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Evaluation of user engagement in smart local energy system projects in the UK

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ABSTRACT

Smart local energy systems (SLES) can intelligently and locally link energy supply, storage and use, and power, heating and transport, in ways that can dramatically improve efficiency. However, successful deployment of SLES is contingent upon user engagement. Currently users of energy have low levels of trust in utilities and rarely engage in energy markets. This paper adopts a meta-study approach to investigate user engagement and its evaluation in SLES initiatives undertaken in the UK over the last 10 years. An extensive review of literature identified 122 SLES projects that received some form of funding, deployed multiple vectors and had an element of 'smartness' to them that included innovative use of data, digitalisation or innovative energy management systems. Meta-data analysis revealed that more than 52% of SLES projects were undertaken in Southern England and Scotland where grid constraints are prevalent. While evidence of user engagement was available in 41 SLES initiatives, user engagement was evaluated in only 36 projects. Five user engagement pathways were identified, including *informing* (e.g. media, social media), *communicating* (e.g. workshop, fair), *involving* (e.g. consultation), *empowering* (e.g. sharing of energy) and through *technical means* (e.g. online dashboards). Evaluation methods included questionnaire surveys, interviews, focus groups and monitoring. Overall, there was lack of longitudinal engagement and evaluation to capture 'user journey' as SLES projects developed over time, possibly due to project time-scales, limited budget and expertise. Since only 30% of the SLES projects provided evidence of user engagement and its evaluation, and these were concentrated in a limited number of geographical locations, it is vital that the next generation of SLES initiatives are multi-actor, including *local actors* such as community energy groups as *intermediaries*, local authorities as *policy-makers* and academic institutions as *independent evaluators*, to stimulate longitudinal engagement and evaluation.

Introduction

The UK Government has recently committed to a net-zero emission target by 2050 (BEIS and Skidmore, 2019) to limit future temperature rise to 1.5°C and address the growing concern of climate emergency (CCC, 2019a, CCC, 2019b). To meet this statutory obligation and achieve a net-zero carbon target, significant effort and innovation is required to decarbonise the UK energy system (Foxon, 2013). Over the past 10 years, energy systems have not only become decarbonised and decentralised (local or community energy), but have also developed in a smart way by becoming more digitised (Ford et al., 2019). Such systems are being termed as Smart Local Energy Systems (SLES). Although there is no standardised definition of SLES, the UK Government considers SLES as: energy initiatives at local scale that have elements of energy demand, distribution and supply, are integrated across demand reduction and demand side response (DSR), include innovative use of data or digitalisation, and may involve local trading of energy and system balancing (Bridgeman et al., 2019). The UK Government's Clean Growth Strategy (BEIS and Skidmore, 2019) confirms that SLES will deliver cleaner,

cheaper energy services to create more prosperous and resilient communities, and benefit the national energy system as a whole. User acceptance of SLES is necessary for their take-up, replicability and scalability.

The main users involved in local energy projects include consumers, prosumers (those who own distributed energy resources), owners of electric vehicles and heat pumps, as well as indirect users of SLES who gain benefits from implementing energy initiatives in the local region. Currently users have low levels of trust in utilities and rarely engage in energy markets (Balta-Ozkan et al., 2013, Gangale et al., 2013). Krishnamurti et al. (2012) conducted a survey on smart meter implementation and identified that the main concerns of users on deploying this smart technology are having limited control over electricity use, violations of privacy and increased costs. User engagement in SLES can ensure that user needs and requirements are recognised and considered. This is vital for the acceptance and successful delivery of SLES initiatives. According to Devine-Wright and Wiersmaa (2013), to set up successful energy projects, it is important to include local users to get the benefit of having local information. While user engagement is found to be an important component in projects led by community groups, projects led by private sector tend to focus on technology, business plan or route to market (Rydin et al., 2013).

User engagement can happen through various ways including: *informing* (media or social media), *communicating* (e.g. events, workshops and presentations), *involving* (direct interaction e.g. consultation, training and drop-in sessions), *empowering* (allowing users to generate, store and sell energy to neighbours) and *technical means* (e.g. online dashboard, gamification, mobile app). *Technical means* such as gamification can help to visualise complex information in a game design manner but in a non-game context (Kazhamiakin et al., 2016). The visualisation of information and a chance to win the game increase and maintain user engagement by allowing data to be presented in a familiar, dynamic and visually pleasing manner, without weakening data displayed on digital platforms (Kazhamiakin et al., 2016). Gamification was used by AlSkaif et al. (2018) to encourage user engagement with home energy management and smart meters.

Walker et al (2014) have proposed a two-way engagement framework to understand citizen (public actor) engagement with renewable energy technology (RET) projects (Figure 1). This included how 'users' are framed (expectations) by stakeholders and engaged with (or not), and how those users in turn engage with those stakeholders/technologies or not. The framework includes interaction strategies that are used to *inform* and *communicate* with users and *involve* them in RET, while *empowering* them in decision making process. The engagement actions represent the decisions that are made by users as citizens and stakeholders as RET actors about how to engage and involve by feeding in their expectations. The engagement strategies in this framework have informed the way engagement is categorised in this study.

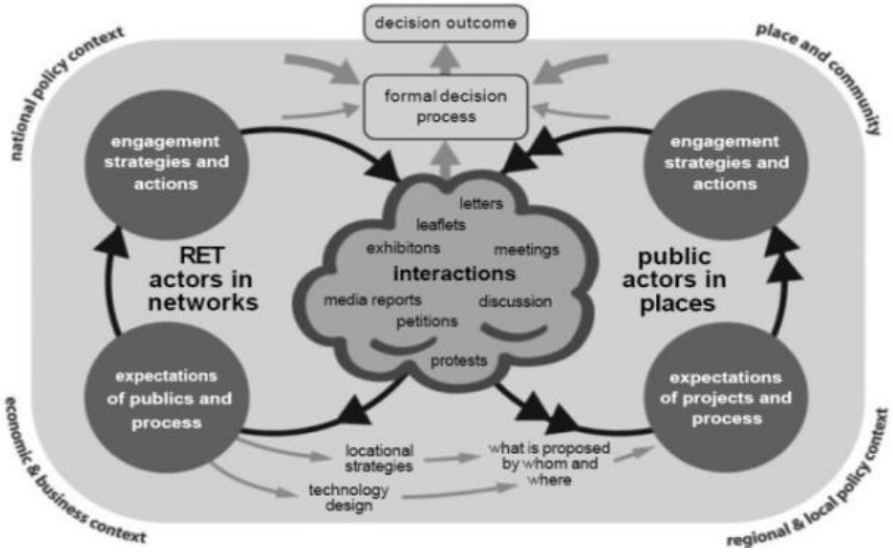

Figure 1. A framework for understanding Renewable Energy Technology (RET) actors' and citizens' (public actors) engagement with RET Projects. *Source:* Walker et al. 2014.

A limited number of evaluation frameworks have been used to assess user engagement. One such framework, *Energy Cultures* assessed engagement and energy behavioural change in local communities to reduce energy use through culture-based methods (Stephenson et al., 2010). The framework is structured around *Material Culture* (e.g. physical aspects of home such as form of buildings and energy technologies)*, Cognitive Norms* (e.g. individuals and shared expectations) *and Energy Practices* (e.g. energy related activities)

Although user engagement and evaluation frameworks exist, there has been no attempt to systematically study the extent of user engagement and its evaluation in SLES initiatives in the UK. This paper adopted a meta-study (cross-project) approach to investigate user engagement and its evaluation in SLES initiatives that have happened in the UK over the last 10 years. An extensive review of literature was conducted to identify 122 SLES projects in the UK that had received some form of funding, deploy multiple vectors (heating, power or transport) and had an element of 'smartness' to them that included innovative use of data, digitalisation or innovative energy management systems. The SLES projects which had some form of user engagement and its evaluation were examined in more detail (deep dive) to explore what kind of user engagement has been undertaken, by whom, and under what circumstances.

Methodology

A meta-study (cross-project) approach was used to assess engagement of users and evaluation of user engagement in SLES initiatives in the UK. The time period considered was the last ten years (2009 to 2018) to cover major funding programmes on local and smart energy, that include: the *Low Carbon Communities Challenge* (LCCC) and *Localised Energy Systems* funded by the UK Government, *Network Innovation Allowance* (NIA) funded by regulators, *Energy and Communities* programme by UK Research Councils and energy communities programmes funded by EU *Horizon 2020* .

An extensive review of academic (journal publications) and grey literature (e.g. project reports) was conducted followed by statistical analysis of the meta-data gathered. To characterise SLES initiatives, key criteria were established drawing upon Devine-Wright (2019). As shown in Table 1, these criteria include participating actors, positioning of individuals, goals set, energy technologies, and scalability and replicability. Additional criteria were identified based on the UK Energy Research Centre's (UKERC's) report on UK energy system demonstrators (Flett et al., 2018) that described SLES in terms of lead partners, project start year, funder, geographical location, energy vectors, and engagement methods. The evaluation methods deployed in SLES initiatives were also examined.

Table 1. Criteria to characterise the meta-data of SLES in this study

Key criteria to characterise the meta-data of SLES	**Description of criteria to characterise SLES initiatives**
Participating actors	Institutions including DNO, energy suppliers, universities and private sector working individually or in partnership.
Positioning of individuals	Active consumers or prosumers of energy technologies, products or services that aim to maximize personal utility and choice
Spatial focus	Networks of organizations spanning local and non-local areas
Goals	Political, economic, social, environmental and technological dimensions are included in the energy chain alongside delivering energy services tailored to the local areas with the great opportunity of smart local energy systems, using the latest digital and data-based solutions
Technologies	Have elements of both demand and supply. Local balancing of supply and demand, across multiple domains - heating, electricity and transport. Element of 'smart'. Grid balancing and management
Scalability and replicability	The boundary can vary from a single street or estate up to a county or region. Accounting for local priorities to meet local needs. Wider value-based needs include addressing a local desire to reduce global environmental impacts.

The engagement methods were categorised into different groups (pathways) based on examination of academic and grey literature, as well as analysis of the meta-study data. These five pathways included *informing*, *communicating*, *involving*, *empowering* and *technical*, as shown in Table 2 which also lists the various engagement methods associated with each pathway. Evaluation methods included surveys (questionnaire), interviews (online, telephone and face-to-face) and focus groups to assess the effectiveness of user engagement in SLES demonstrators. Monitoring of energy use was also undertaken in some SLES projects to assess the impact of user engagement in reducing energy use. For deep dive, where user engagement was not specified in a SLES initiative, it was excluded from the analysis.

Table 2. User engagement pathways and engagement methods undertaken in SLES initiatives

Engagement pathway	Engagement methods
Informing	Media, newsletter, video, mail shot, leaflet, brochure, notice boards, linkedin, twitter, website
Communicating	Presentation, seminar, conference, exhibition, fair and open days, workshop, events, meetings
Involving (direct interaction)	Consultation, drop-in session, tele-service, training, webinar, offers (e.g. free smart meter)
Empowering	Empower to manage energy load, empower to generate/store energy, create energy market to promote prosumer role, empower to effectively manage electricity and thermal demand.
Technical	Smart energy tools: online dashboard, gamification, smart speaker, In-home-display and mobile app

Findings

In total, 122 SLES initiatives (also called demonstrators or projects) were identified that received some form of funding, deploy multiple vectors (heating, power or transport) and have an element of 'smartness' to them that includes innovative use of data, digitalisation or innovative energy management systems. Meta-data analysis revealed that 57 out of the 122 SLES initiatives mentioned user engagement, while only 41 out of 57 projects provided some details about user engagement, and are therefore included in the analysis. About 36 out of 41 SLES initiatives used some form of evaluation to assess the effectiveness of user engagement (Figure 2).

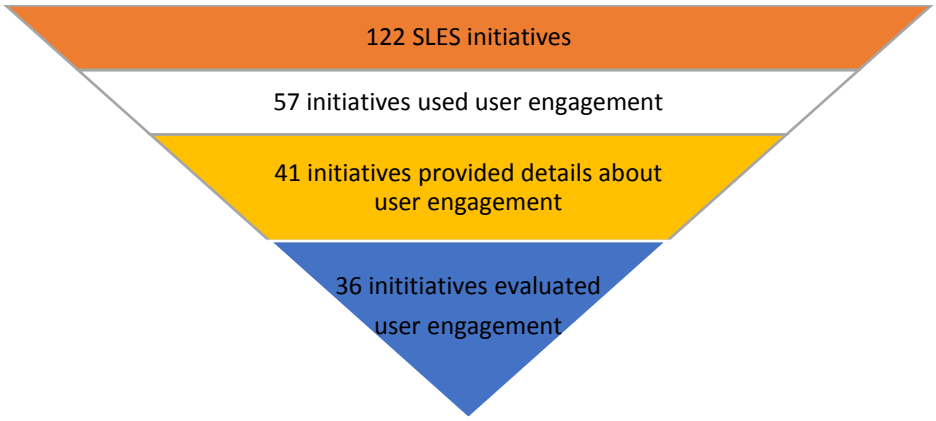

Figure 2. Numbers of SLES initiatives that used engagement and evaluation of user engagement.

Further details about the 122 SLES projects, along with the respective user engagement pathways and evaluation methods adopted are shown in Annex 1 and Annex 2.

User engagement in SLES initiatives

User engagement is about involving local energy users in SLES initiatives to ensure their requirements are considered. The distribution of engagement pathways adopted by the 41 SLES initiatives is shown in Figure 3a below. As evident, the majority of SLES initiatives used multiple user engagement activities (n: 121), with communication related activities being the most popular followed by *technical means* of engagement (online dashboards, apps, gamification). On average, SLES project were found to include about three engagement activities. *Empowering* users was the least popular with five activities, possibly due to social barriers such as concerns about privacy, security and reliability, as well as adaptation to new technologies (Hargreaves et al., 2018). While some projects adopted one type of engagement pathway such as *communicating* or *involving*, others used combination of pathways users such as *informing*, *involving*, *communicating* and *technical* means to increase awareness and knowledge, and build trust. This also affected the success of the projects.

The SLES projects funded by regulators (18 out of 41) such as Ofgem used all the identified pathways of user engagement (Figure 3b) wherein *communicating was the most popular,* followed by *technical*, *involving* and *informing*, with limited focus on *empowering* user. Projects funded by EU, Government and UKRI also adopted four out of five engagement pathways, with *empowering* users being the least popular.

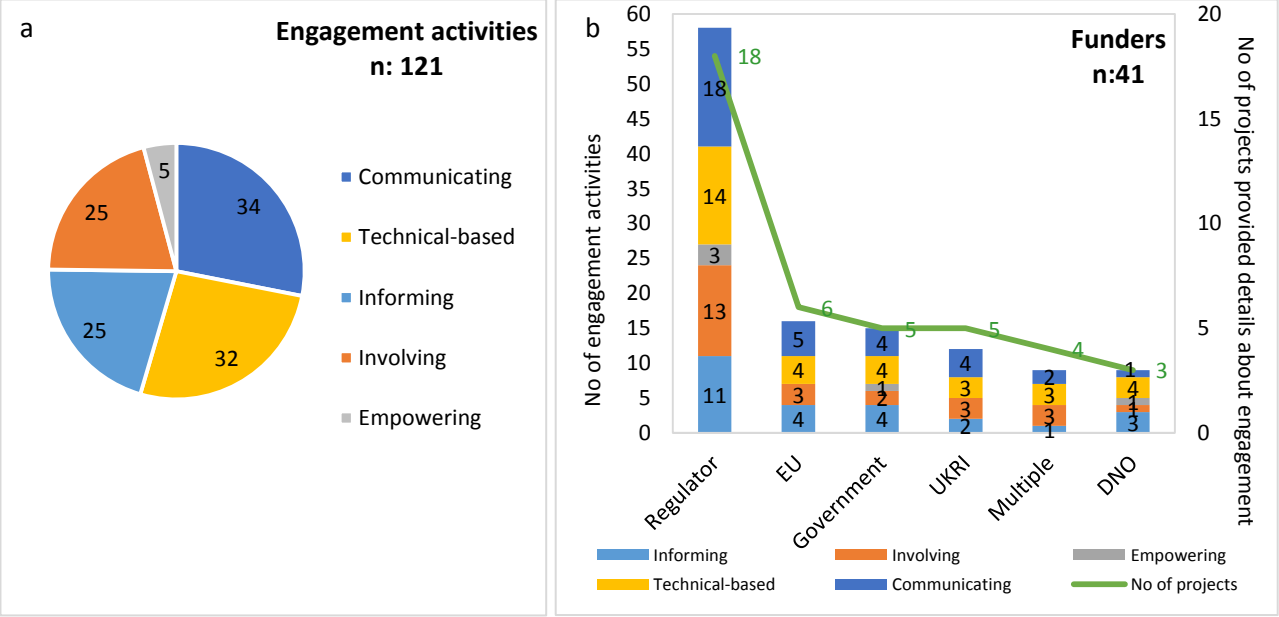

Figure 3. Engagement activities in SLES (a) and funder of SLES initiatives that involved user engagement

It was found that interest in user engagement in SLES demonstrators increased in 2014-2015 (Figure 4) when the UK government published the first ever Community Energy Strategy (DECC, 2014), which presented a decentralised vision of energy transition in which communities would play a leading role to engage users (Department of Energy and Climate Change, 2014). The emphasis of this strategy on local engagement, local leadership and the benefits of local community from the outcomes may have increased user engagement in smart energy initiatives happening locally. However this increase was not sustained in subsequent years, as the focus changed from community energy (CE) projects to local energy initiatives (LE), possibly driven by the setting up of Local Energy Hubs to support local authorities in providing low carbon economic growth (Devine-Wright, 2019). While CE initiatives incorporated user engagement as a key aspect, with the changes in the UK energy policy and with the publication of the UK Industrial Strategy in 2017, LE evolved into SLES initiatives that reduced community and user-led actions, since these initiatives involved public-private partnerships to develop and trial smart energy technologies locally, with a focus on roll-out and developing a route to market.

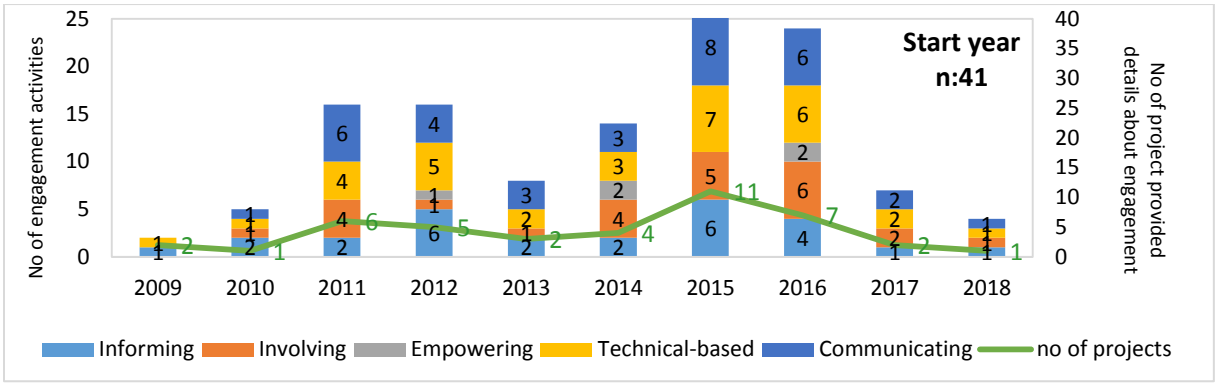

Figure 4. Start year of SLES initiatives that deployed user engagement methods

The meta-study revealed that projects led by DNOs (22 out of 41 projects) had the largest number of engagement activities – about 58, followed by partnership-based projects (9 out of 41) that involved universities, local community groups, local authorities and private sector (Figure 5a). The actors responsible for carrying out user engagement were mentioned in 14 (out of 41) SLES projects (Figure 5b), wherein it was realised that DNOs conducted the most user engagement activities (5 out of 14), followed by community groups (2 out of 14) (Figure 5b). Since DNO-led projects were dominant (54%) in the sample, it is evident why DNOs were the lead actors in conducting engagement in 5 out of 14 projects. Although community group-led projects formed 10% of the sample (4 out of 41), 14% of engagement activities were undertaken by community groups (2 out of 14). This indicated that community groups were more likely to report that they led the community engagement, where they were project lead.

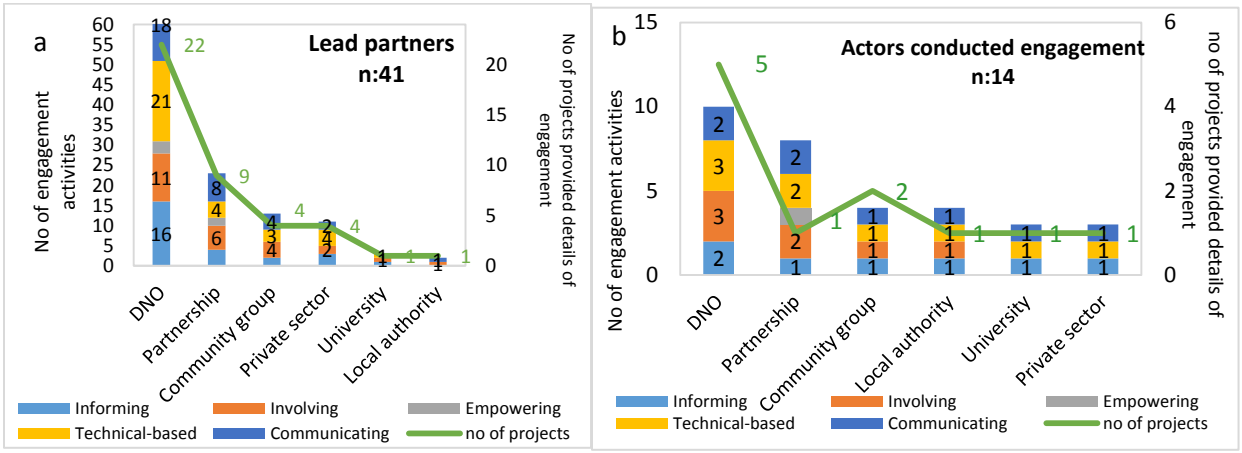

Figure 5. Lead partners that deployed user engagement (a) and actors who conducted user engagement (b)

In terms of timing of user engagement whether it was one-off (once) or repeated (longitudinal), the meta-study analysis revealed that majority of user engagement activities were undertaken as one-off to engage users *either* at the start, in the middle or at the end of projects. About 43 engagement activities were repeated as shown in Figure 6, nearly 42% of these were undertaken through *technical* means, followed by *involving* (Figure 6). This indicates the preference to use some form of technology (e.g. In-home displays, Mobile Apps) to engage users over time, against the resource, expertise and training required for people-based engagement.

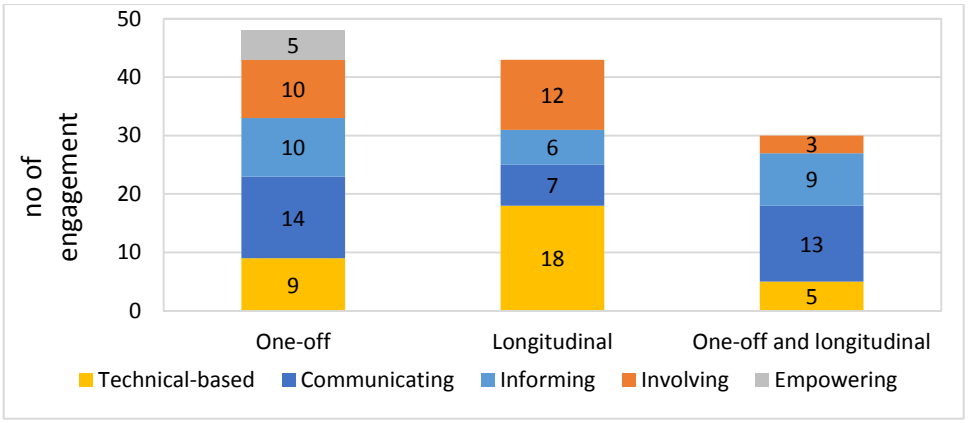

Figure 6 Time scale of user engagement in SLES initiatives

The meta-study also showed that majority of engagement activities were undertaken in Scotland, South-East and South-West England, as well as the Midlands where there was concentration of SLES projects. In total 24 and 25 SLES projects took place in Scotland and South-east England respectively accounting for 40% of the total number (122) of SLES projects. One of the reasons for the surge in SLES initiatives in Southeast (and Southwest) England and Scotland was to overcome grid constraints (Jones et al., 2018), especially with the surge in local renewable energy projects in these areas. SLES initiatives were designed to help with grid balancing and local energy management.

In line with the high number of SLES projects, user engagement was dominant in these geographical areas. While 11 out of the 24 projects in Scotland (46%) had user engagement (with 31 engagement activities), nearly 40% of the SLES projects (10 out of 25 projects) in South-East England undertook user engagement with 13 engagement activities. This high occurrence of user engagement can be explained by the fact that these two regions have high concentration of community energy groups, as mentioned in the Community Energy Strategy 2014 (DECC, 2014) and presented in Community Energy Hub online map (Community Energy Hub, 2020). Though this is based on the assumption that those who did not report engagement activities did not undertake them.

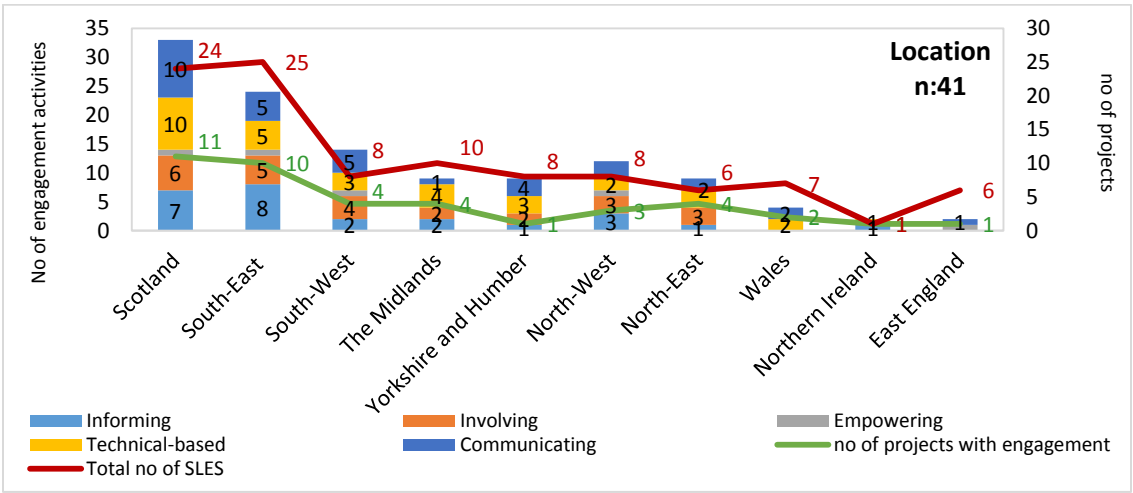

Figure 7. Location of SLES initiatives that reported user engagement

Evaluation

About 36 out of the 41 SLES initiatives that conducted user engagement, deployed some form of evaluation to assess the effectiveness of user engagement, either through surveys (questionnaire), interviews (online and face-to-face), and/or focus groups. Overall, 63 evaluation methods were used across 36 SLES initiatives as shown in Figure 8a. While 29 out of 36 SLES initiatives (81%) deployed surveys, 20 out of 36 projects (56%) used interviews, while 8 projects used focus groups, as shown in Figure 8a. A small number of projects (6) monitored energy-use and indoor environment over time to evaluate the impact of user engagement on energy use. Similar to user engagement, the majority of the projects that undertook evaluation of user engagement were funded by regulators (16 out of 36), followed by EU (6 out of 36), UKRI (5 out of 36) and UK Government (5 out of 36) (Figure 8b). Questionnaire surveys and interviews were found to be popular methods for assessing the effectiveness of user engagement probably because these methods are widely understood and can be implemented easily.

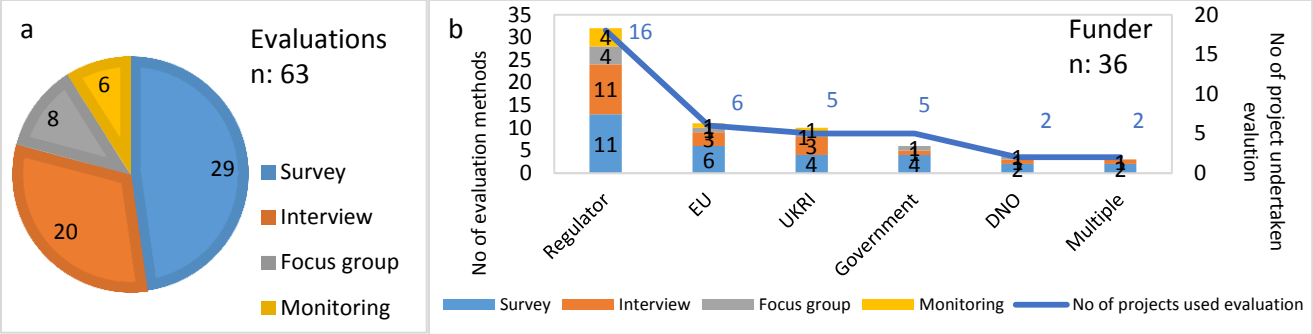

Figure 8: Distribution of evaluation methods (a) and funders of SLES (b) that evaluated user engagement

Furthermore, more than half of SLES initiatives that evaluated user engagement were led by DNOs (20 out of 36 projects) possibly because these projects were mostly about demand side response and smart grid initiatives, and evaluation of user engagement was necessary for future roll-out and scaling-up. This was followed by projects that were led by public-private partnership (Figure 9a). It is evident that projects led by DNOs and public-private partnership tend to adopt user engagement and its evaluation (Figures 5a and 9a). About 91% of these projects that were led by DNO were also evaluated (20 out of 22). Similarly, all partnership-led projects that included user engagement also carried out evaluation (9 out of 9). However, only 75% of the projects that led by community group (3 out of 4) and 50% of the projects that led by private sector undertook evaluation (2 out of 4). Despite universities and local authorities leading a small number of SLES projects that included user engagement (2 out of 41 SLES), all these projects conducted evaluation.

About 14 SLES projects identified the specific actors who undertook evaluation of the effectiveness of user engagement (Figure 9b). Universities emerged as a key actor that conducted the most evaluations in 5 out of 14 projects, possibly because of their independence and impartiality. While DNOs conducted user engagement in 5 projects (Figure 5b), in three of these projects, evaluation was undertaken (Figure 9b).

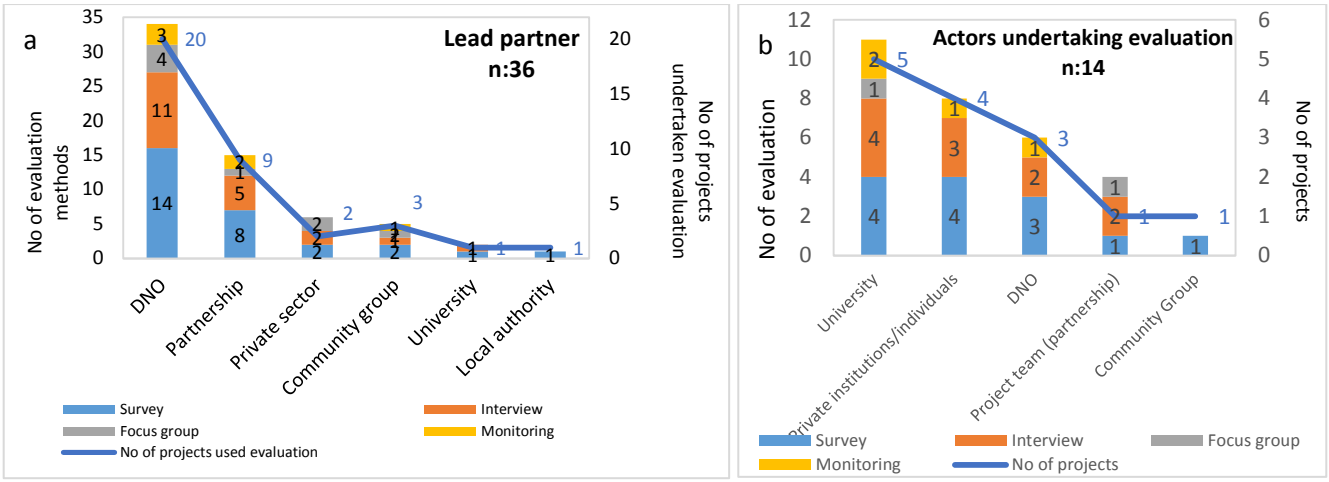

Figure 9. Lead partners that conducted evaluation of user engagement (a) and actors who carried out evaluation (b)

The majority of evaluation studies were undertaken as one-off - either in the middle or at the end of the projects, and rarely conducted at the beginning of SLES initiatives which can help to establish the baseline (Figure 10). Only 14 out of 63 evaluation methods were used for longitudinal evaluation and these were largely interviews and surveys.

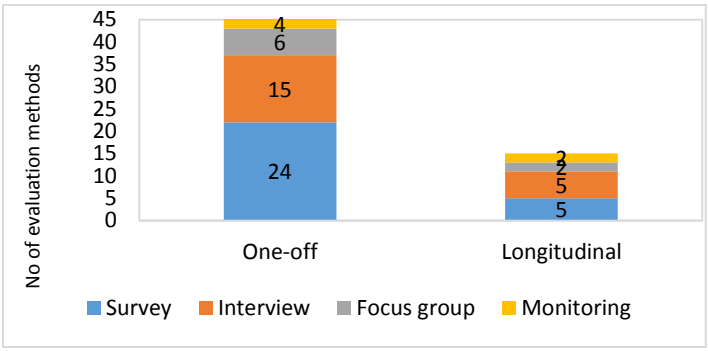

Figure 10. Timing of evaluation methods

Reflecting the prevalence of user engagement activities in South-East England and Scotland, all 10 projects that undertook user engagement in Southeast England (Figure 7) also undertook evaluation (Figure 11), while 9 out of 11 projects in Scotland that undertook user engagement also evaluated it. Given that 3 out of 4 SLES projects that undertook user engagement also conducted evaluation in Southwest and the Midland, it is evident is that there is high likelihood of evaluation happening in projects where user engagement is undertaken. Overall 40% of SLES projects in South-East England and Scotland undertook user engagement and its evaluation, which was similar to other regions, such as the Midlands and North-east England although number of SLES projects was significantly lower in these regions.

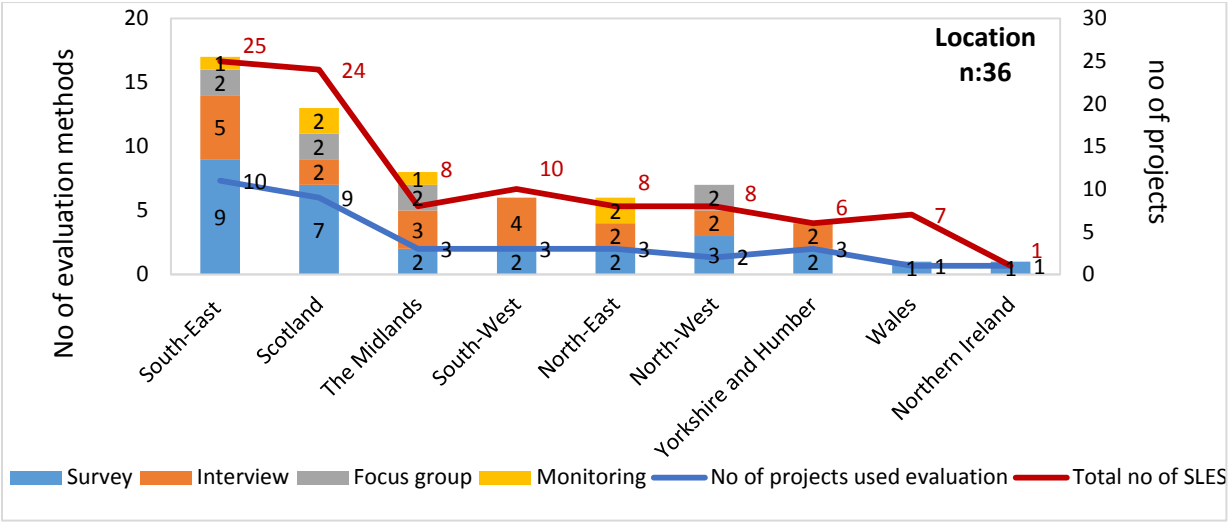

Figure 11. Location of SLES initiatives that deployed evaluation methods

Discussion

Findings from this meta-study suggest that there is limited amount of user engagement happening in SLES initiatives, given that while 57 out of 122 SLES initiatives (46.7%) mentioned user engagement, only 41 out of the 57 initiatives provided some evidence of conducting user engagement activities, despite user acceptance of smart local energy system being vital for their take-up. Unsurprisingly evaluation of user engagement was even less – in 36 out of 122 initiatives (29.5%), although capturing the benefits of engaging users can provide lessons for scaling up SLES projects. It is likely that evaluation is conducted in projects with user engagement (87.8% in the meta-study) since evaluation may uncover barriers to user engagement.

Where user engagement was undertaken, it was mainly based on *communication* through trusted actors to increase users' trust to participate in SLES initiatives. *Informing* and *involving* users as engagement pathways were deployed in 25 out of 41 projects, mainly through media (e.g. press, newspaper, video, leaflet and letter), social media (e.g. LinkedIn and twitter), consultations and drop-in sessions to increase user awareness about SLES initiatives. There was a dearth of engagement activities for *empowering* users, and where these happened, they tend to be conducted in projects that had some kind of public-private partnership. Most of the engagement activities were one-off in the form of workshops, meetings, exhibition fairs, seminars and events, and took place either at the beginning of the projects to capture user requirement or at the end of the projects for disseminating the outcomes. Engagement through *Technical* tools (in home displays, Mobile Apps) was popular for enabling user engagement over time, while gamification technique enabled two-way interaction between end users and smart energy systems. The majority of SLES initiatives that undertook user engagement and evaluation had some involvement of DNOs (as partner or lead) because SLES initiatives tend to focus on grid balancing and local energy management for which DNO involvement is vital. User engagement was also undertaken in projects where there was presence of community energy groups. Where community group led SLES initiatives, they were more likely to report on user engagement.

Interesting trends emerged geographically. The majority of SLES initiatives happened in Scotland, South-East and South-West England which are also areas of grid constraints and local renewable energy projects. Since these regions also have high concentration of community energy groups, it may explain why the majority of SLES projects in these regions undertook user engagement and evaluation. For example, community energy projects undertaken in South West England used electricity sub-station metering data for stimulating behaviour change to reduce local power demand during peak periods (Coxcoon et al., 2015). The prevalence of SLES initiatives in Scotland also matched with high levels of local authorities' engagement with

the energy system (Tingey et al., 2017). There is emerging evidence that SLES initiatives tend to happen in places with grid constraints and/or high penetration of local renewable energy projects (technology), active community energy groups (intermediaries), as well as local authorities who engage actively with the energy system (policy). Such enabling factors related to technology, intermediaries and policy may need to be in place for a successful roll out of SLES initiatives to other regions in the UK.

Although longitudinal engagement evaluation is necessary for capturing 'user journey' over time to help with scalability and replicability (Milne et al., 2019) of SLES initiatives, meta-study showed that there was limited longitudinal evaluation (and engagement) undertaken to understand how users engage with SLES, how SLES initiatives engage with users, and how that engagement develops over time. Possible reasons for lack of longitudinal user engagement and evaluation were due to project time-scales, limited budget and expertise of the project team. Where longitudinal evaluation was undertaken, it was mainly through interviews and surveys. Interestingly evaluation of user engagement was prevalent in projects which had involvement of academic institutions, indicating the vital role that such organisations can play in assessing the outcomes and impacts of SLES initiatives, while also brining independence and impartiality.

Conclusion

This paper has undertaken, for the first time, a systematic meta-study to investigate user engagement and its evaluation in SLES initiatives undertaken in the UK over the last 10 years. An extensive review of literature was conducted to identify 122 SLES projects (from 2009 to 2018) that received some form of funding, deployed multiple vectors and had an element of 'smartness' to them that included innovative use of data, digitalisation or innovative energy management systems. Since only 30% of the SLES projects provided any evidence of user engagement and its evaluation, and these were concentrated in a limited number of geographical areas, much work needs to be done to integrate engagement and evaluation in the delivery of smart local energy initiatives across the UK. Where user engagement was undertaken, it was through engagement pathways that comprised: *informing* (e.g. media and social media), *communicating* (workshop, meeting and fairs), *involving* (e.g. consultation, offer and promotion), and *empowering* users in SLES (e.g. delivering energy services such as producing and selling energy), as well as *technical tools* (In home displays, Mobile Apps). Evaluation of engagement was undertaken mostly using interviews (online and face-to-face) and surveys.

There was a distinct lack of longitudinal engagement and evaluation (before, during and after the project) to capture 'user journey' as SLES projects developed over time, possibly due to project time-scales, limited budget and expertise. The presence and role of *local actors* such as community energy groups as *intermediaries*, local authorities as *policy-makers* and academic institutions as *independent evaluators* can stimulate longitudinal engagement and evaluation in SLES initiatives. Given the expected role of SLES initiatives in energy transition, it is vital that learnings from past SLES projects is used to inform the next generation of SLES projects that have been funded under the £102 million *Prospering from the energy revolution* (PFER) programme, as part of UK's Industrial Strategy Challenge Fund. This will ensure that SLES project teams, local actors and end users are able to gain value from such initiatives, and move towards more prosperous and resilient communities.

Acknowledgement

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Annex 1: SLES initiatives that used engagement methods for user participation

Code	Project	Lead partner	*Informing*	*Involving*	*Empowering*	*Technical-based*	*Communicating*
ENG 1	Ashton Hayes Smart Village	DNO					
ENG 2	Community Energy Generation, Aggregation and Demand Aggregation Shaping	Partnership					
ENG 3	Assisting Communities to Connect to Electric Sustainable Sources (Mull ACCESS)	Community group					
ENG 4	Customer Led Network Revolution	DNO					
ENG 5	Energise Barnsley	Partnership					
ENG 6	FREEDOM	DNO					
ENG 7	Accelerating Renewable	DNO					
ENG 8	Activating Community Engagement	DNO					
ENG 9	Community Energy at Trent Basin	Private sector					
ENG 10	Creative Energy Homes	Partnership					
ENG 11	Customer Led Network Revolution	Partnership					
ENG 12	Distributed Storage and Solar Study	DNO					
ENG 13	Electric Nation	DNO					
ENG 14	Flexible Approaches for Low Carbon Optimised Networks	DNO					
ENG 15	Flexible Networks for a Low Carbon Future	DNO					
ENG 16	Fusion	DNO					
ENG 17	Glasgow Future Cities	Partnership					
ENG 18	Heat Smart Orkney	Partnership					
ENG 19	Low Carbon London	DNO					
ENG 20	LV Connect and Manage	DNO					
ENG 21	My Electric Avenue	Private sector					
ENG 22	Network Equilibrium	DNO					
ENG 23	ORIGIN	University					
ENG 24	Power Saver Challenge	DNO					
ENG 25	Shift & Save	DNO					
ENG 26	Smart Fintry	Community group					
ENG 27	inteGRIDy	Partnership					
ENG 28	Smart Hooky	DNO					
ENG 29	Smart Street	DNO					
ENG 30	SMILE Orkney	Community group					
ENG 31	SoLa Bristol	DNO					
ENG 32	SENSIBLE	Partnership					
ENG 33	Sunderland Low Carbon Energy	Local authority					
ENG 34	Sunshine Tariff	DNO					
ENG 35	Thames Valley Vision	DNO					
ENG 36	Zero-Plus	Partnership					
ENG 37	"The GenGame" smart grid platform	Private sector					
ENG 38	Energyzing Insch	Private sector					
ENG 39	Northern Isles New Energy Systems	DNO					
ENG 40	Ebbs and Flows of Energy Systems (EFFS)	Community group					
ENG 41	Greenwatt Way	DNO					
Total			25	25	6	32	33

Annex 2: List of SLES initiatives that evaluated user engagement

Code	Project	Lead partner	Survey	Interview	Focus group	Monitoring
EV 1	Ashton Hayes Smart Village	DNO	■	■		
EV 2	Community Energy Generation, Aggregation and Demand Aggregation Shaping	Partnership	■			
EV 3	Assisting Communities to Connect to Electric Sustainable Sources (Mull ACCESS)	Community group		■		■
EV 4	Customer Led Network Revolution	DNO		■		■
EV 5	Energise Barnsley	Partnership	■	■		
EV 6	FREEDOM	DNO		■	■	
EV 7	Accelerating Renewable Connections	DNO	■			
EV 8	Activating Community Engagement	DNO	■			
EV 9	Community Energy at Trent Basin	Private sector	■	■	■	
EV 10	Creative Energy Homes	Partnership	■	■		
EV 11	Customer Led Network Revolution	Partnership		■		■
EV 12	Distributed Storage and Solar Study	DNO	■			
EV 13	Electric Nation	DNO	■	■		
EV 14	Flexible Approaches for Low Carbon Optimised Networks	DNO		■		
EV 15	Flexible Networks for a Low Carbon Future	DNO	■			■
EV 16	Fusion	DNO	■			
EV 17	Glasgow Future Cities – Demand Side Management	Partnership	■	■		
EV 18	Heat Smart Orkney	Partnership	■			
EV 19	Low Carbon London	DNO	■	■		
EV 20	LV Connect and Manage	DNO	■			
EV 21	My Electric Avenue	Private sector	■	■	■	
EV 22	Network Equilibrium	DNO	■	■		
EV 23	ORIGIN	University	■	■		
EV 24	Power Saver Challenge	DNO	■	■	■	
EV 25	Shift & Save	DNO	■			
EV 26	Smart Fintry	Community group	■		■	
EV 27	inteGRIDy	Partnership	■			
EV 28	Smart Hooky	DNO	■			
EV 29	Smart Street	DNO	■		■	
EV 30	SMILE Orkney (SMart IsLand Energy systems)	Community group	■			
EV 31	SoLa Bristol	DNO	■	■		
EV 32	SENSIBLE	Partnership		■	■	■
EV 33	Sunderland Low Carbon Energy Demonstrator Project	Local authority	■			
EV 34	Sunshine Tariff	DNO	■	■		
EV 35	Thames Valley Vision	DNO	■		■	■
EV 36	Zero Plus	Partnership	■	■		
Total			29	20	8	6