



# RCUK Centre for Energy Epidemiology

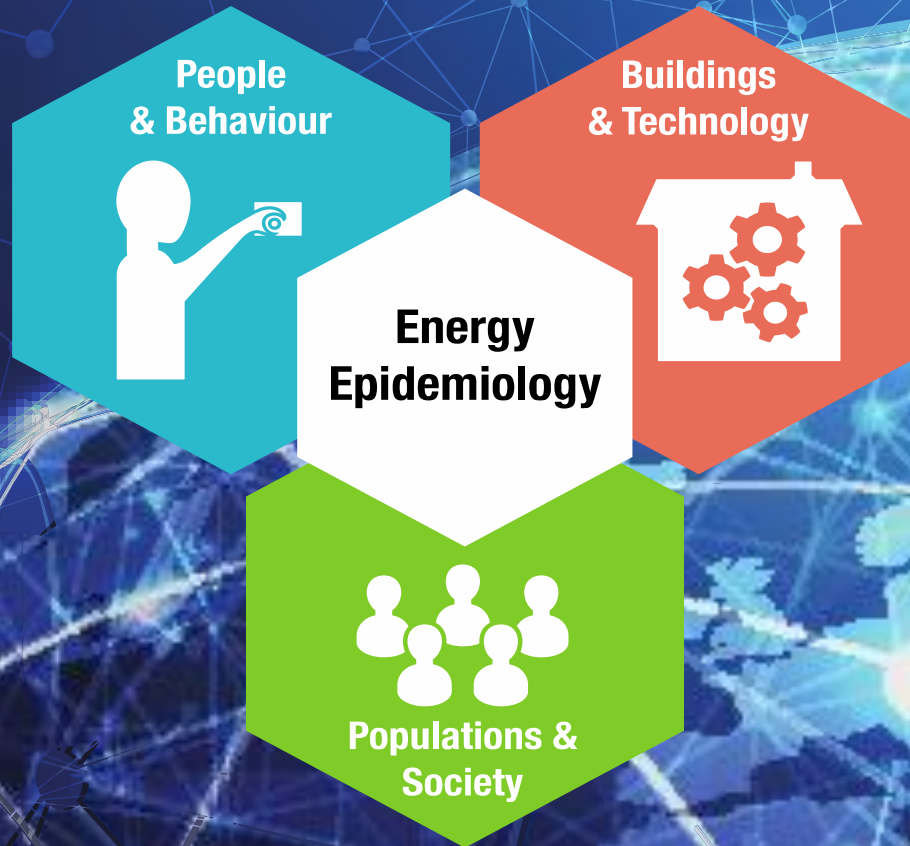
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**IEA EBC Annex 70 Operating Agent**



# What is Energy Epidemiology?



## epidemiology

“epi” - **upon**; “demos” - **the people**;  
“ology” - **logic, study**

The study of what is upon the people – normally applied to the study of health.

## energy epidemiology

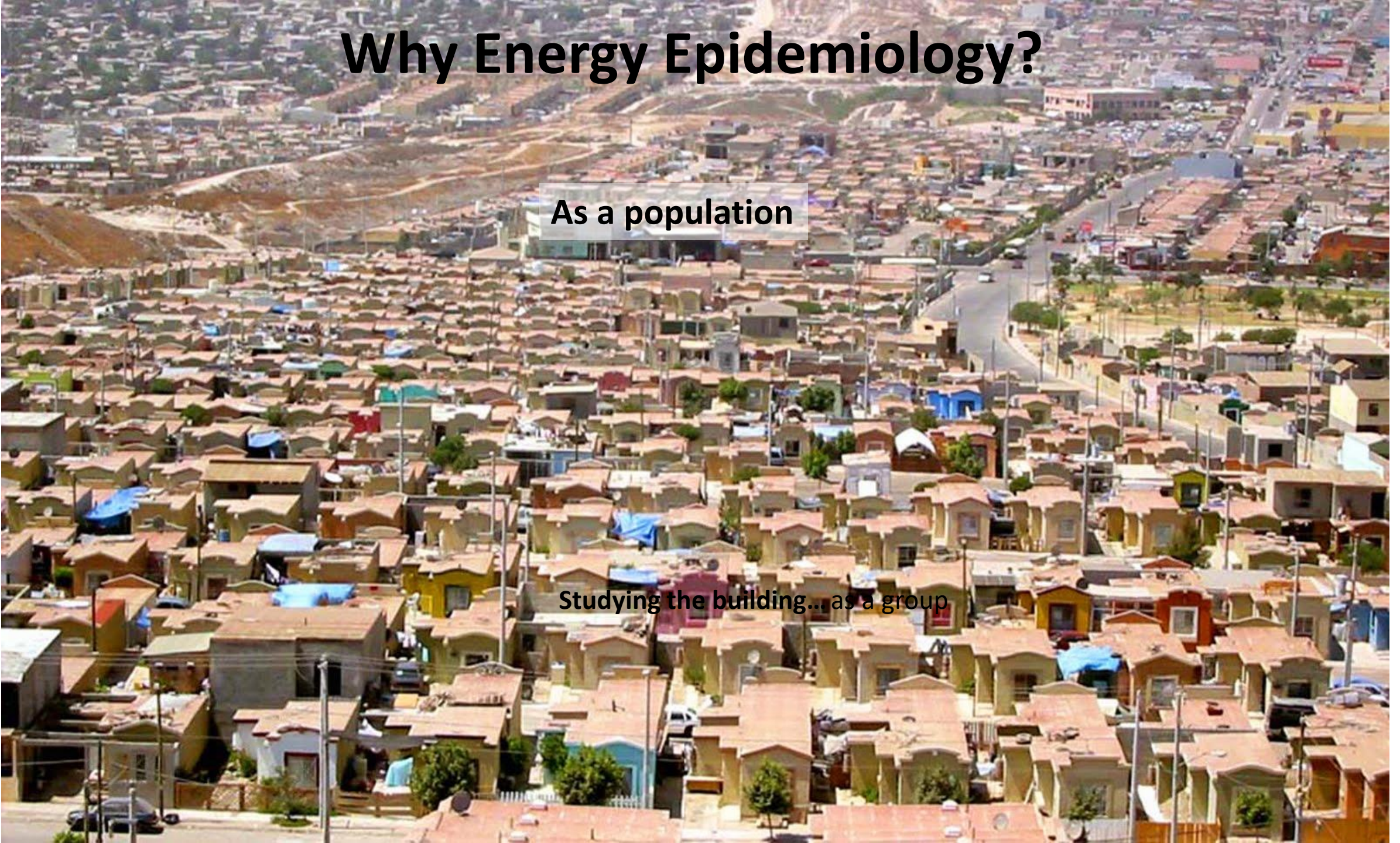
The systematic study of the distributions and patterns of energy use and their causes or influences in populations.



# Why Energy Epidemiology?

As a population

Studying the building... as a group





# UK's Energy Performance Certificates

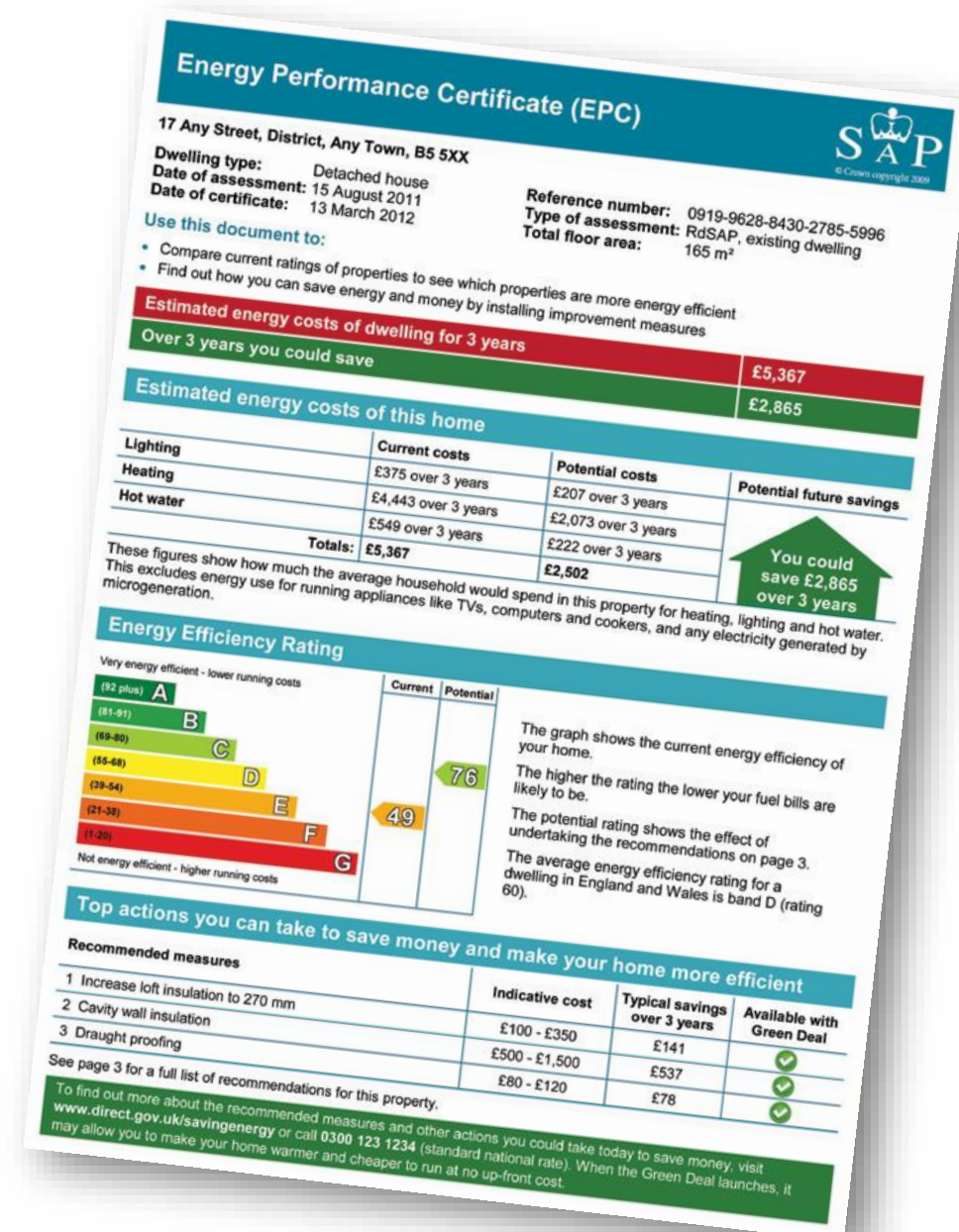
The Energy Performance Certificate (EPC) is a measure of the **relatively energy performance of a dwelling**. It is generated using a **government-approved method**.

An EPC is required for **all rentals or sales of dwellings** in the UK and is **valid for 10 years**; 14M logged, ~6 M actual.

An accredited Energy Assessor visits the property to **collect data** required for assessing energy features.

The assessment is based on the **construction and type of dwelling and relevant fittings** (heating systems, insulation or double glazing, for example).

The EPC will also states what the energy-efficiency rating could be **if improvements are made**, and highlights **cost-effective ways** to achieve a better rating.



# Challenges of the scheme

## Strengths:

- Common method
- Valid for a reasonable period
- Intuitive A-G scale
- Provides 'on sheet' advice

## Weaknesses:

- Poor quality data collection practices
- Inconsistent ratings for similar properties
- Low overall priority for homeowners
- Energy savings advice not accessible

### TOP 20 PROPERTY 'MUST-HAVE' FEATURES

1	Central heating	79%
2	Double glazing	74%
3	A garden	71%
4	Secure doors and windows	70%
5	Off road parking	58%
6	A bath tub	57%
7	Local shops and amenities	55%
8	Friendly neighbours	54%
9	A good, reliable broadband connection strong enough to stream films and TV	53%
10	A good energy efficiency rating	50%
11	A land line telephone	50%
12	A good TV signal	49%
13	A separate shower cubicle	47%
14	Cavity wall insulation	47%
15	At least two toilets	45%
16	A dining room	44%
17	A reliable and clear mobile phone signal	44%
18	A garage	43%
19	A living room big enough for a large, flat screen TV	39%
20	An en-suite bathroom	34%

Source: GoCompare.com



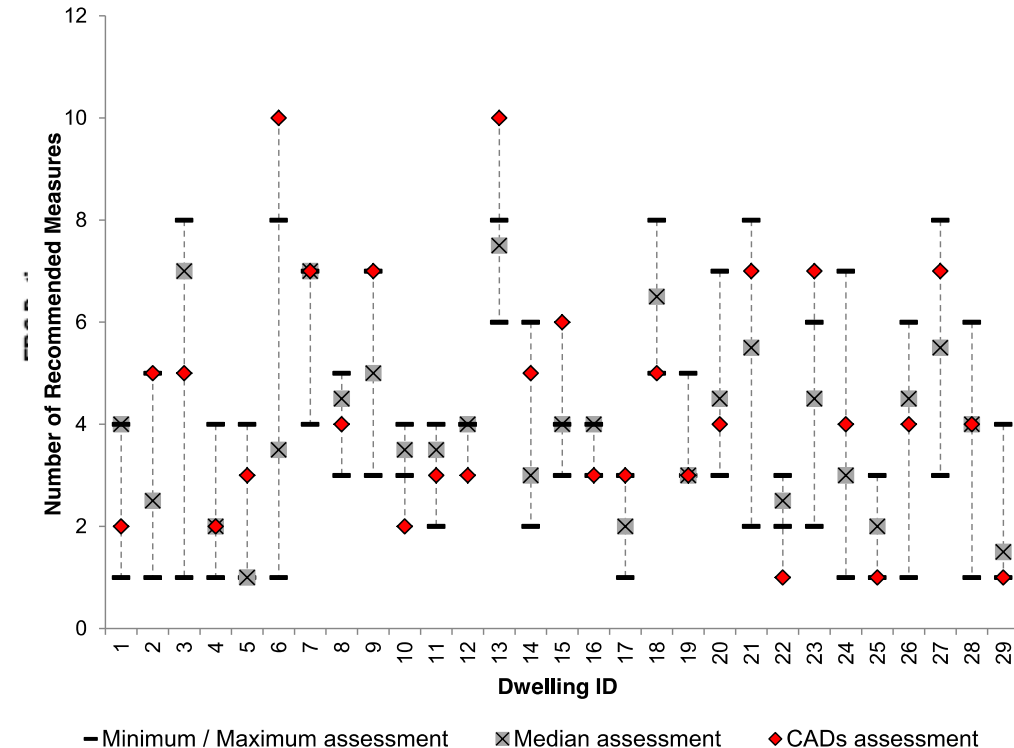
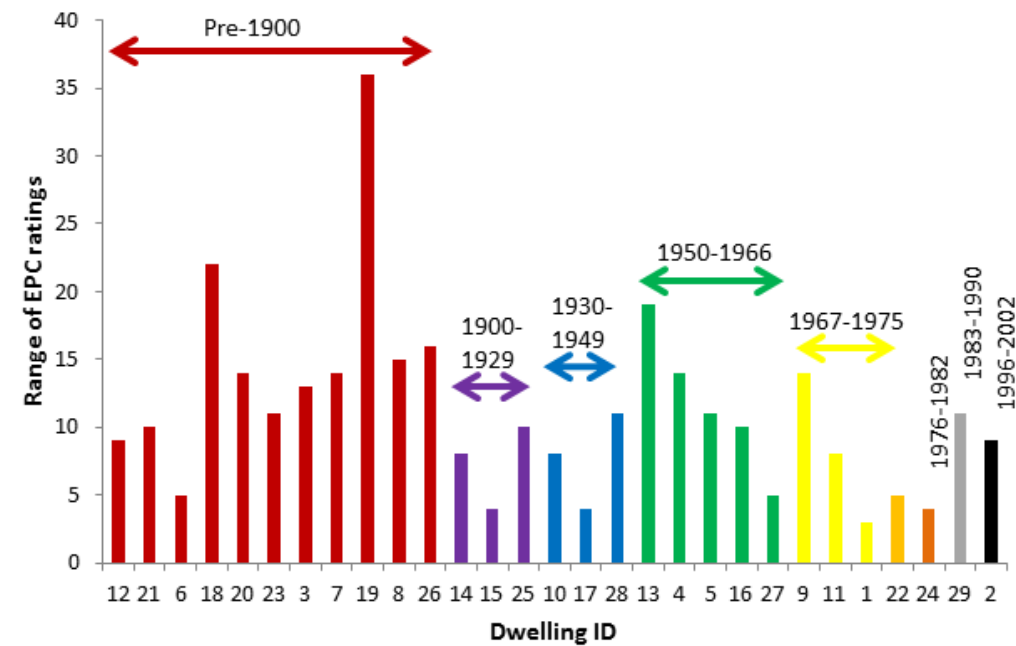
# Challenges of the scheme

EPC assessments are of low quality and inconsistent for even the same dwellings.

Government 'Mystery shopper' report found that **2/3 of EPC assessments spanned 2 bands** and the **number of recommendations varied widely** for the exact same homes.

## Considerations:

- Standardised inputs should bring **consistency** and **minimal data requirements**.  
But,  
**Not suitable for tailored advice.**
- House specific inputs brings **greater accuracy** of energy performance **rating and advice**  
But,  
**Need greater assessor skill and better models**



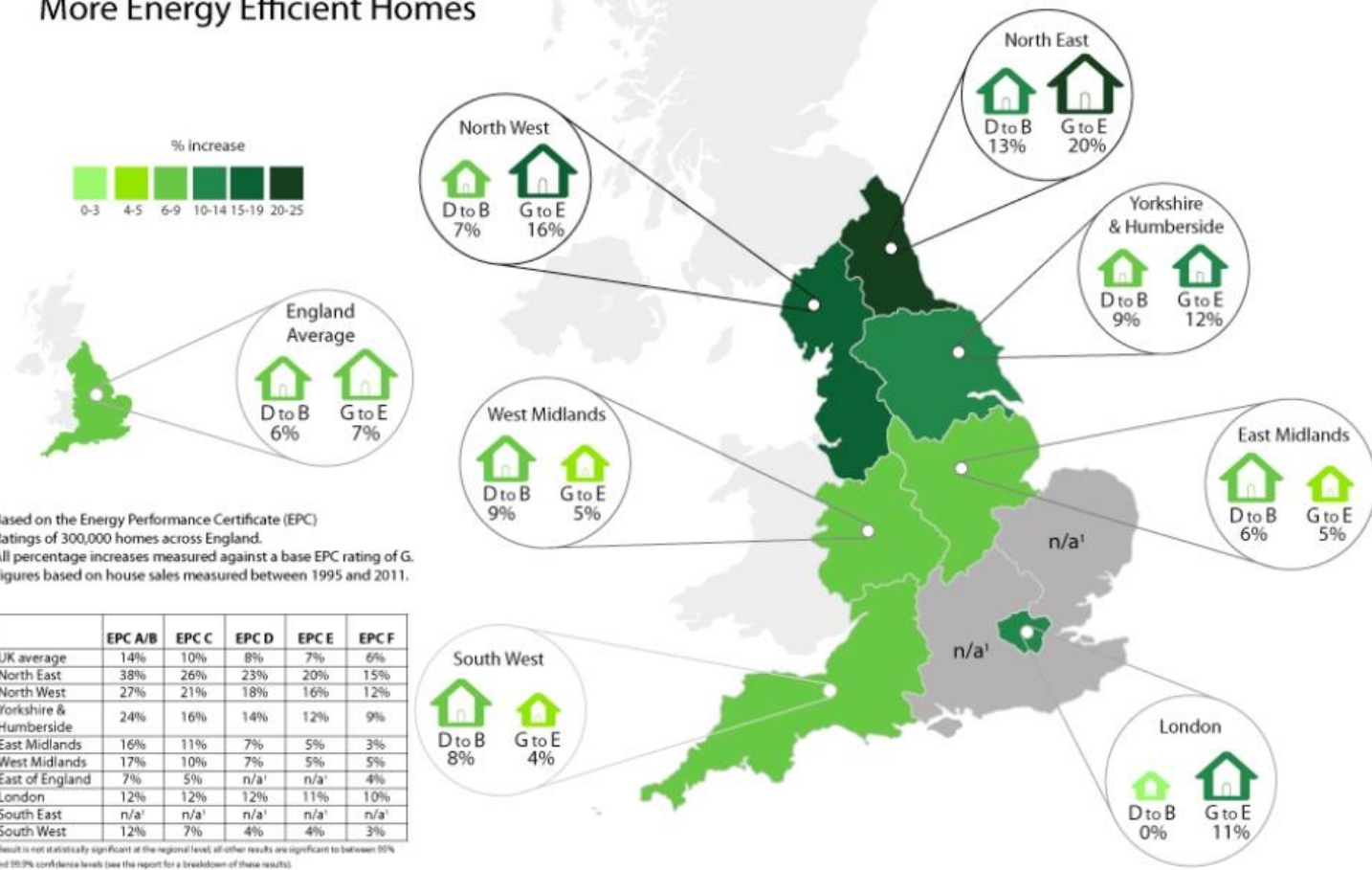
# Opportunities of the scheme

Does the EPC impact home prices in the UK?

UK evidence shows that EPC's are related to **tangible increases in dwelling value** at the point of sales.

**Higher energy performance ratings showed some association with higher purchase prices**; approximately 5% and 1.8% for the higher bands (compared to the middle band).

Average House Price Increases for More Energy Efficient Homes





# Opportunities of the scheme

Improving data and energy performance by integrating energy performance rating into the mortgage lending process?

An opportunity to increase the importance of energy performance in the lending and purchasing process in due to the **Mortgage Market Review (MMR)**.

Under the MMR, lenders are required to assess how much **loan a customer can afford** and therefore to determine what their potential incomes and outgoings are.

Mortgage lenders must now consider to a greater extent the prospective **borrowers' outgoings when calculating the affordability** of the expected repayments.





# The LENDERS project linking home energy performance to mortgages

**1** The LENDERS project is undertaking large scale data research and analysis to establish if there is a reliable link between the energy efficiency information available about homes and the actual fuel costs that those homes incur.



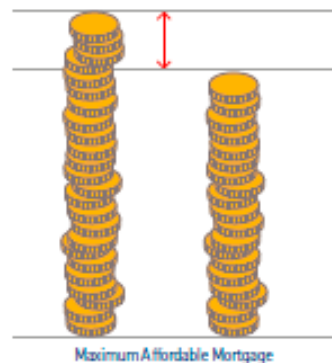
**2** The goal is to allow a more reliable and accurate prediction of the fuel costs part of a home owners monthly outgoings.



**3** Predicting this more accurately would allow mortgage lenders to better estimate how much a home owner would be able to afford to repay each month on their mortgage.



**4** That means mortgage lenders can justify higher lending to low energy properties.



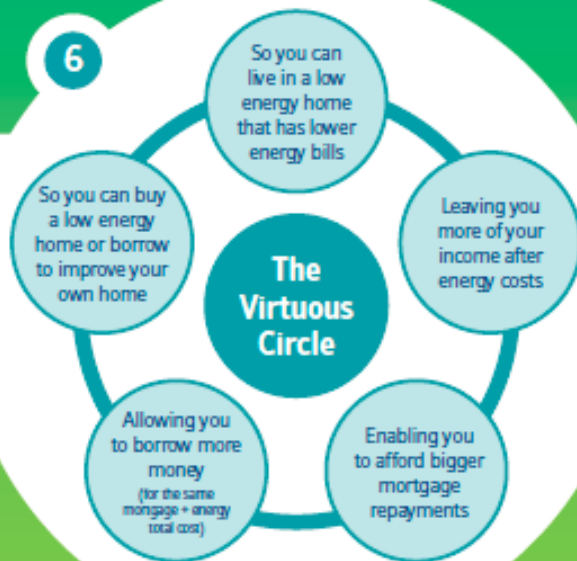
**7** Which might lead to house buyers actively looking for low energy homes, driving the market value of low energy homes upwards.



**8** Which will probably drive those selling homes, building homes or just improving them, to use the additional capacity to borrow through fuel savings to improve their energy performance.



**6**



**5** In turn, this creates a virtuous circle of borrowing that both supports energy home improvement and lends new borrowers more money if they buy low energy homes. Nett monthly costs for home owners won't increase, but energy efficiency can improve.



The LENDERS project is a collaboration of these organisations, who are part funded by Innovate UK on behalf of UK government.

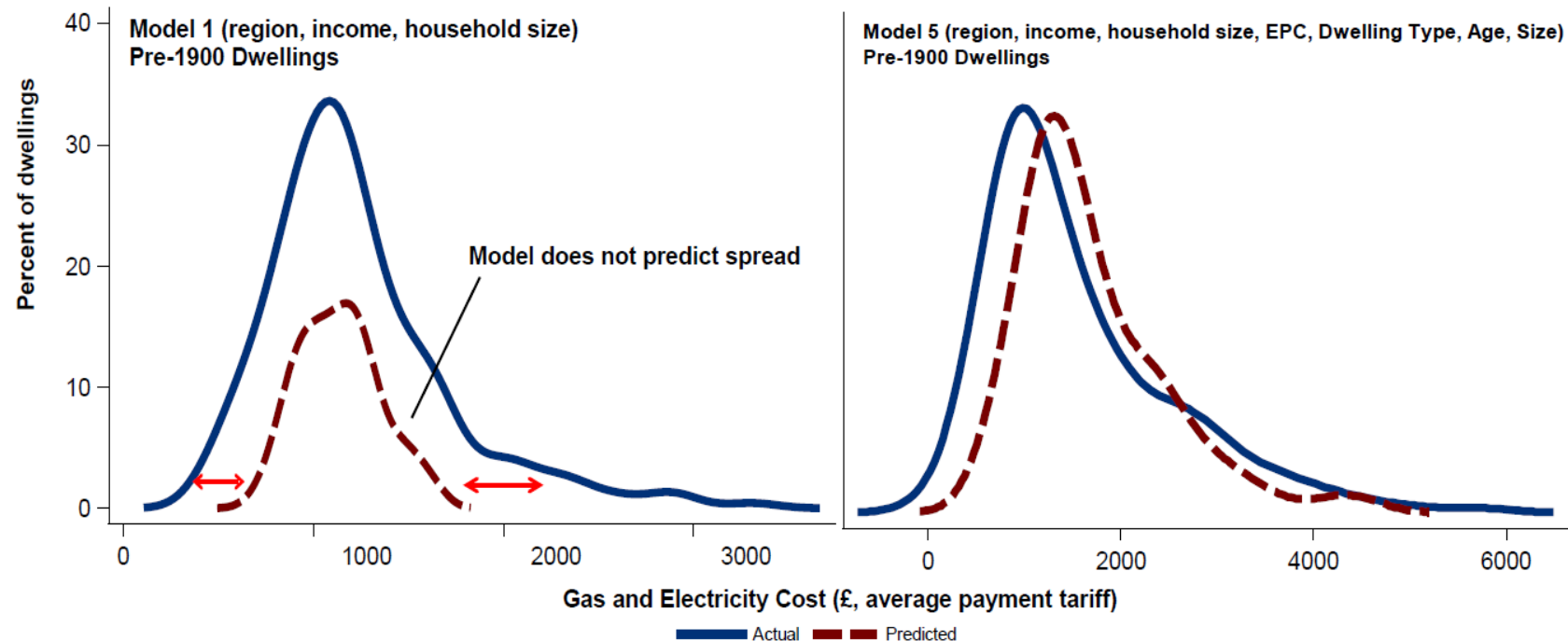


# Opportunities of the scheme

Better data improves energy demand prediction.

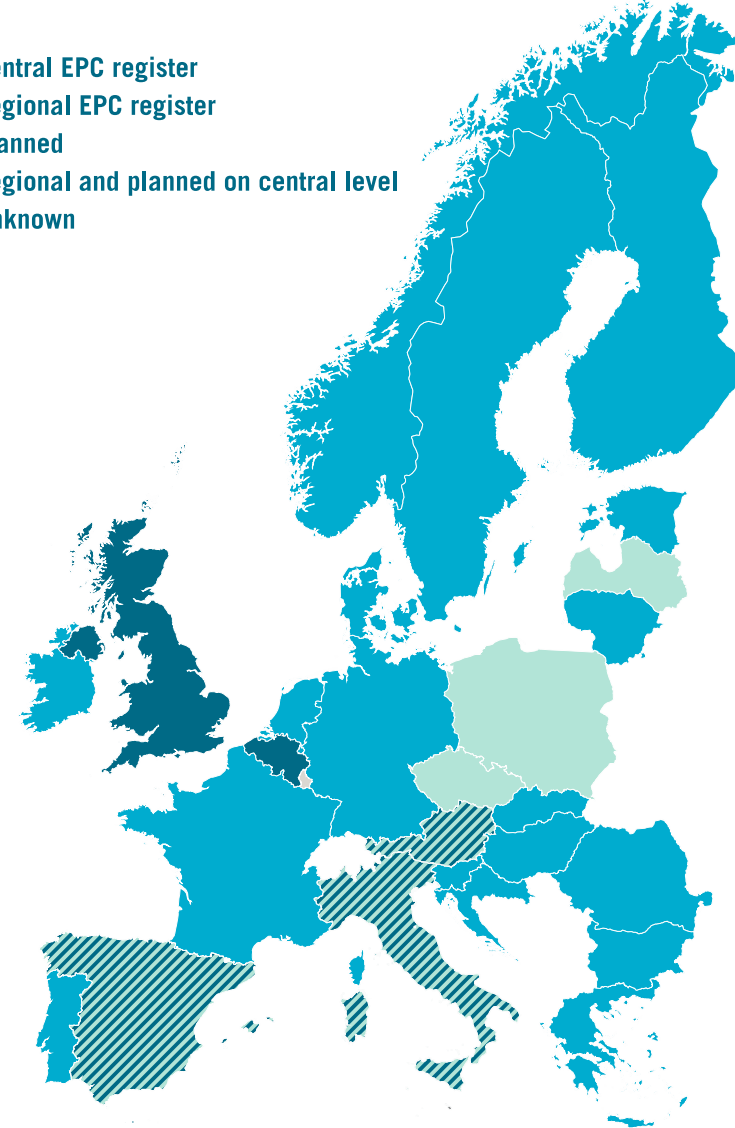
Lenders typical model (region, income, household size) provides a low predictive power for energy bills.

Adding a combination of the above and dwelling type, age, size along with the EPC improves the predictive power (as expected).



But it needs to be accessible

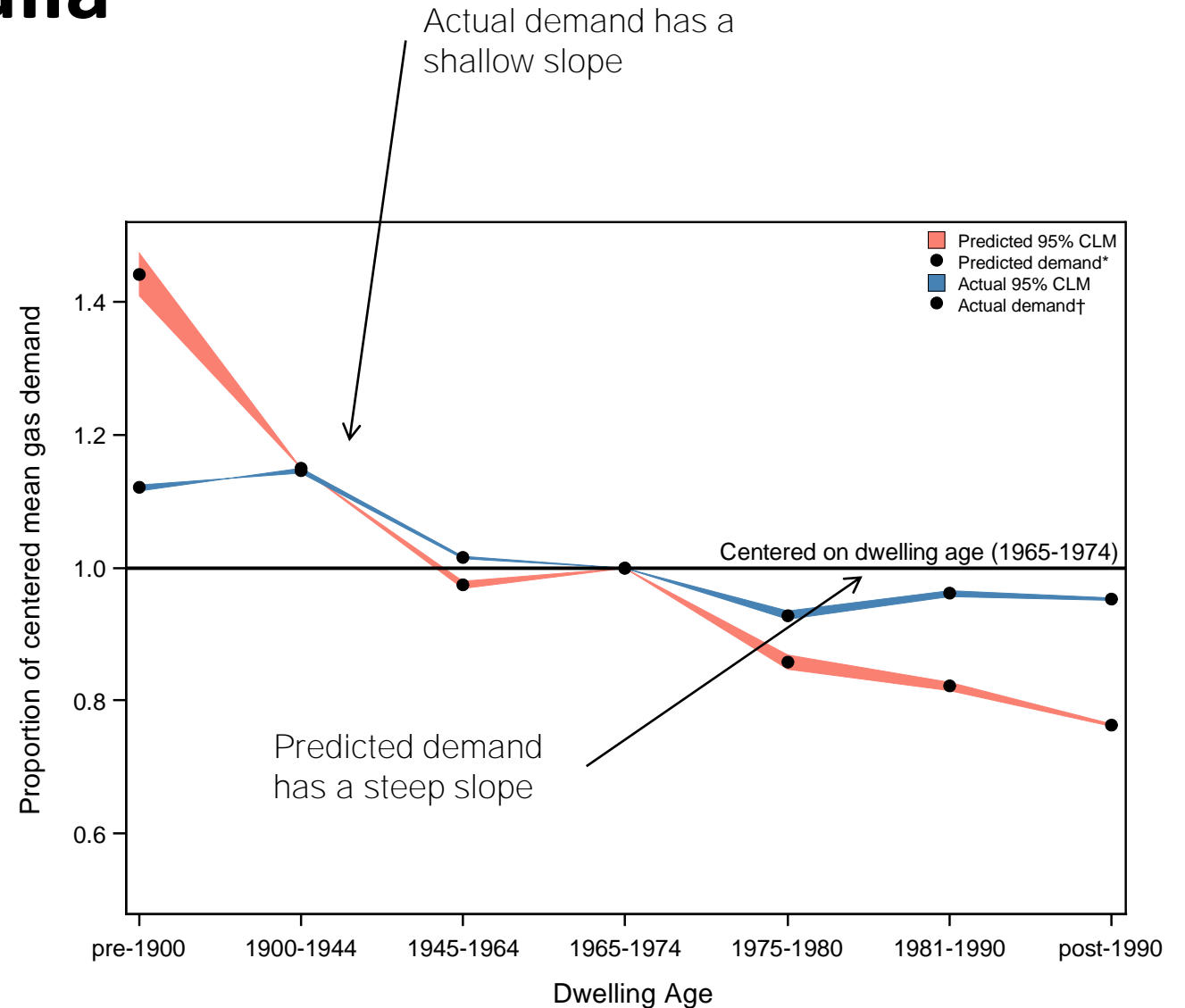
- Central EPC register
- Regional EPC register
- Planned
- Regional and planned on central level
- Unknown





# Considerations for Australia

- Consistent methodologies can create a bigger market with greater competition for retailers, and an information standard for consumers
- Balance input requirements with assessor skills, effort, and home owner/ purchaser tolerance
- Making data available (but with privacy addressed) enables research, targeting and information for



\*Representative sample of British dwellings with predicted 2007 gas primary space and water heating N=13,000  
†Representative sample of British dwellings with actual 2007 gas meter readings N=50,000