Green Homes Grant:

A GIS analysis of installations from E.ON under 'phase 1 A'

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Abstract

- Green Homes Grant was a bilateral scheme with energy companies to install energy saving retrofits in domestic properties.
- GIS analysis used to observe socio-economic characteristics of the areas receiving high amounts of retrofits (prewar dwellings and IMD scores at the LSOA level)
- Overall retrofits were mostly installed in deprived areas with high frequencies of prewar dwellings- these dwellings are likely to be inefficient enhancing the vulnerability of inhabitants against fuel poverty.
- Enhancing the efficiency of a property reduces its emissions and can lift a household out of fuel poverty

Background

- Green Homes Grant was a bilateral government scheme with participating energy suppliers to cover 66% of energy saving measures up to the value of £5,000 (£10,000 for disadvantaged households) through the application of vouchers.
- Aim of scheme was to decarbonise the UK residential sector and/or reduce the level of fuel poverty. Scheme was scrapped after a year due to COVID-19 pandemic and excessive red tape for suppliers.
- All GIS analysis was on high value vouchers (£5,000-£10,000) to explore the socio-economic characteristics of the areas mainly receiving these retrofits.

Objectives

1. To assess the spatial scale of retrofits installed by E.ON under the Green Homes Grant.
2. To observe the socio-economic characteristics of areas with high frequency of retrofitting's installed under the Green Homes Grant.
3. To provide recommendations of future areas to target for retrofitting's with schemes similar to the Green Homes Grant.

Methods

- Process of data-preprocessing- ensuring data was ready to use for analysis (473 retrofits in total)
- Observing the postcodes for all the retrofits to determine areas with high frequency.
- Data packs for IMD and frequency of different house ages obtained from CDRC for the areas of high frequency- Greater Manchester, Leicester, Newcastle, Nottinghamshire and Derbyshire, Stoke-on-Trent, and Staffordshire.
- Excel spreadsheets for each area joined with LOSA code from the shapefiles within QGIS.
- GIS maps created for the location and type of retrofit in relation to an LSOA's frequency of pre war dwelling counts and IMD scores.

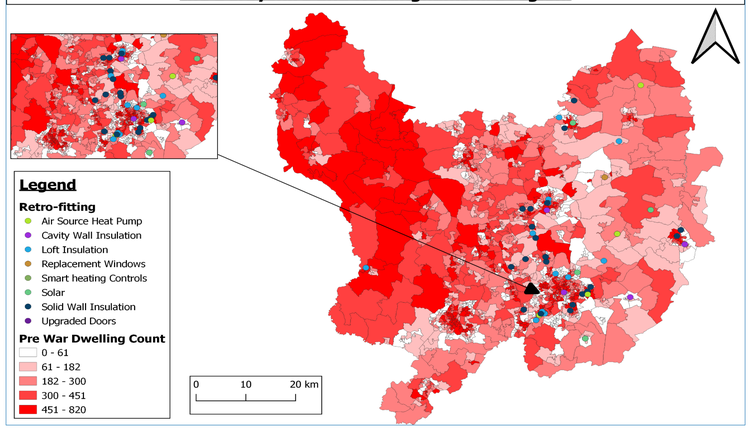
Channel	Postcode Area	Property Type	Detachment Type	Bedrooms	Main Heating	Main Heating Fuel
Air Source Heat Pump	NG4 2	Flat	Flat	1	Electric Storage Heaters	Gas
Solid Wall Insulation	NG17 9	House	Mid-Terrace	2	Boiler (Standard)	Gas
Solid Wall Insulation	DE14 2	House	Mid-Terrace	2	Boiler (Standard)	Gas
Solid Wall Insulation	LE2 0	House	Mid-Terrace	2	Boiler (Standard)	Gas
Room in Roof Insulation	NE3 3	House	Semi-Detached	2	Boiler (Standard)	Gas
Solid Wall Insulation	SK3 9	House	End-Terrace	2	Boiler (Standard)	Gas
Solid Wall Insulation	LE3 6	House	Semi-Detached	3	Boiler (Standard)	Gas
Solid Wall Insulation	LE5 4	House	Semi-Detached	3	Boiler (Standard)	Gas
Air Source Heat Pump	CA16 6	House	Detached	3	Boiler (Standard)	LPG (Bulk)
Air Source Heat Pump	OL4 5	House	Mid-Terrace	2	Room Heaters	Electricity
Air Source Heat Pump	NG9 1	House	End-Terrace	3	Boiler (fire with back boiler)	Solid Fossil Fuel
Solid Wall Insulation	NG15 7	House	Mid-Terrace	3	Boiler (Standard)	Gas
Solid Wall Insulation	NG24 2	House	Mid-Terrace	3	Boiler (Standard)	Gas
Solid Wall Insulation	NG4 3	House	Semi-Detached	3	Boiler (Standard)	Gas
Solid Wall Insulation	NG9 1	House	Semi-Detached	3	Boiler (Standard)	Gas
Solid Wall Insulation	NG17 7	House	Semi-Detached	2	Boiler (Standard)	Gas
Solid Wall Insulation	DE14 2	House	Mid-Terrace	5	Boiler (Standard)	Gas
Solid Wall Insulation	LE3 9	House	Mid-Terrace	3	Boiler (Standard)	Gas
Solid Wall Insulation	ST5 5	House	Semi-Detached	4	Boiler (Standard)	Gas
Solid Wall Insulation	LE2 0	House	Mid-Terrace	3	Boiler (Standard)	Gas

Results

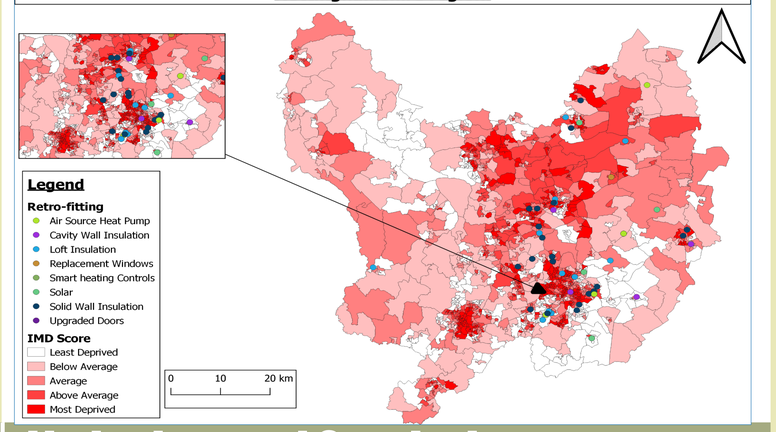
- Two outputs per each of the five areas (retrofits with IMD and retrofits with frequency of prewar dwelling)
- Overall retrofits were mostly in the areas of high deprivation and high frequency of pre-war dwelling- Retrofits could therefore be installed in inefficient properties which can see improvements in decarbonising the sector and lift a household out of potential fuel poverty.
- Liverpool was not an area targeted, but an area which sees high deprivation (North) and high counts of pre war dwellings (Central and North). These are likely to be inefficient dwellings and could be targeted for future use.

Results

Location of residential retro-fitting's with the frequency of pre war dwellings for the Derbyshire and Nottinghamshire region.



Location of residential retro-fitting's with IMD score for the Derbyshire and Nottinghamshire region.



Limitations and Conclusions

- Entire postcode for location of retrofit was not available e.g. WS8 0H. This created area crossover and prevented the plotting of some retrofitting's
- IMD and dwelling age only gives limited indication of the efficiency of a dwelling- could use additional data like EPC ratings to geta better indication on the efficiency of households
- LSOA's give a false representation. Dwelling could be modern in an LSOA with a high frequency of pre-war dwellings.
- Overall E.ON has done an effective job of installing retrofits in the 'correct areas' (in LSOA's with high frequencies of pre-war dwellings and high IMD deprivation)
- Liverpool is a city with high populations and potentially low efficiencies- this is a place of focus for retrofit installations.
- Fuel poverty and high emissions within the sector are a significant problem- after the scrapping of the GHG the UK needs a scheme to try and combat these issues.