

Evaluation of user engagement in SLES projects in the UK



UK Research
and Innovation

Prof Rajat Gupta and Dr Sahar Zahiri

Oxford Brookes University, Oxford, UK
rgupta@brookes.ac.uk

Energy Evaluation Europe 2021 Conference
16 March 2021

EnergyREV

Context and scope of the study

- 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 (2009-2018).
- Explore **what kind** of user engagement/evaluation was undertaken, **by whom**, **where** and **under what circumstances**.
- About 122 SLES initiatives identified - received some form of funding, deployed multiple vectors, had an element of 'smartness' that included innovative use of data, digitalisation or innovative energy management systems
- Drawn from *UK Energy Research Centre (UKERC) energy demonstrators, Localised energy systems, Network Innovation Allowance* programmes
- 57 out of 122 SLES projects mentioned user engagement.
- 41 provided some detail about user engagement (33.6%)
- 36 out of 41 SLES initiatives undertook evaluation (29.7%)



INDUSTRIAL
STRATEGY

UK Research
and Innovation



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

Rajet Gupta, Low Carbon Building Research Group, School of Architecture, Oxford Brookes University, Oxford, UK (rgupta@brookes.ac.uk)

Sahar Zahiri, Low Carbon Building Research Group, School of Architecture, Oxford Brookes University, Oxford, UK

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., 2018). 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,

2020 Energy Evaluation Europe Conference – London, UK

1

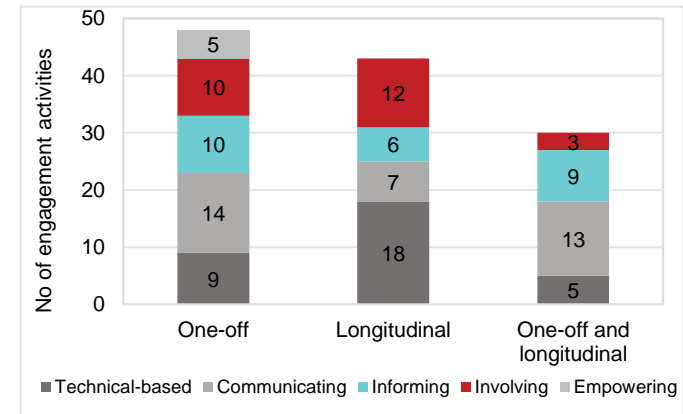
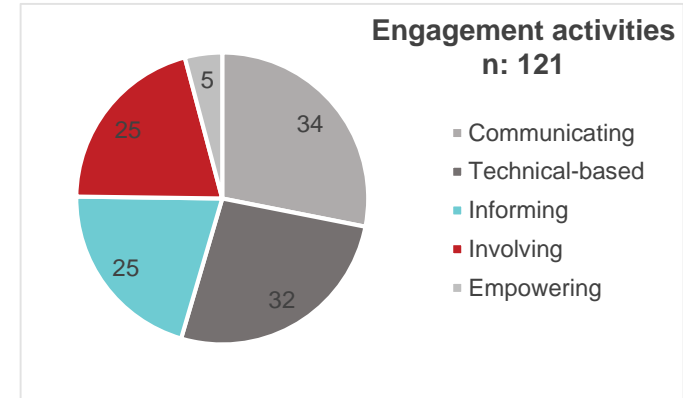
User engagement methods: What

Engagement activities

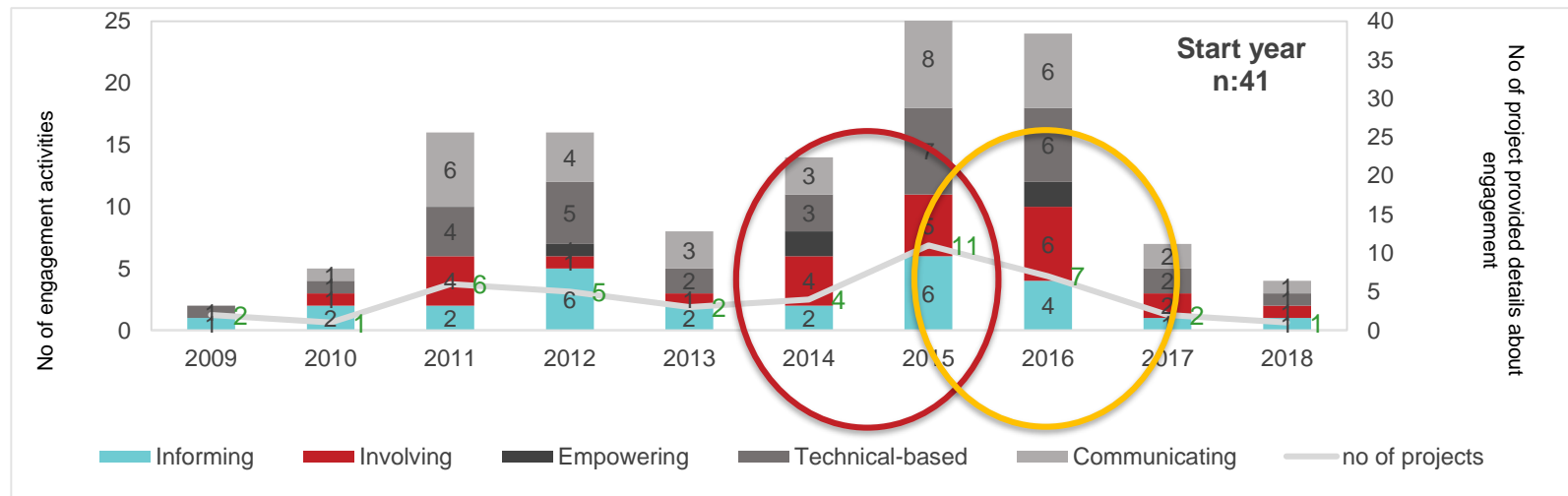
Engagement pathway	Engagement methods
<i>Informing</i>	Media, newsletter, video, mail shot, leaflet, brochure, notice boards, <u>linkedin</u> , twitter, website
<i>Communicating</i>	Presentation, seminar, conference, exhibition, fair and open days, workshop, events, meetings
<i>Involving (direct interaction)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

User engagement methods: What

- Majority of SLES initiatives used multiple user engagement activities/pathways (n: 121)
- *Communication* related activities (workshops, meetings, events) most popular but *one-off*
- Followed by *technical means* (e.g. IHD, DEP and apps) that were deployed over time.
- *Empowering* users was the least popular possibly due to concerns about privacy, security, reliability and adaptation to new technologies.



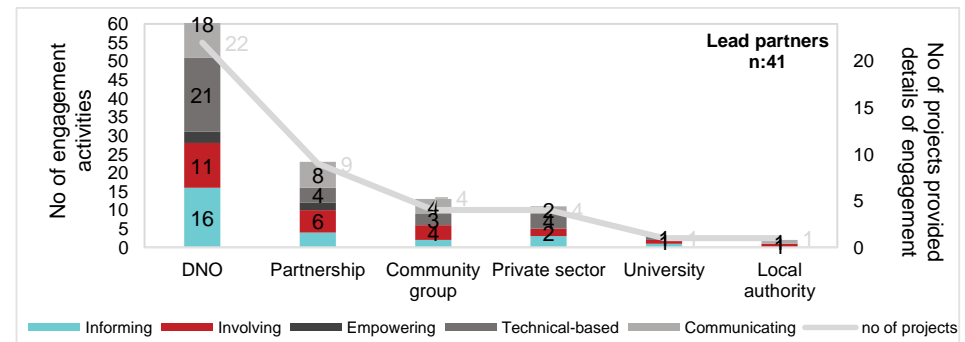
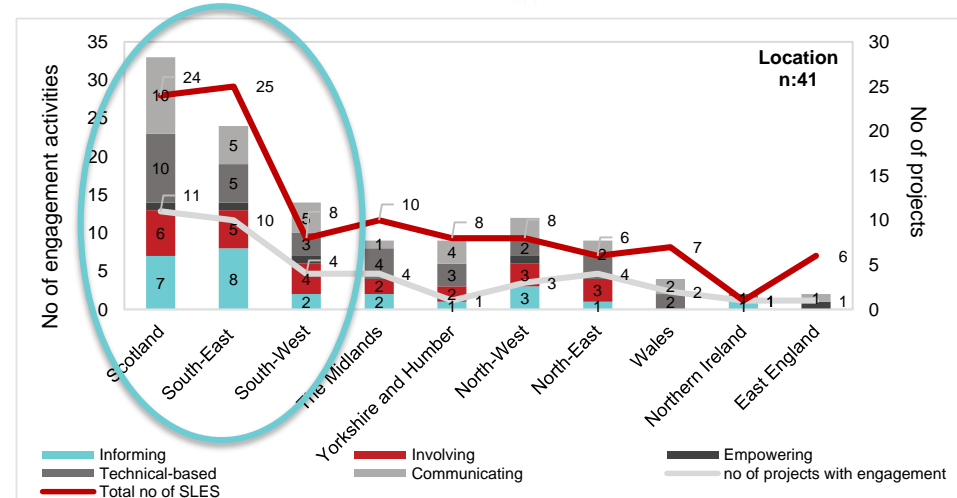
User engagement methods: When (start year)



- User engagement increased from 2015 following the first ever **Community Energy Strategy (2014)** that emphasised local engagement, local leadership, benefits of local community.
- Increase not sustained in subsequent years - focus changed to local energy initiatives possibly driven by setting up of Local Energy Hubs to support LAs with low carbon economic growth.
- **UK Industrial Strategy in 2017**, LE evolved into smart energy initiatives that involved public-private partnerships to develop/trial smart energy technologies locally, with a focus on route to market.

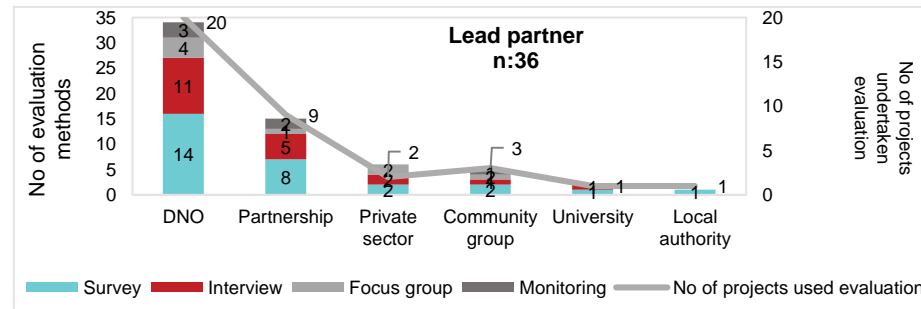
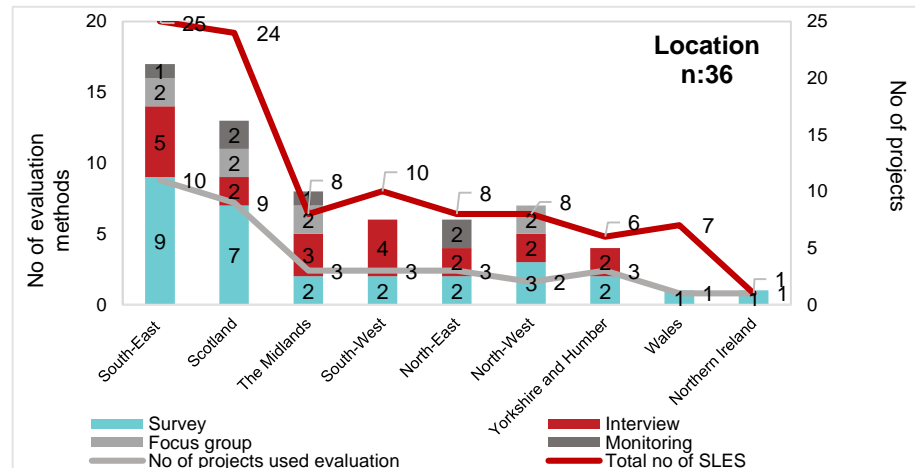
User engagement – where and by whom

- Majority of engagement activities undertaken in Scotland, South-East and South-West England – concentration of SLES projects.
- Projects led by DNOs had large number of engagement activities, followed by partnership-based projects - universities, community groups, LAs, private sector.
- Since DNO-led projects were dominant (54%), they were found to be lead actors in conducting engagement.
- Community group-led projects formed 10% of the sample (4 out of 41) – undertook 14% of engagement activities.



Evaluation: What, where, by whom

- Majority of the (36) projects adopted survey or/and interview based methods - as *one-off* methods to assess effectiveness of user engagement.
- Projects that undertook user engagement in South-East England also undertook evaluation. About 9 out of 11 projects in Scotland evaluated user engagement.
- Projects led by DNOs and public-private partnership adopted user engagement and its evaluation. Possibly for future roll-out/scaling-up of DSR and DSM projects.
- Universities emerged as a key actor that conducted the most evaluations.



Summary of insights

- **User engagement** is vital for user acceptance of SLES while capturing benefits of engaging users (through **evaluation**) can provide lessons for scaling up. Despite this only **30% of SLES** (41 out of 122) undertook user engagement/evaluation.
- User engagement was prevalent in projects where there was involvement of local community groups, while evaluation was mostly led by academic institutions.
- SLES projects with engagement/evaluation were implemented in places with:
 - Network constraints and/or high penetration of local renewable energy projects (**technology**)
 - Active community energy groups (**local actors**)
 - Local authorities who engaged actively with energy system (**policy**).
- Most engagement/evaluation activities were **one-off** (beginning/end of project) due to project time-scales, limited budget, resource and expertise.
- Next generation of SLES initiatives could be **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**.



Thank you for your attention!
