

Social Identity and Relations: implications for home energy demand and peak load reduction in the UK

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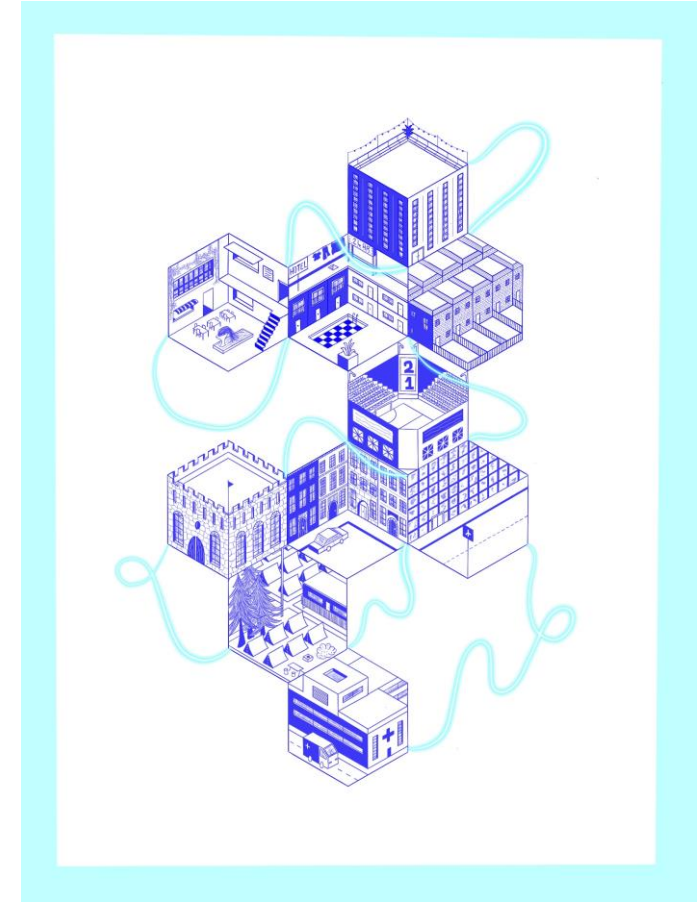
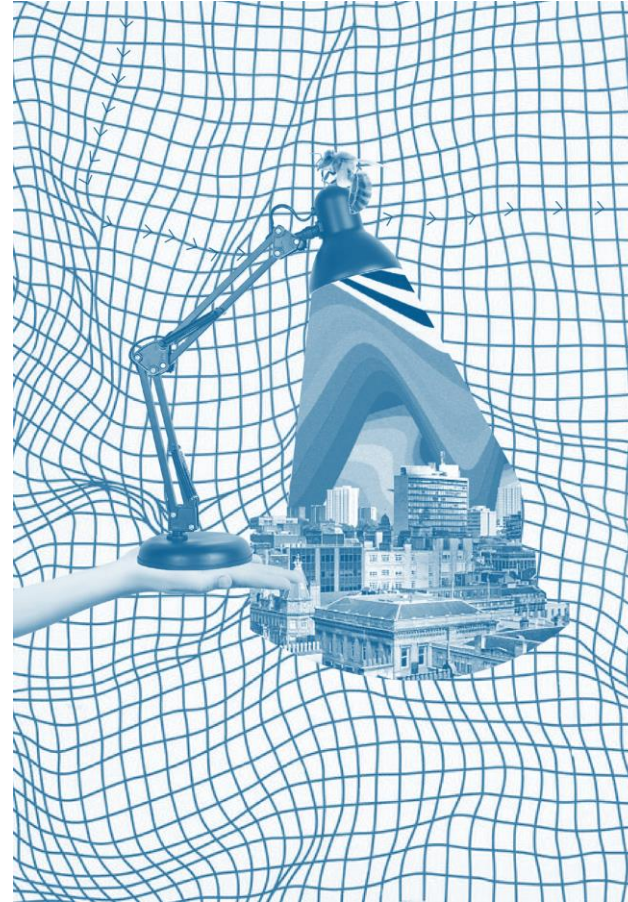
Engineering and
Physical Sciences
Research Council

EPSRC (586K)

GLOW

Energy nested bio system flows
from the home to the hub

[2022 – 2024]

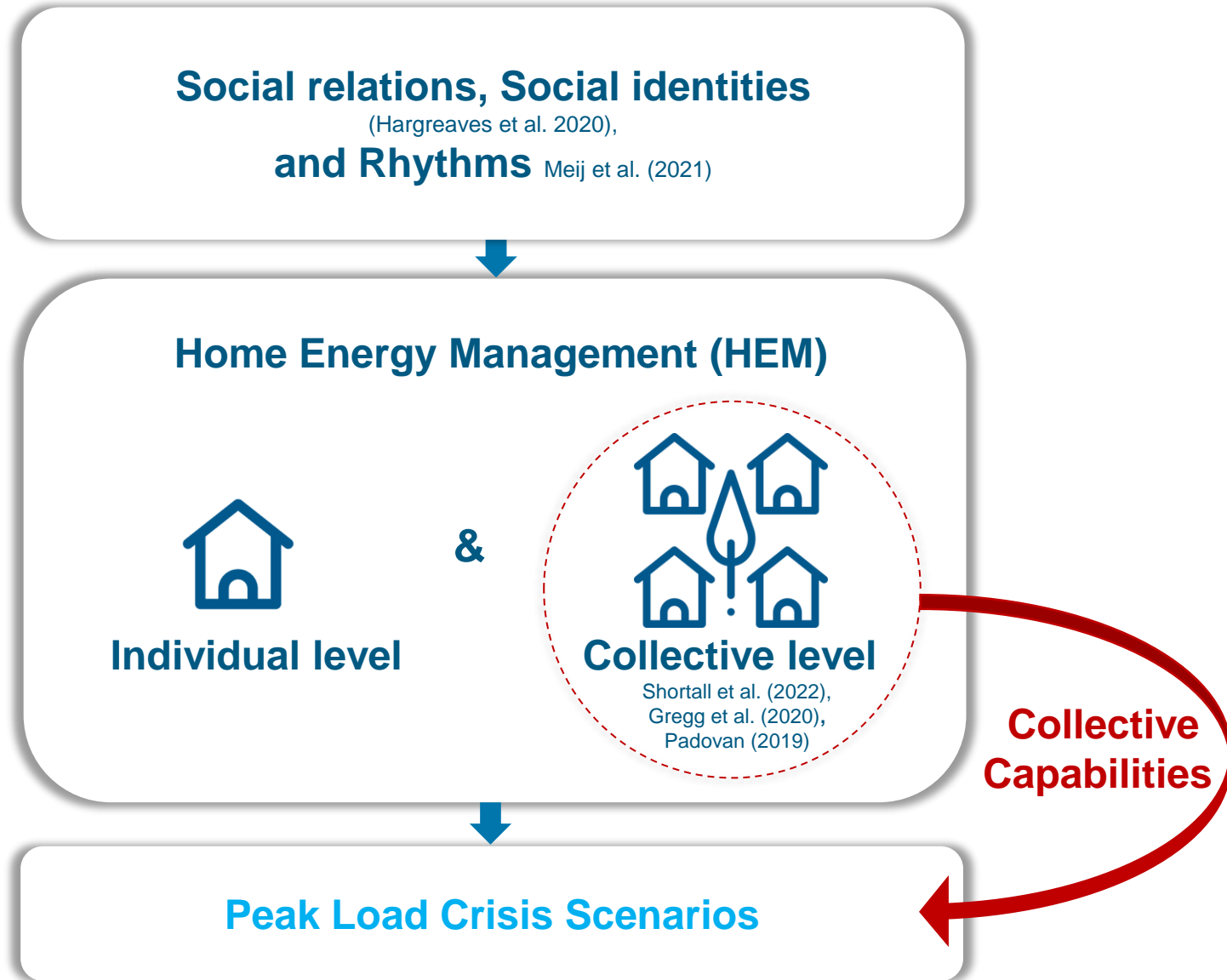


www.glow.arch.strath.ac.uk



AIM

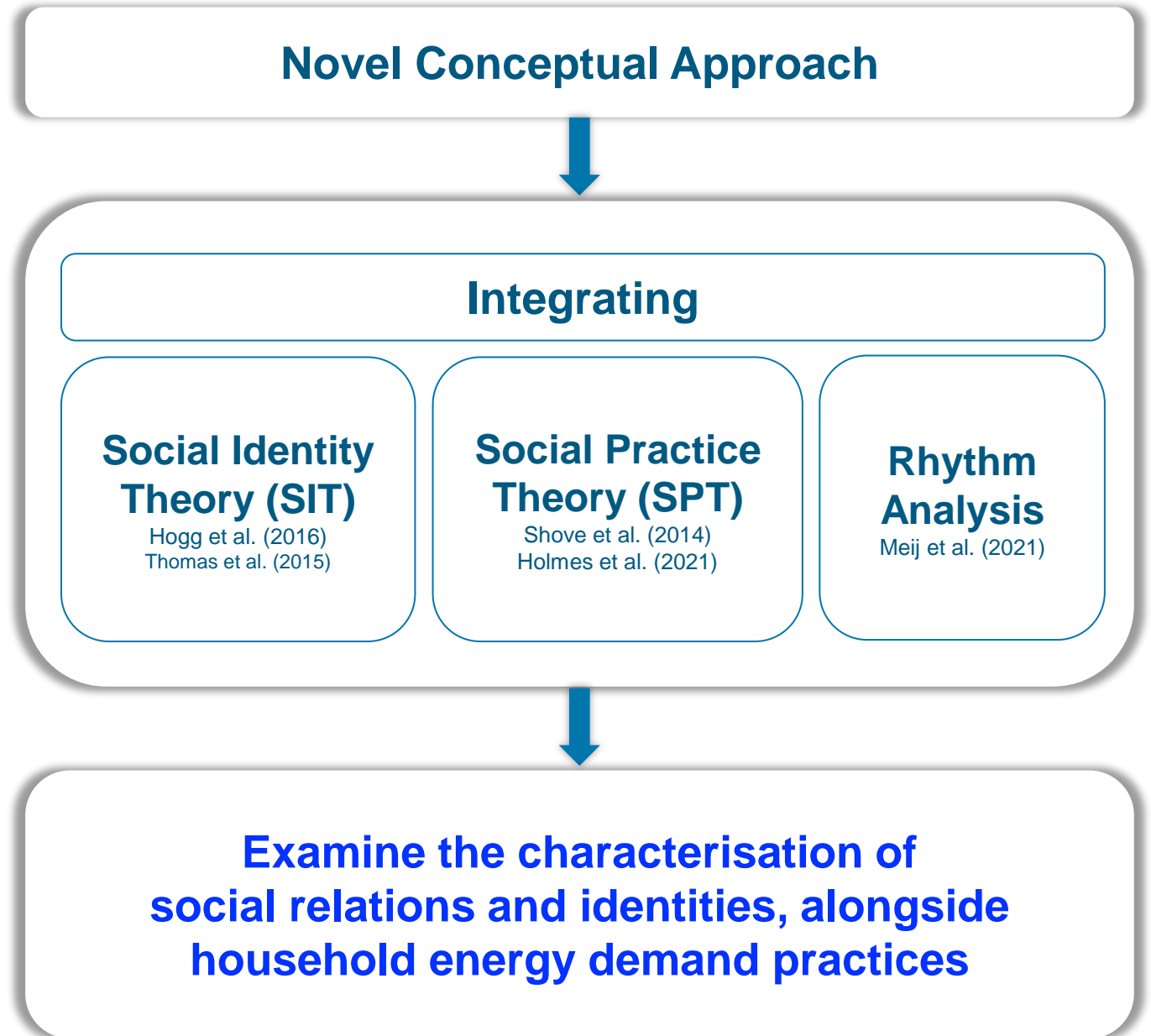
The aim of this research is to provide **new empirical insights into the collective capabilities** of individual homes to manage energy demand in **peak load scenarios** in the UK.



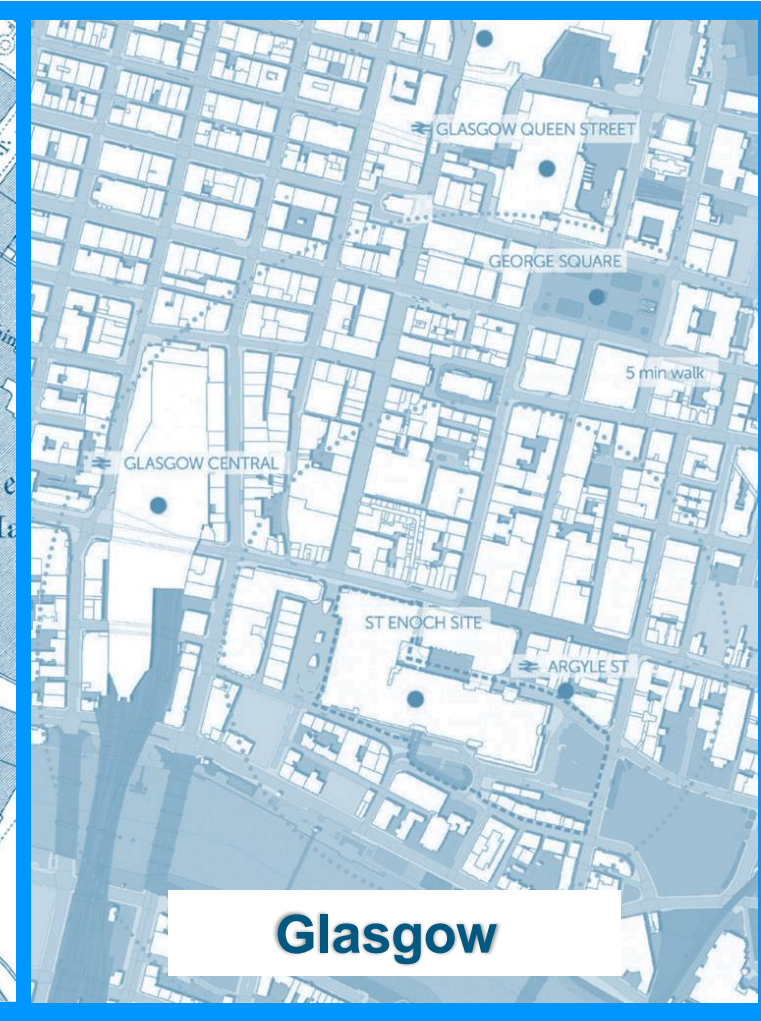
RESEARCH PROBLEM

- **Lack of empirical evidence** in the context of collective capabilities in smart energy systems. *(Oliveira S. et al. 2023)*
- **Limited theoretical advances** in the study of interconnected phenomena involved between social context and energy demand and between scales of the home and neighbourhood, with a dominant focus placed on individual homes and descriptive approaches. *(Oliveira S. et al. 2023)*
- **How do collective social relations and identities influence home energy management practices in energy crisis scenarios** such as peak load reduction?

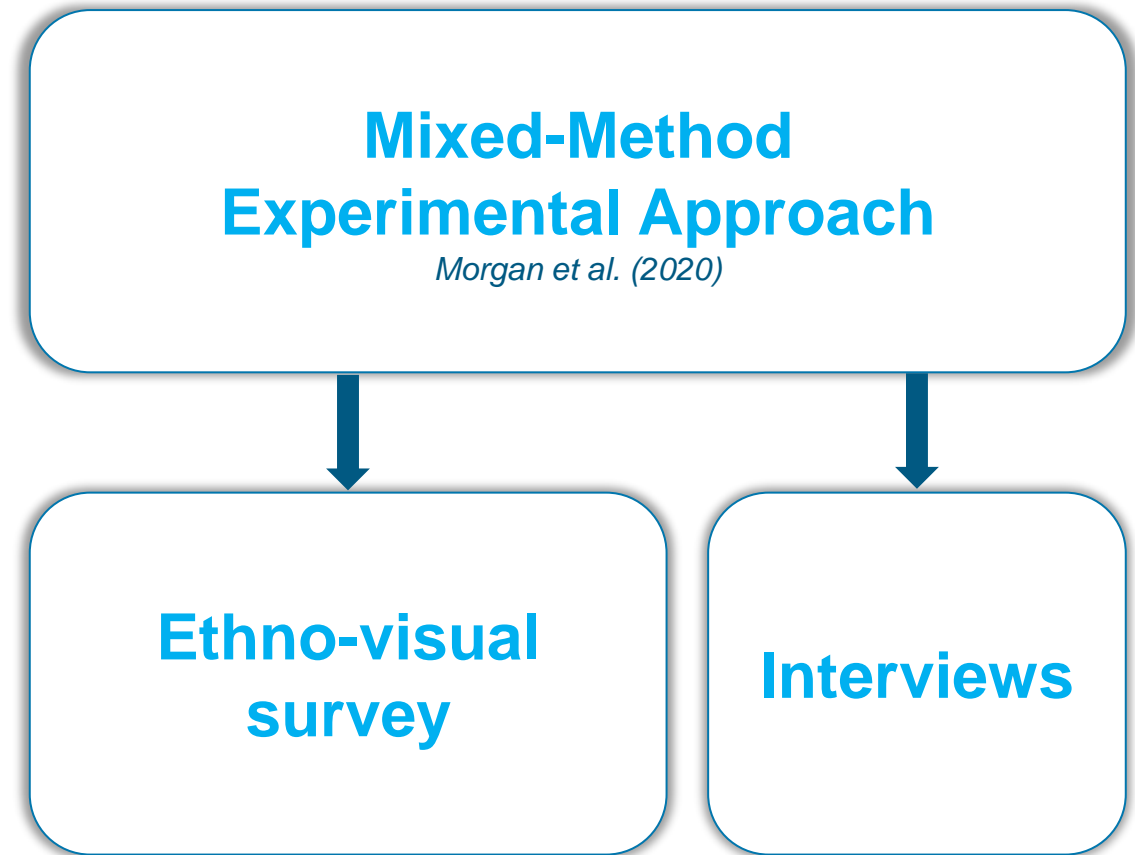
APPROACH



EMPIRICAL SETTING



METHODS



DATA COLLECTION

1.

Surveys:
617
Participants

Visual data:
517
Photos

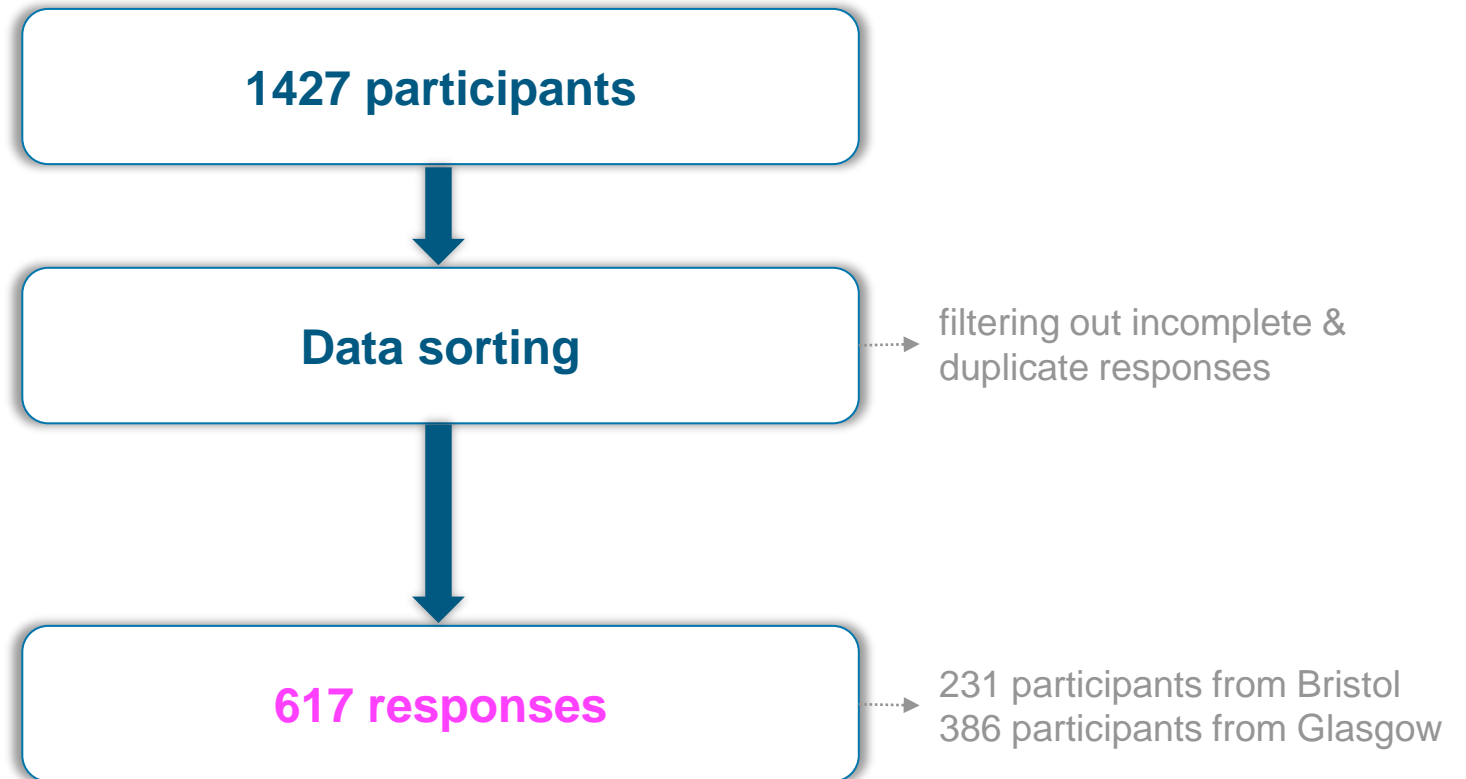
2.

Interviews:
11 participants

DATA ANALYSIS

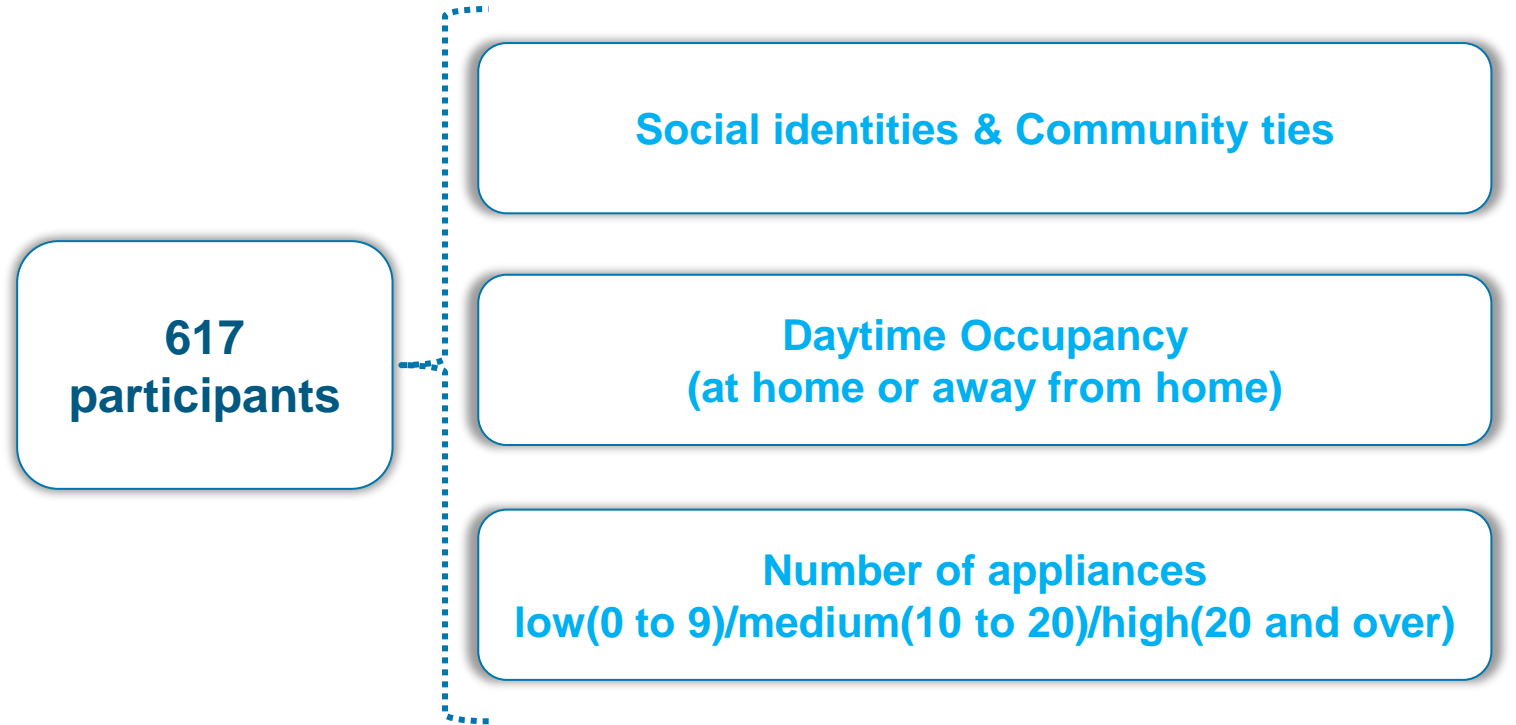
Phase 1

In the initial stage, a survey was distributed using Qualtrics, with a total of 1427 participants taking part. After filtering out incomplete and duplicate responses, the final sample consisted of 617 participants, comprising 231 participants from Bristol and 386 participants from Glasgow.



DATA ANALYSIS

Phase 2



DATA ANALYSIS

The survey was designed to explore four key categories aligned with the project's overarching conceptual approach. *(Oliveira et al. 2022)*

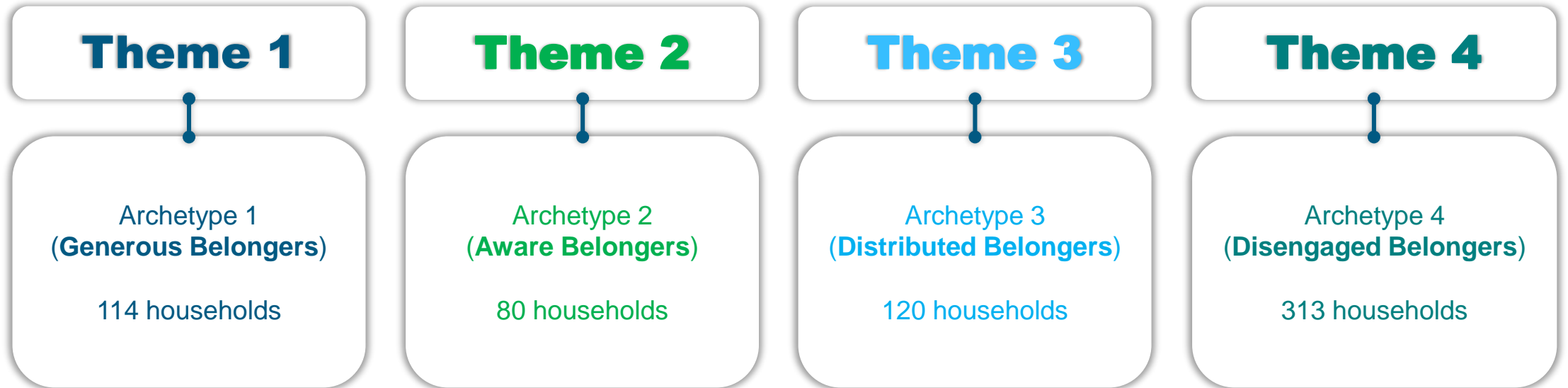
1. Participants' home spatial and social characteristics

2. Home energy management approaches

3. Neighbourhood approaches to energy and social dynamics

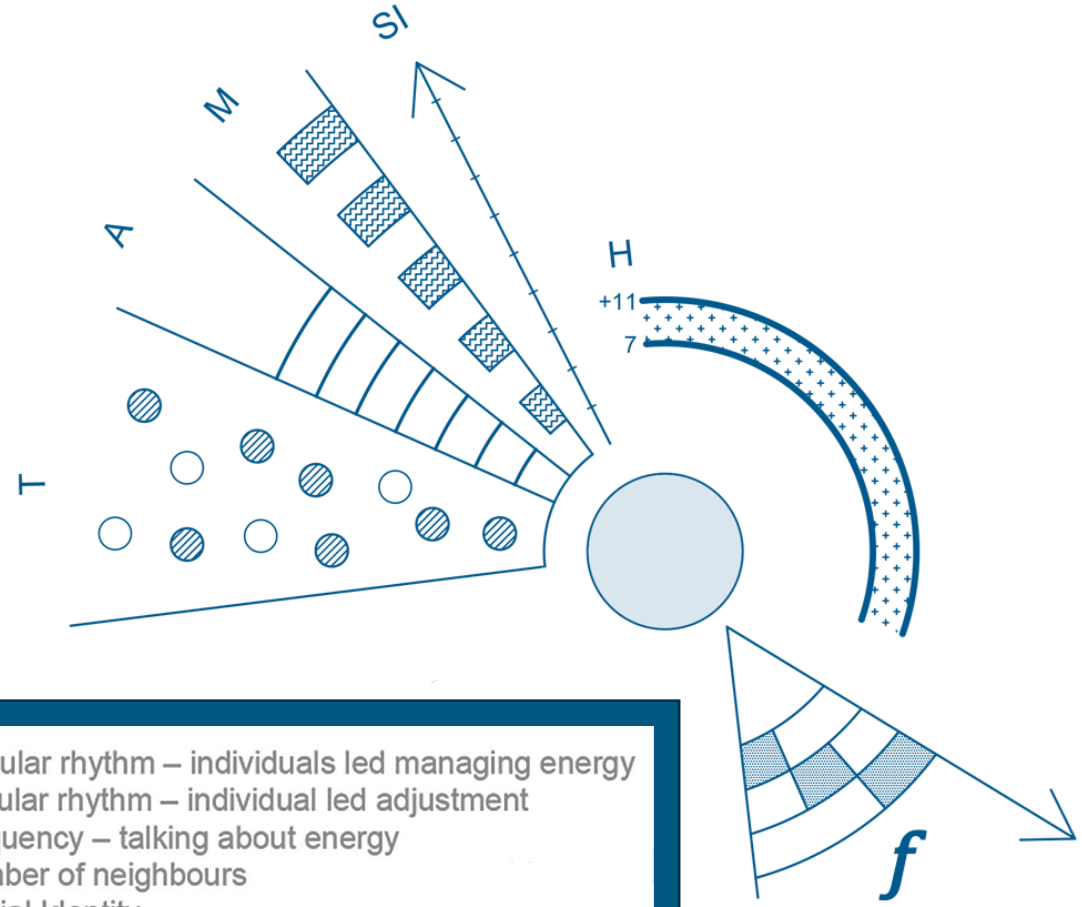
4. Home daily and weekly energy use and management routines

FINDINGS



FINDINGS

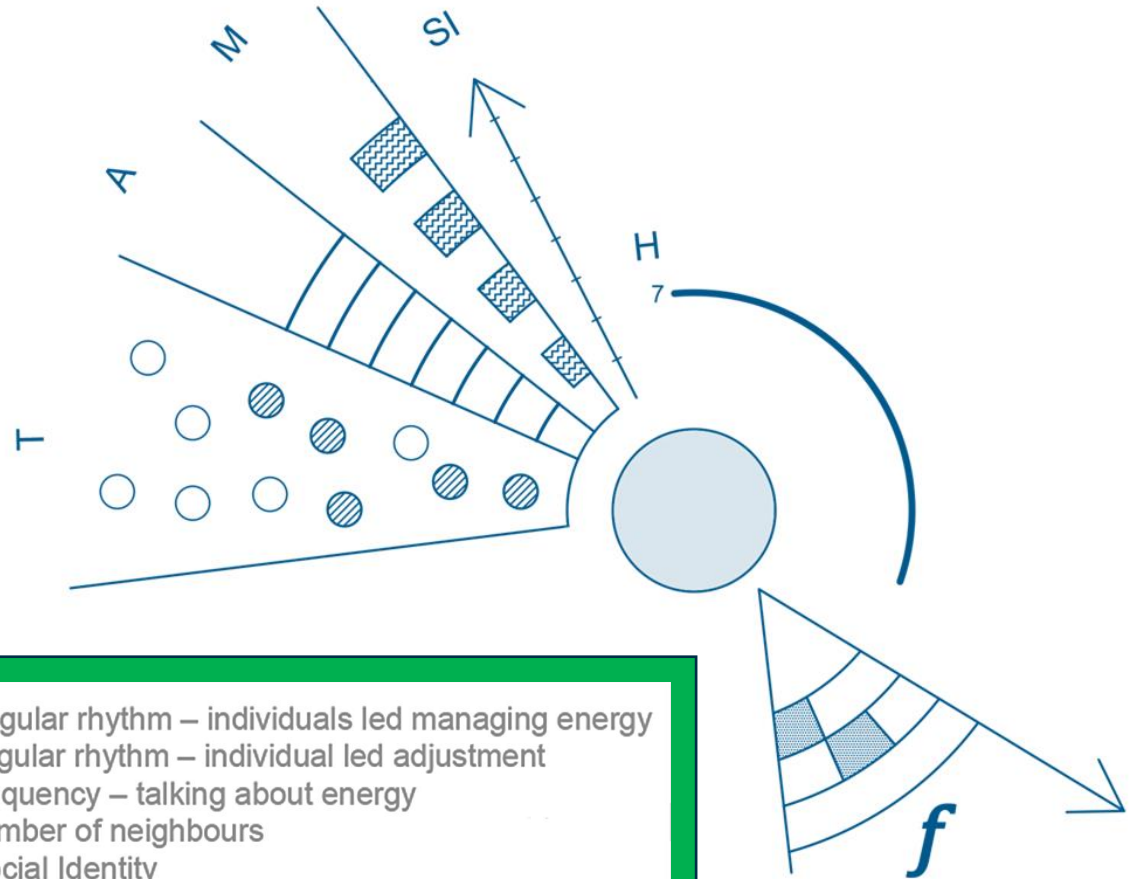
Theme 1 Generous Belongers



M : Regular rhythm – individuals led managing energy
A : Regular rhythm – individual led adjustment
T : Frequency – talking about energy
H : Number of neighbours
SI : Social Identity
F : Frequency of meeting neighbours

FINDINGS

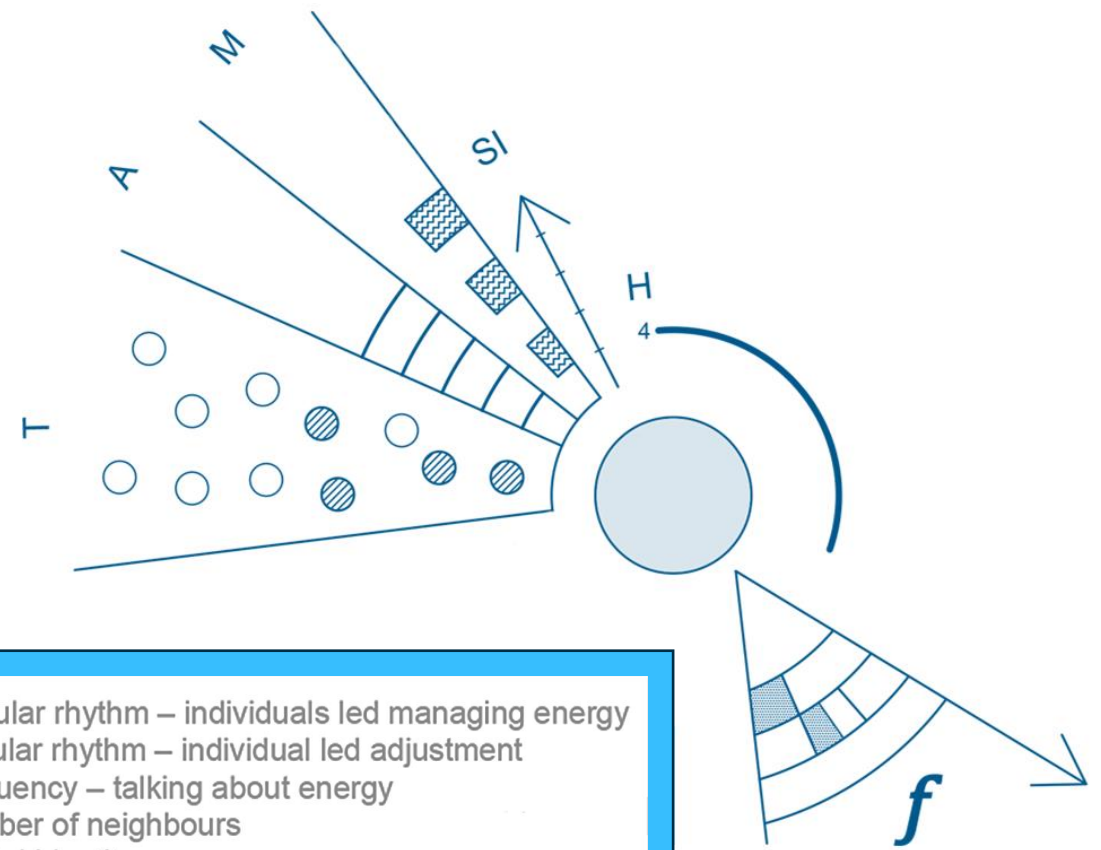
Theme 2 Aware Belongers



M : Regular rhythm – individuals led managing energy
A : Regular rhythm – individual led adjustment
T : Frequency – talking about energy
H : Number of neighbours
SI : Social Identity
F : Frequency of meeting neighbours

FINDINGS

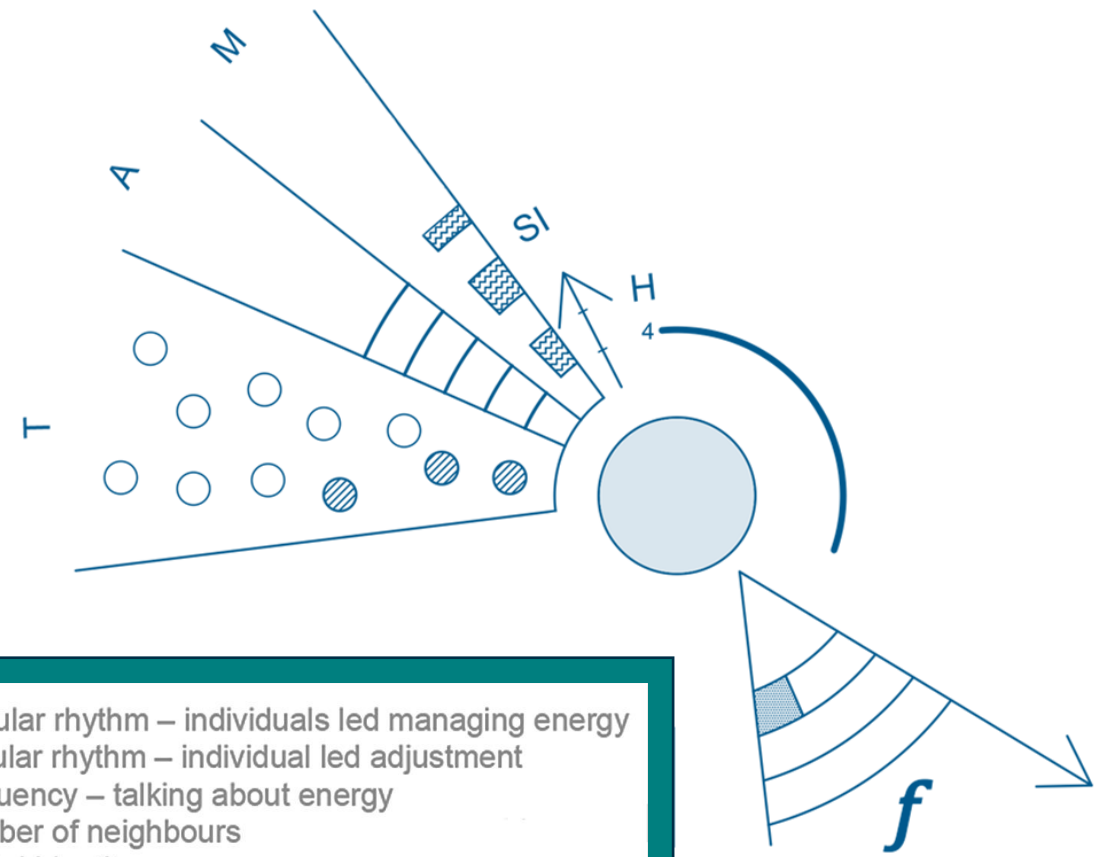
Theme 3 Distributed Belongers



M : Regular rhythm – individuals led managing energy
A : Regular rhythm – individual led adjustment
T : Frequency – talking about energy
H : Number of neighbours
SI : Social Identity
F : Frequency of meeting neighbours

FINDINGS

Theme 4 Disengaged Belongers



M : Regular rhythm – individuals led managing energy
A : Regular rhythm – individual led adjustment
T : Frequency – talking about energy
H : Number of neighbours
SI : Social Identity
F : Frequency of meeting neighbours

Implications

- ★ The implications of this research are twofold:

First, it offers a nuanced understanding of **how social relations and identities influence energy management** in households, particularly **in energy crisis scenarios** such as peak load reduction.

Second, this study has significant implications for the **development of smart energy system policies and flexible energy frameworks**, both in the UK and elsewhere.

Acknowledgements

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References

- Hargreaves T. and Middlemiss L. "The importance of social relations in shaping energy demand," *Nature Energy*, vol. 5, no. 3, pp. 195-201, 2020, doi: 10.1038/s41560-020-0553-5.
- Padovan D. et al., "Collective Action Initiatives. Some theoretical perspectives and a working definition," Torino: COMETS, 2019.
- Gregg J. S. et al., "Collective Action and Social Innovation in the Energy Sector: A Mobilization Model Perspective," *Energies*, vol. 13, no. 3, 2020, doi: 10.3390/en13030651.
- Shortall R., Mengolini A., and Gangale F., "Citizen Engagement in EU Collective Action Energy Projects," *Sustainability*, vol. 14, no. 10, 2022, doi: 10.3390/su14105949.
- Meij E., Haartsen T., and Meijering L., "The time and place of social mixing: Everyday rhythms of long-term residents and newcomers in a Dutch neighborhood," *Environment and Planning C: Politics and Space*, vol. 39, no. 8, pp. 1809-1826, 2021, doi: 10.1177/2399654421997410.
- Hogg M., "Social Identity Theory," in *Understanding Peace and Conflict Through Social Identity Theory: Contemporary Global Perspectives*, S. McKeown, R. Haji, and N. Ferguson Eds., D. J. Christie, Ed. Switzerland: Springer Nature, 2016.
- Thomas E., McGarty C., and Mavor K., "Group interaction as the crucible of social identity formation: A glimpse at the foundations of social identities for collective action," *Group Processes & Intergroup Relations*, vol. 19, no. 2, pp. 137-151, 2015, doi: 10.1177/1368430215612217.
- Holmes T., "Roles, responsibilities and capacities: Theorizing space, social practice, and the relational constitution of energy demand in and beyond Manchester," *Energy Research & Social Science*, vol. 82, 2021, doi: 10.1016/j.erss.2021.102293.
- Shove E, Walker G. What is energy for? Social practice and energy demand. *Theory, culture & society*. 2014 Sep;31(5):41-58.
- Morgan L. and Nica A. "Iterative Thematic Inquiry: A New Method for Analyzing Qualitative Data," *International Journal of Qualitative Methods*, vol. 19, 2020.
- Oliveira S., et al. "Assemblages of home energy rhythms - from the individual to the collective " presented at the *Ethnographies of Urban Data and Technology*, Copenhagen, 2022. [Online]. Available: <https://urbanair.itu.dk/conference/>
- Oliveira S., et al. "From individuals to collectives in energy systems – A social practice, identity and rhythm inspired lens" *ERSS*, 2023.

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