

Evaluating the Impacts of the Kirklees Warm Zone Scheme

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Why this study is important

- We need to know more about the extent to which retrofit schemes actually work.
- To what extent do they change domestic energy use, reduce fuel poverty, reduce carbon emissions?
- To what extent are outcomes affected by performance gaps and rebound effects?
- How do they impact on lower, middle and upper income households?
- What is the direct cost-benefit case, what are the broader indirect benefits?
- There are few large scale, ex post evaluations of the actual impacts of retrofit schemes.

The KWZ Scheme (1)

- One of the largest retrofit schemes completed in the UK to date.
- Ran from 2007 to 2010 with a budget of £21m
- Initiated by Kirklees Council, managed Yorkshire Energy Services (not for profit) with insulation installed by the private sector.
- Offered free energy assessments and surveys and, where technically feasible, free loft and cavity wall insulation to all households in the area.
- Of the 176,000 households in the area, 134,000 had a preliminary (doorstep) assessment, 111,000 of which went on to have a fuller survey and 51,000 households had measures installed.
- A total of 64,000 measures were installed, including insulation in 43,000 lofts and 21,000 cavity walls.

The KWZ Scheme (2)

- 30% participation rate was secured through sustained marketing and repeated household visits from a trusted provider that placed great emphasis on customer care and the quality of installations.
- It also relied on the provision of insulation measures at no cost with steps (such as assisted loft clearances) taken to limit disruption in participating households.
- KWZ makes a good case study for a large-number, *ex post* analysis because of its scale, geographical and temporal concentration the data on KWZ activity that was collected by the local authority.

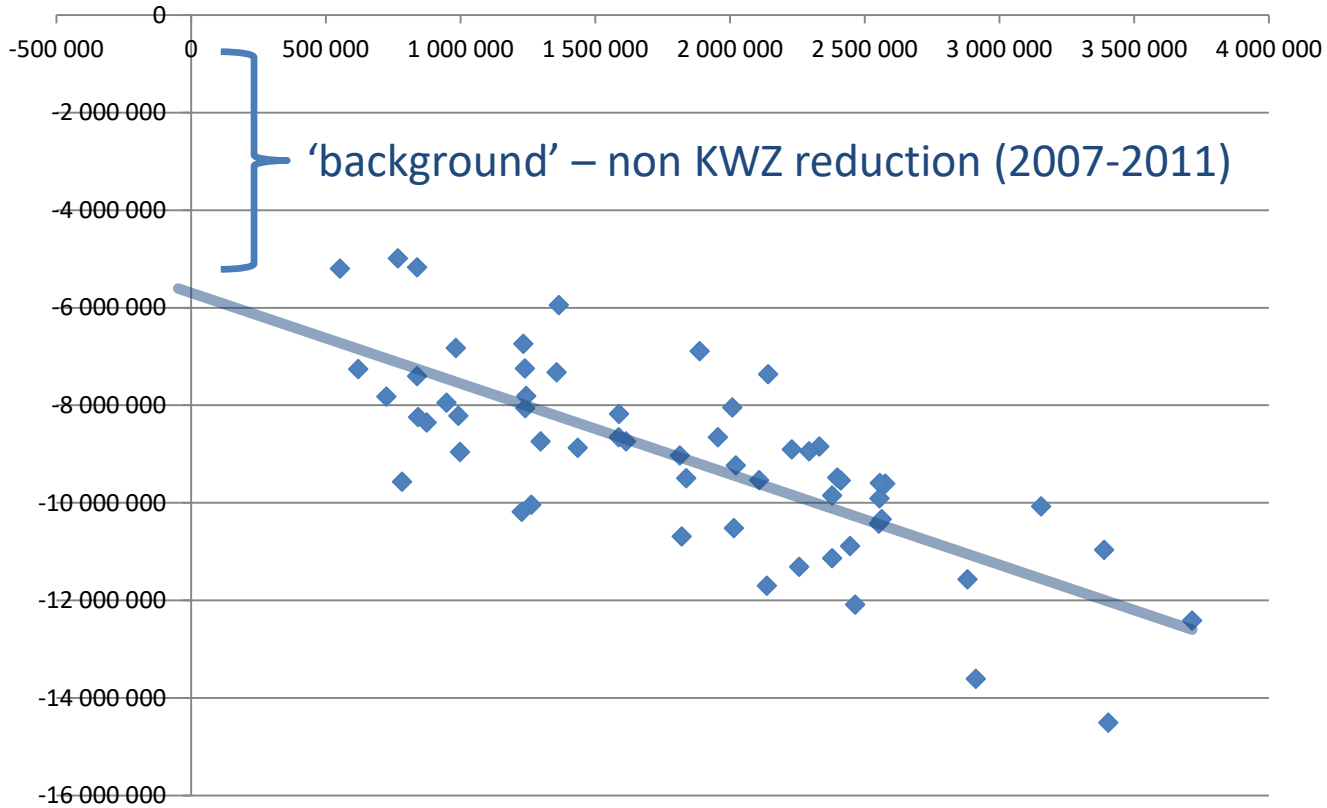
Our Approach

- Data set 1 – on 176,000 households (inc. size, age, type) and insulation measures pre and post KWZ.
- Data set 2 – on household energy at MLSOA level (inc. domestic gas, economy 7, electricity usage) for 58 MLSOAs
- Corrected for changes in numbers of meters and weather
- We predict energy savings from KWZ insulation using two models
- CERT (RdSAP) model used up to 2012
- BRE model developed for Committee on Climate Change
- We examine correlations between actual reductions in energy demand and predicted impacts of different levels of KWZ activity to separate background trends from KWZ impacts.

Correlating Actual and Predicted Impacts

Predicted Impacts (Model 1)

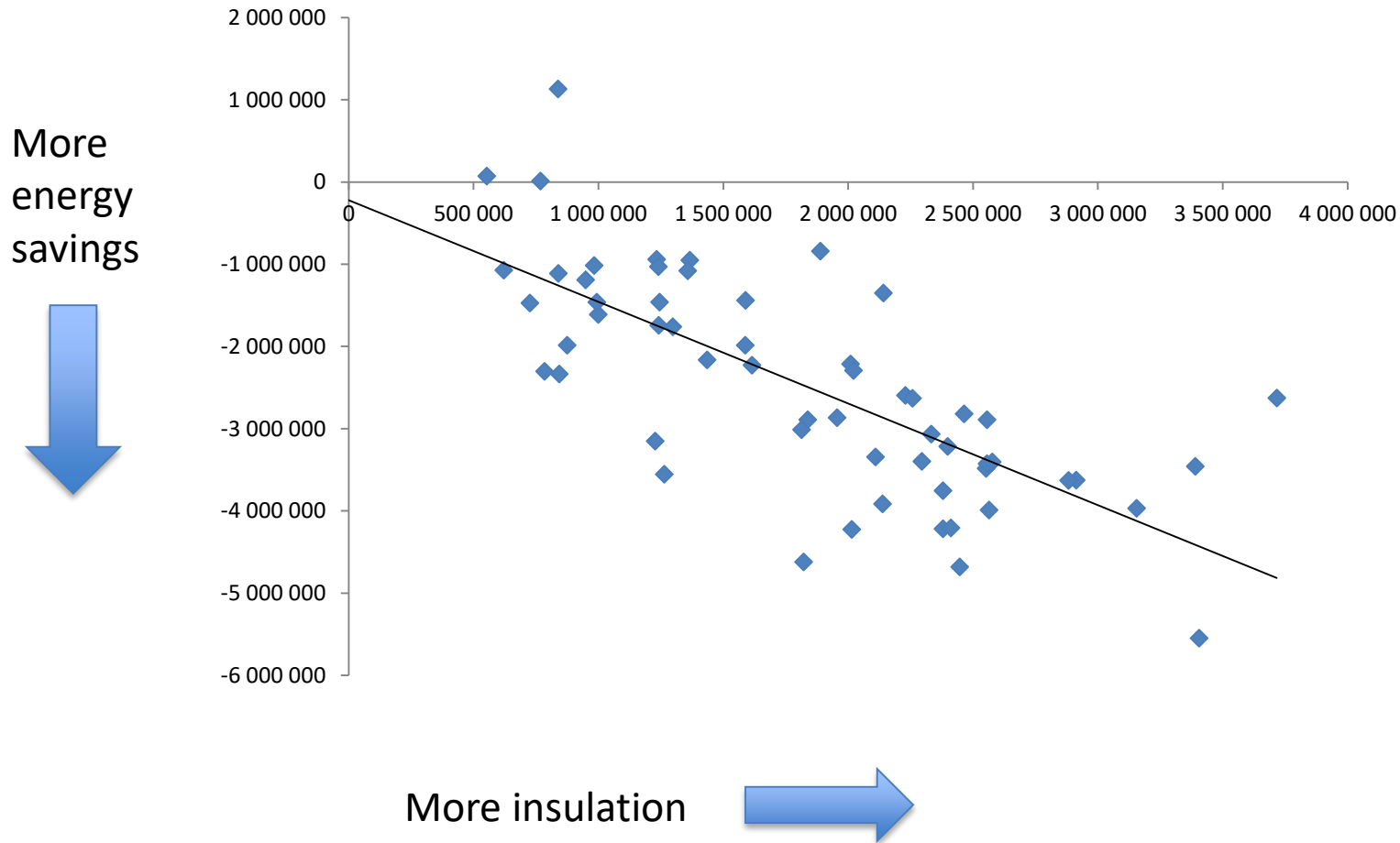
More energy savings



More insulation



Correlating Actual and Predicted Impacts After Adjusting for Background Trends



Impacts Across Income Groups

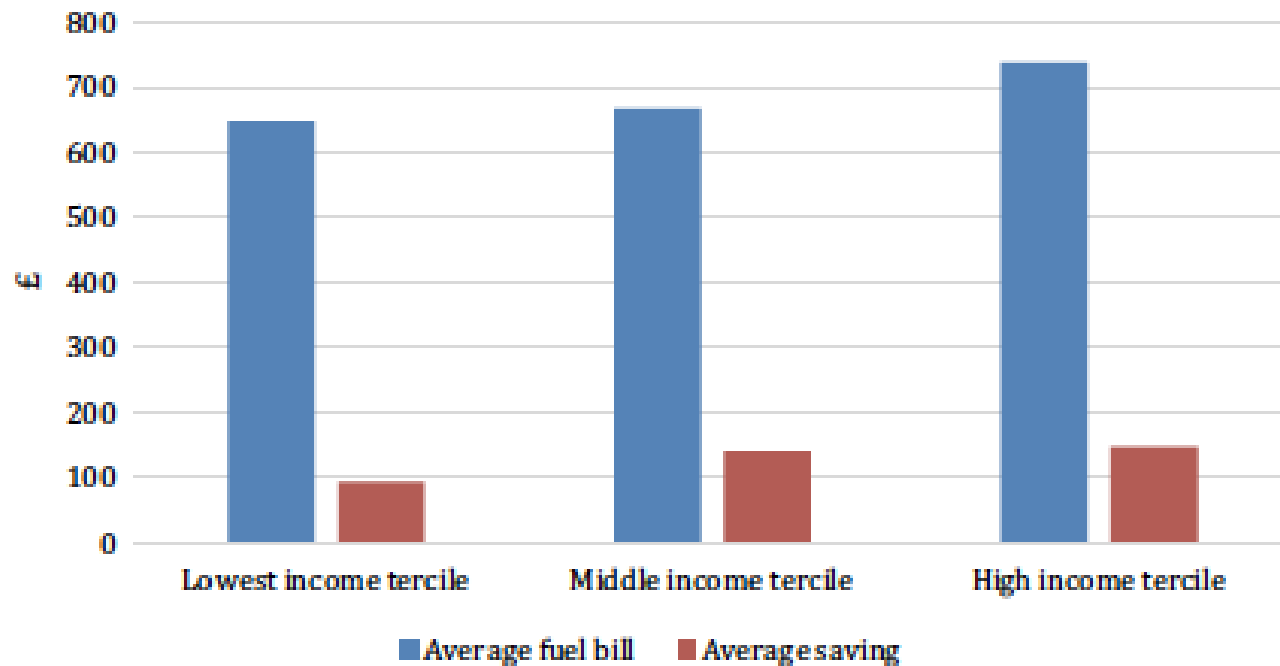


Fig. 3. Average 2011 fuel bills and energy savings for lower, middle and upper income areas.

Key Findings (1)

- BRE model assumes that 44% of the full technical energy saving potential of insulation would be realized in practice.
- Results suggest 76% of potential is actually realized in practice, with 53% of the technical potential realized in the lowest income areas, but 85-93% in the middle and highest income areas.
- CERT model assumes that 50% of the of the full technical energy saving potential of insulation would be realized in practice.
- Results suggest 62% is actually realized in practice, with 49% of the technical energy savings potential secured in the lowest income areas, but 70-71% in middle and higher income areas.

Key Findings (2)

- Losses due to performance gaps and rebound effects are roughly as predicted in lower income areas but are lower than predicted in middle and upper income areas.
- Poorer households split the benefit between improved quality of life and monetary savings. This addresses fuel poverty. Middle and upper income households save more energy and benefit most monetarily.

Key Findings (3)

- In aggregate, we identify a reduction of 4.2% in 2007 levels of household demand for energy for space and water heating that can be attributed to KWZ and a further 12.3% that is independent of KWZ.
- For participating households, this amounts to an average per household KWZ reduction in energy use of 2,655 kWh over the 2007-2011 period due to KWZ, compared to 2177kWh reductions from background trends.

Key Findings (4)

- For its initial investment of £21m, KWZ has generated reductions in energy bills totaling £6.2m a year at 2011 energy prices.
- This is equivalent to an average annual saving of £125 per year at 2011 energy prices for each participating household, which represents a saving on the total average household energy bill of 10.6%.
- In 2011, Kirklees commissioned studies which estimated the non energy related local economic impact at £39m and the health benefits at £3.9m over 5 years.