promote interdisciplinarity.

Academic Publications Planned

Table 1 below details the potential academic publications in SMARTEES. SMARTEES has already published a number of research articles and has other under review. These already completed works

[5] R. Henson, K. Cobourn, K. Weathers, C. Carey, K. Farrell, J. Klug, M. Sorice, N. Ward,and W. Weng, "A practical guide for managing interdisciplinary teams: Lessons learned from coupled natural and human systems research," *Social Sciences*, vol. 9, no. 7, p. 119, 2020.

were not considered in Workshop 4. Instead, the workshop focused on potential papers, or papers in production that were open to further collaboration.

Table 1 – Potential academic publications planned in SMARTEES and their interdisciplinary collaboration (SI = Social Innovation)

Lead Author	Research Theme	Motivation	Method/Data	Potential Collaborators
Gabriele Quinti (K&I)	Explore strategies by local authorities in local social innovation. Identify factors that affect citizens' SI participation in the energy transition.	Structural change is needed, specifically with regard to a multi-actor SI approach.	Case study – sociological approach	• Giuseppe M. • Christian K. • Erica L • Isabel B. • Wander J. • Hutton team?
Jed Cohen (EI-JKU)	How can we develop an operationalized concept of SI and illustrate it using case studies? What qualifies as social innovation?	The need to improve understanding of how SI occurs. The need for a unified framework for improved inter and trans-disciplinary communication relating to SI in social science.	SI will be illustrated and conceptualized using SMARTEES' case studies	• Christian K. • Gary P. • Giuseppe M. • Gabriele Q. • Wander J.
Ryan O'Reilly (EI-JKU)	What are the macro factors influencing use of a bicycle and frequency of use across Europe?	Achieving climate goals by reducing personal vehicle use. Are the SMARTEES case studies in sustainable mobility SI (e.g. Groningen) transferable across Europe, or are there macro-factors that will affect this transfer?	SAR model Data: ECHOES	• Alim Nayum
Wander Jager (UG)	HUMAT model 1. First paper: describes the model 2. Second paper: social scientific journal to describe the power of the model	There is a need to improve the way ABM models are created, specifically with regard to how they account for dynamic change.		• Andrea D. • Gary P. (2nd paper)
Patrycja Antosz (UG)	Social innovation in transport policy. What is the effect of COVID on changes in transport?	How is COVID affecting transport policy	5 case studies	• Christian K. • Jed C. • Adina D. • Giuseppe M. • Wander J. • Irina M.

Giuseppe Pellegrini Masini (NTNU)	Four proposed papers: 1. Clusters of islands 2. Urban regeneration 3. Mobility 4. Energy Justice and Energy Poverty	Identify the barriers and drivers to SI for papers 1-3. How SI can improve energy justice and energy equality, theme 4.	Data: SMARTEES case studies, available empirical data Urban perspective: Malmö, Stockholm, Timisoara	• Jed C. (4th paper) • Gabriele Q. • Isabel B.
Gary Polhill (JH)	"Trouser Legs of Time"	The way that ABMs are constructed are inherently wrong (logical fallacy: models are confirmed by their ability to predict validation data).	Theoretical	• Wander J. • Patrycja A. • Noelia S. • Amparo B • Andrea D. • Christian K. • Erica L. • Patrycja A. • Andrea S. • Jed C.
Christian Klöckner (NTNU)	What did SMARTEES discover? Identify different theoretical approaches of social science which would be used to reinforce ABM.	Understanding and developing overview of benefits of SMARTEES related research (models, approaches, etc.). Outline the practical benefits of building ABM, using social science for policy making and the uptake of SI.		• Gary P. • Jed C.
Andrea Declich (K&I)	How does SI challenge the ABM approach?	Based on work done so far in SMARTEES create paper on SI		• Wander J. • Patrycja A.
Erica Löfström (NTNU) Wander Jager (UG)	Social simulation as a Tool for Societal Transition- Explaining the Methodology by means of Improv Theatre Dance	State value and use of SI for policy development Explaining complexity, non-linearities and tipping points in an experiential way Show the usefulness of the tools (social simulation and toolbox)	Practical approach, building on Wander's teaching experiments Theatrical setting to enhance understanding of ABM	• Dawn Parker

The Next Steps from Workshop 4

At the end of Workshop 4 the SMARTEES researchers developed an ambitious plan to push forward interdisciplinary publications in an effort to create holistic research outputs in the academic literature. The following steps were outlined at the conclusion of Workshop 4.

- Lead authors of each potential paper will continue to develop publications and collaborate with interested parties if suitable for their research efforts. Contact information for each lead author was distributed to the consortium with a clear invitation to contact a lead author about papers of interest. The hope here is that non-academic partners, including municipal representatives and urban planners, will also participate in some publications to create transdisciplinary outputs. These professionals do not often participate in academic writing, and so it would be of high interest to include their perspectives and insights into the academic literature.
- Erica Löfström (WP6 leader) will contact the SMARTEES Advisory board in order to foster additional collaborative efforts with ongoing SMARTEES research, with the same goal as the point above.
- With regard to citations and references for a publication, the SMARTEES consortium will use the *Vancouver Rules* (see : Vancouver - Citing and referencing - Library guides at Monash University).
- The ambitious goal is to get 10 of the 16 publication suggestions to the stage that they are on Zenodo as preprints, and/or submitted to journals before the end of the SMARTEES project

Concluding remarks

Overall, the SMARTEES workshop series went well and was a key part in fostering broader collaboration amongst research teams. The findings of Task 2.1, relating to best practices for interdisciplinary communication and a shared understanding of social innovation, were brought up and quickly explained at the beginning of every workshop. This set a proper tone for interdisciplinary collaboration by opening participants up for other views and generally making people aware of the various expertise in the workshop and the need to avoid jargon terms. This simple practice is strongly recommended in future interdisciplinary energy research projects. Additionally, the creation of Workshop 4 stemmed from the work in Task 2.1, specifically the finding that co-authorship is a good way to create interdisciplinary output, and was another simple practice that was highly interesting, engaging and productive for the SMARTEES' group. With time, we hope to see the fruits of this interdisciplinary process bring new insights to the literature, and the practice of social innovations in energy and transport systems across Europe.

Appendix

Agenda of Workshop 1

Time	Topic	Presenter
	Day 1	
09:30-10:00	Welcome tea and coffee	Christian Klöckner
10:00-11:00	Social innovation	EI-JKU
11:00-12:00	Social networks	NTNU
12:00-13:30	lunch	
13:30-14:30	Public policy analysis	UDC
14:30-15:30	ABM	UG
15:30-16:00	Sandbox tools	ICLEI
16:00-17:00	Follower cases	ICLEI
	Day 2	
09:00-09:10	Welcome tea and coffee	
09:10-09:30	Groningen presentation	Terry Albronda
09:30-13:00	Cluster workshop	workshops in groups
12:00-13:30	lunch	
13:30-14:45	Finances for fieldwork	Christian Klöckner
14:45-15:00	Wrap up and goodbye	Christian Klöckner
15:00-16:00	Steering group meeting	Christian Klöckner

Agenda of Workshop 2

This Workshop was an open discussion to define the linkages between Work Packages in the project and key challenges moving forward. As such a detailed agenda was not needed.

Agenda of Workshop 3

19.10.2020

WHEN: 9:00 – 12:00 CEST

WHERE: gotomeeting

Two main AIMS of the Workshop:

1. Hone the Sandbox Tool.
2. Conceptualizing social innovation for the SMARTEES project. Can we develop an interdisciplinary concept?

Detailed Agenda

PART 1 – honing the Sandbox Tool (2 hours)

- Presentation: Big picture of the sandbox tool – what did we promise the EC, and how can the tool tie into the project's overall message? (EI-JKU, Jed)
- Presentation: Present state of the tool and next critical steps (ICLEI, Niklas)
    - Activity: delivery of needed items for Sandbox tool
- Activity: Ideazboard – ideas for adding or subtracting to the tool (All)
    - After 10 minutes of adding ideas we will go through them and discuss each, the feasibility and advisability of each. This could use Slido for spontaneous voting if needed
    - At the end a list of recommended next steps is output

PART 2 – Conceptualizing social innovations in energy (1 hour)

- Presentation: rehash the early survey of theories prevalent in the project, discuss the potential for a SMARTEES concept of social innovation and how that could look.
    - Voting: is it interesting / needed to think of overall concepts for social innovation?
    - Voting: do you think it is possible to develop a concept of social innovation in energy?
- Activity: Ideazboard – get people to write down ideas for this unifying concept or add papers that could be of interest.
- Follow-up: ask researchers to list their top three takeaways from the project and to write down the research question(s) that their work answers.

Agenda for Workshop 4

15.01.2020

WHEN: 10:00 – 12:30 CEST

WHERE: gotomeeting

PREPARATION: please fill out the workshop's pre-questionnaire and prepare a 5 – 10 minute talk about any efforts for scientific papers you have planned or under construction for SMARTEES.

This final workshop under T2.4 in SMARTEES aims to bring together the interdisciplinary and international research team to discuss the scientific outputs of the project. A particular goal of the workshop is to encourage co-authorship and interdisciplinary efforts in the exploitation and analysis of the project's results.

Brief Agenda:

3. An overview of the SMARTEES research ecosystem.
4. Ideas for paper, or papers under construction, that are based on SMARTEES work.

Detailed Agenda

PART 1 – An overview of the SMARTEES research ecosystem. [15 – 30 minutes]

- Presentation: Synergies and overlaps in SMARTEES research approaches – results of the workshop's pre-questionnaire (EI-JKU, Jed)
- Open discussion, questions and comments on the project's research ecosystem.

    - What does this ecosystem say about our project, gaps we still need to fill and what brings all of our efforts together?

PART 2 – Ideas for paper, or papers under construction, that are based on SMARTEES work. [2 hours or less]

- Round around the Table: Each person shall present in 5-10 minutes any efforts for scientific papers they have planned or under construction that are based on SMARTEES work.
    - Presentations can include 1-2 slides if needed
    - Presentations should address:
        - Research questions for the paper(s) and the motivation for these questions
        - Methods and data to be used
- Are there overlaps in these efforts? Are there efforts open to collaboration or interdisciplinary cooperation?