

Master Thesis

Integrated PV Systems: a Decision Experiment

■ Background

Renewable energy generation offers opportunities to improve local resilience and support net zero goals. However, renewables projects have encountered resistance both within local communities and with the wider public due to privatization of the gains from large-scale installations such as solar parks that cause landscape impairment. This study develops a decision experiment to examine preferences for alternative system design integrated within current land-use practices. Across land-use scenarios, the experiment investigates preferences for system attributes selected to capture trade-offs between presumption concepts, decarbonization, climate adaptation, and resource management. The choice experiment is designed to quantify respondent's willingness to accept integrated PV systems and to estimate the relative importance of co-benefits such as decarbonization of local energy use, community implication and sustainability.

Objectives of the thesis

The goal of this thesis is to implement a Discrete Choice Experiment (DCE) that will empirically examine preferences for PV deployment in rural areas. Specifically, in an online experiment we will establish the stated preference ranking among different options for PV systems. The acceptability of a particular system can vary across different user groups depending on socio-economic characteristics and lifestyles. The study will benefit from existing foundations as the experimental design and accompanying survey are already developed, the experimental setup is mostly programmed. In a first step, the efficient choice design for the experiment will have to be calculated and the programming finalized. Second, a first pilot study will be run in the experimental lab. Third, once the insights from the pilot study are incorporated, the full experiment will be conducted online. Finally, the empirical data will be analyzed and results interpreted.

■ Requirements

- Interest in energy and social science topics (especially integrated PV and user behavior) and empirical research (e.g. decision making, experiments)
- Willingness to work independently
- Ideally existing skills in programming and/or statistical data analysis (e.g. R, Python)

■ Start date/duration/language

Thesis can start immediately / 3-6 months / English required

■ Contact person

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