

Feed-in Tariff design in the UK; cities and economic inequality.

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Energy/Environment/Climate Change and Smart Cities
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Overview

1. Policy context- why is there a subsidy for distributed electricity generation?
2. Feed-in Tariff- how does it work?
3. Policy impacts, intended and unintended
4. Looking to the future

Policy context- why are we doing this?

- ▶ The UK energy policy *trilemma*
 - ▶ Contribution to security of supply?
 - ▶ UK environmental targets (Scottish, UK and EU)
 - ▶ Affordability
- ▶ Pre-FITs arrangements

Feed-in Tariff- how does it work?

- ▶ Households must bear the upfront capital cost of installing a qualifying device
- ▶ FITs rate is guaranteed, and devices installed prior to the advent of FITs can apply for recognition
- ▶ Financial benefits to households after the device has been installed come in three forms:
 - ▶ Reduced imports of electricity from the grid
 - ▶ Payment per unit of electricity generated
 - ▶ Payment per unit of electricity exported back onto the grid
- ▶ Cherrington et al (2013) suggest that even after reductions in the tariff rate announced in 2010, the average ROI lies between 7 and 9%.

Evidence on impacts

- ▶ DECC's (2013) assessment of the impact of FITs²
 - ▶ Based on correlation analysis

- ▶ Allan & McIntyre (201x)³
 - ▶ An econometric assessment of the factors associated with uptake of these devices.
 - ▶ Based on postcode level FITs accreditation data, aggregated to English LAs
 - ▶ Incorporating key (expected) determinant, including climate, housing characteristics, economic and socioeconomic determinants, environmental attitude proxies, etc

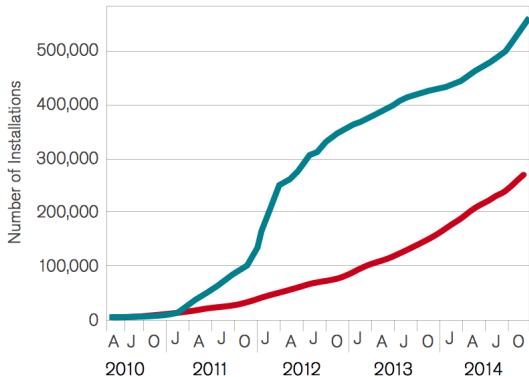
²Paper titled: 'Identifying trends in the deployment of domestic solar PV under the feed-in tariff scheme'.

³Paper (provisionally) titled: 'Green in the heart or greens in the wallet? The spatial uptake of small-scale renewable technologies'.

Policy impacts, **intended** and unintended

- ▶ Significant increase in domestic installation of distributed electricity generation devices

FIT installations uptake by year



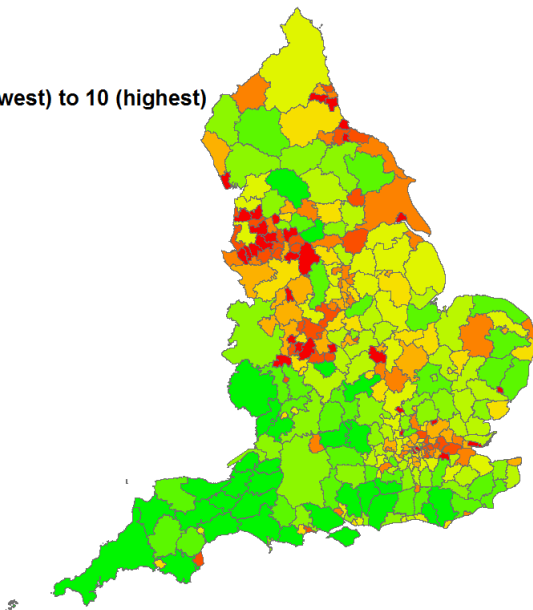
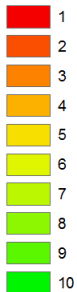
Policy impacts, **intended** and unintended

- ▶ In our work- no apparent link between environmental sentiment and adoption of these devices in the UK -> financial motives appear to be better at explaining the adoption of these devices.
- ▶ Existing technological knowledge/capacity key to subsequent adoption
- ▶ Solar irradiation not important
- ▶ BUT, not so prevalent in cities, why?
 - ▶ Geography - rural areas have higher adoption rates (greater density of PV installations)
 - ▶ Housing characteristics - detached houses have higher adoption rates
 - ▶ Renting - areas with more social housing have lower uptake rates
 - ▶ Cost of living/difficulty of capital accumulation/age composition

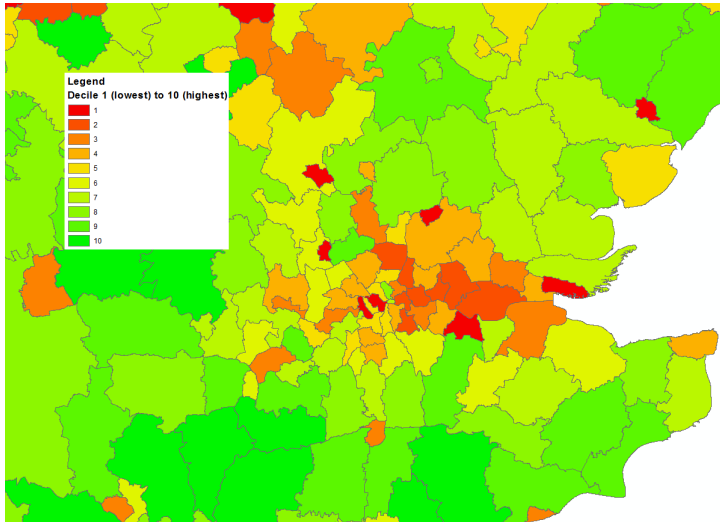
Pre-FITs installations per HH

Legend

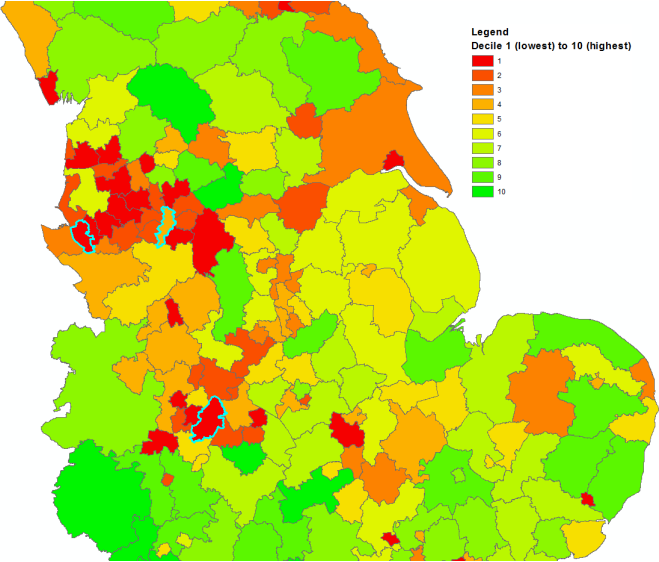
Decile 1 (lowest) to 10 (highest)



Pre-FITs installations per HH



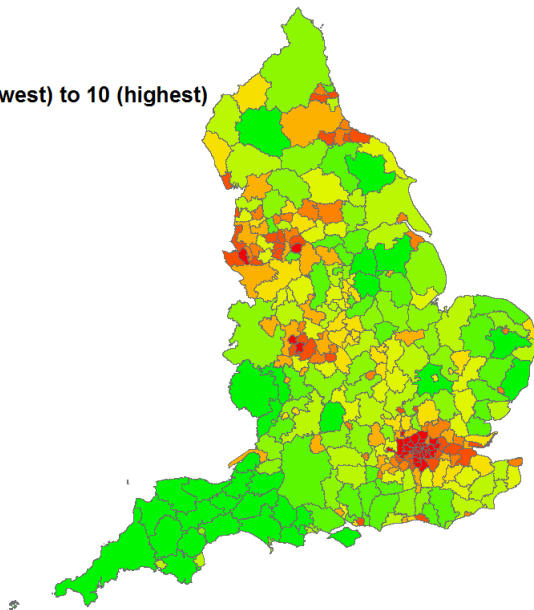
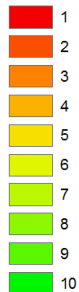
Pre-FITs installations per HH



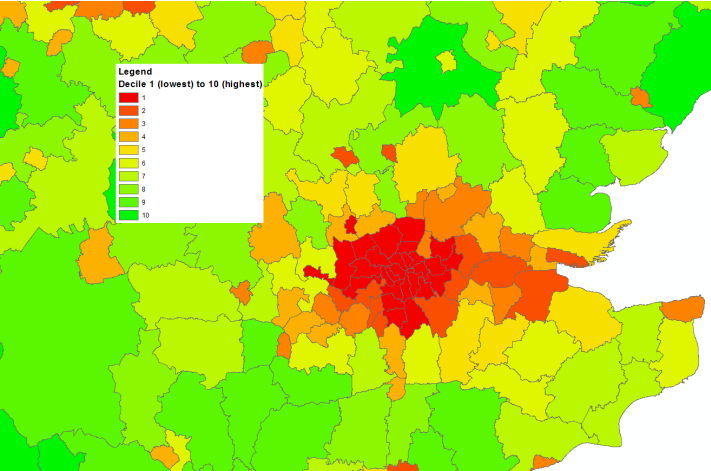
Post-FITs installations per HH

Legend

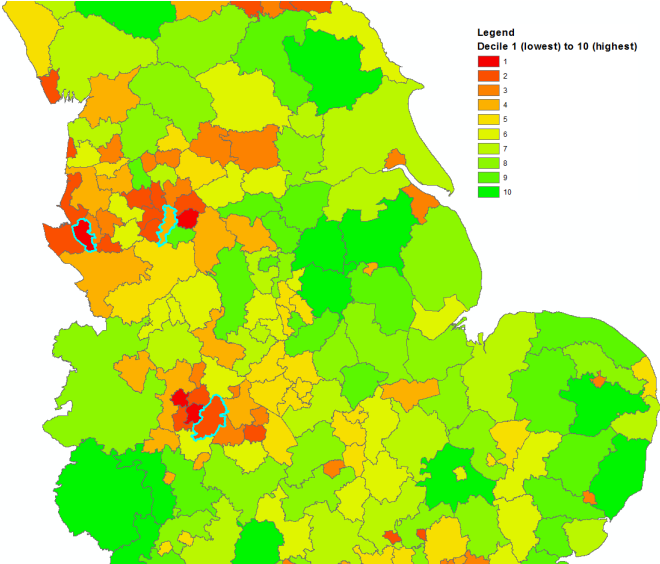
Decile 1 (lowest) to 10 (highest)



Post-FITs installations per HH



Post-FITs installations per HH



Policy impacts, intended and **unintended**

- ▶ Transfer from North to South, Urban to Rural?
- ▶ Poorer to richer?
- ▶ Exacerbate intra-regional inequality?

- ▶ Environmental targets still challenging, as are energy targets
 - ▶ Energy security and climate change are not the only elements of the *energy trilemma*, affordability is also supposed to be central to our design of energy policies
- ▶ Political economy of these policies can't be ignored
- ▶ Is this type of distributed energy generation subsidy scheme a good use of scarce resources?

Thank you

Any questions?

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