

Behavioural responses to photovoltaic systems in the UK domestic sector

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ABSTRACT

Microgeneration technologies, such as solar photovoltaics (PV), have recently been cited as a potential solution to energy policy challenges including climate change and security of supply. International evidence suggests that the benefit of a PV installation will depend on both the amount of electricity generated and the technology's influence on energy consumption behaviour. This study seeks to quantify and explain this 'double-dividend' effect by examining photovoltaics in the UK domestic sector.

Questionnaire and interview data were collected from owner-occupier PV households, revealing that the installation of PV increased awareness of electricity generation and consumption in the home. Guided by monitoring devices, an overall electricity saving ($\approx 6\%$) and load-shifting behaviours were observed. Although the installation of PV followed a series of other energy-saving measures, respondents showed an ongoing commitment to environmentally-responsible behaviour and further reduction of the carbon footprint of household energy consumption. PV household electricity data and interviews with industry and government found that electricity tariffs, metering and other institutional constraints were important determinants of a household's behavioural response. As these parts of the domestic PV system are largely still evolving, it is recommended that households and industry work together to develop systems that support sustainable electricity use, for both the early adopting households studied here and future adopters.