

Article 4 Building Renovation Strategy

a) overview of national building stock (UK)

Greg Shreeve, Energy Saving Trust

March 2016, CT1: NEEAPs and annual reports and measuring progress in Energy Efficiency Article 4 building renovation strategies



CONCERTED ACTION
ENERGY EFFICIENCY
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Introduction: Energy Saving Trust

- Founded 1992 – UK government
- Consortium partners for CA-EED
- Produced Annex B of the UK National Energy Efficiency Action Plan for Department of Energy and Climate Change (DECC) [Response to Article 4 of EED]
 - Detailed statistical overview of the United Kingdom's building stock
 - Partnership **Verco** Advisory Services Limited

Article 4: DIRECTIVE 2012/27/EU

Member States shall establish a long-term strategy for mobilising investment in the renovation of the national stock of residential and commercial buildings, both public and private. This strategy shall encompass:

(a) an overview of the national building stock based, as appropriate, on statistical sampling;

Guidance document:

Guidance for National Energy Efficiency Action Plans

https://ec.europa.eu/energy/sites/ener/files/documents/20131106_sw_d_guidance_neeaps.pdf

Guidance recommendations 57:

Guidance recommends an overview of the stock that covers:

- Building categories
- Age bands (with material bearing on building performance)
- Climate zones
- Combinations of the above
- Ownership and Tenure of the stock
- Urban/Rural split
- Energy performance characteristics: U-values, HVAC and lighting types, energy use split, fuel use split.

Building Type: The UK's submission

Guidance: What main **building categories** have been identified as part of the overview?

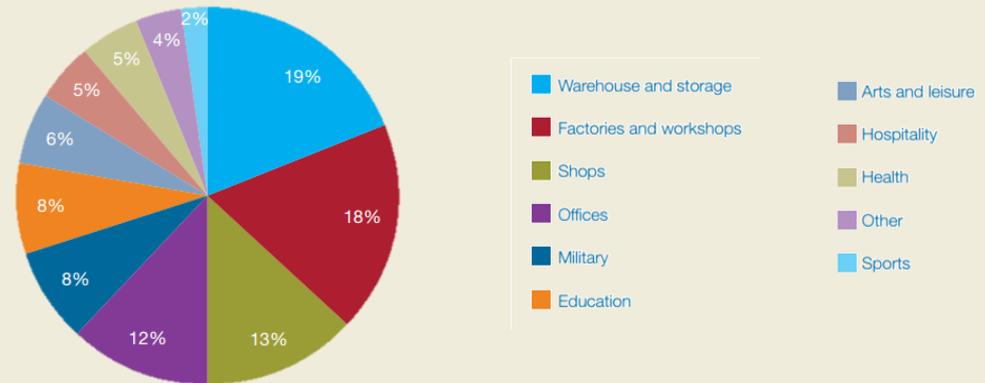
Non-residential:

- 11 categories
- VOA data (Non-residential buildings energy fact file (BRE 1998))

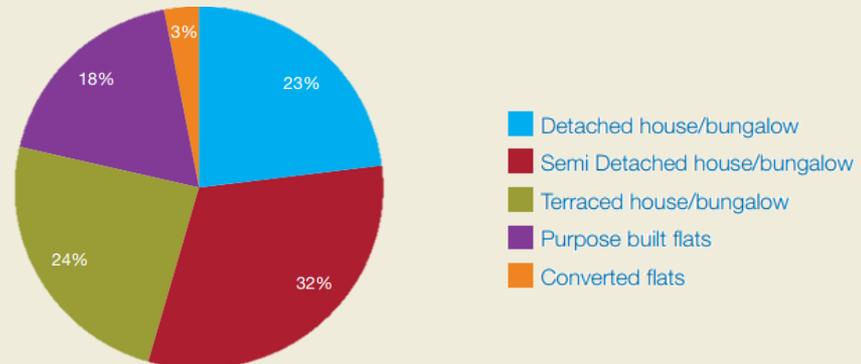
Residential :

- 2011 Census

Non-residential



Residential



Building Age: The UK's submission

Guidance: What **age bands** having a material bearing on building energy performance have been identified?

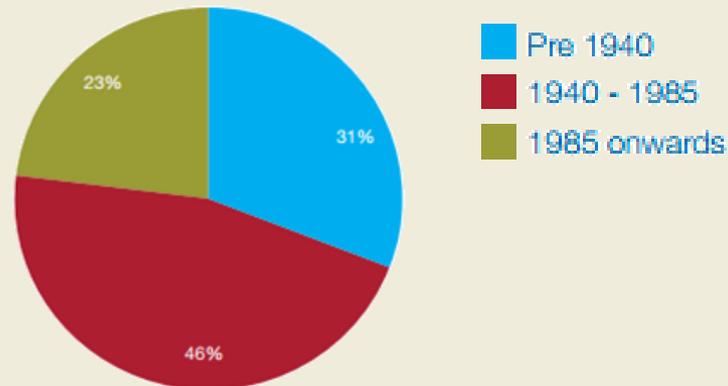
Non-residential:

- Energy conservation measures introduced in 1974, current system coming into force in 1985

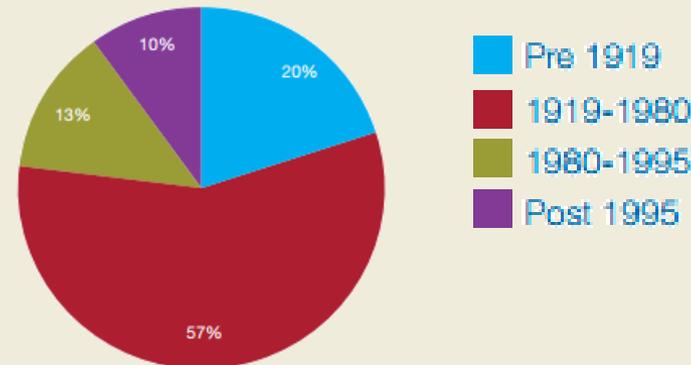
Residential :

- Pre 1919 – solid walls
- 1919-1980 – cavity walls unfilled
- 1980-1995 – some insulation potential
- Post 1995 better performance

Non-residential



Residential

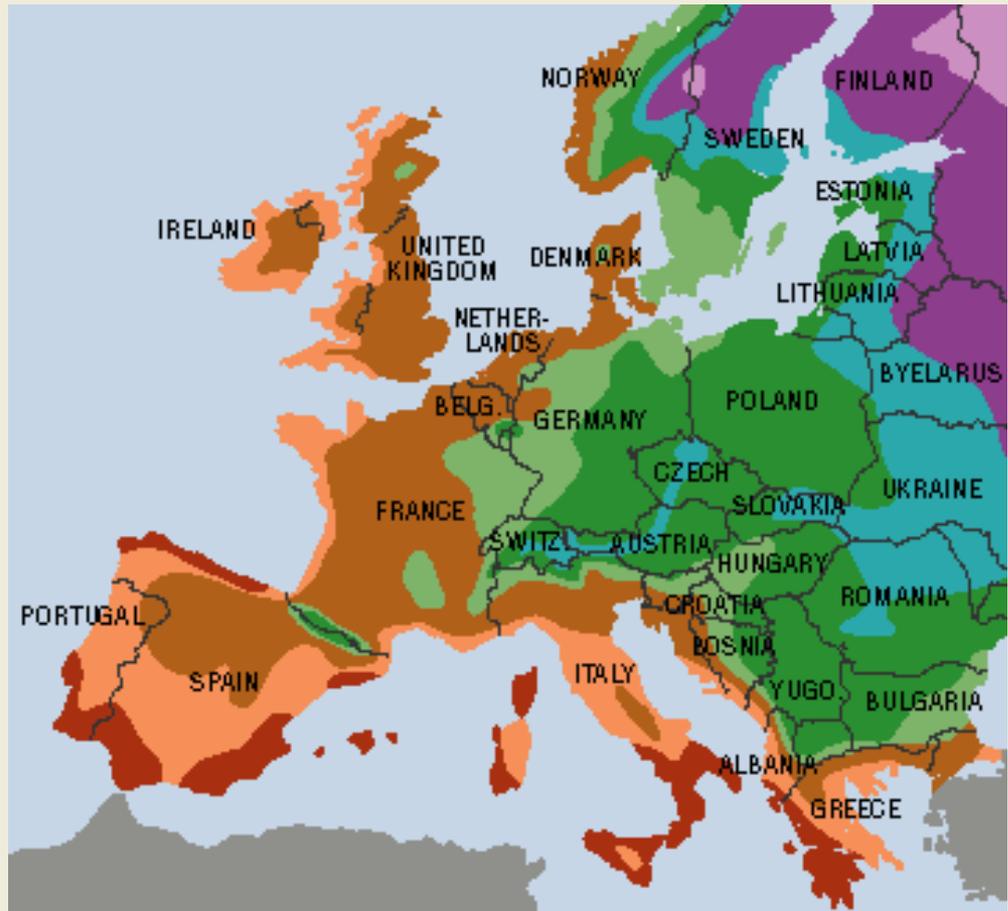


Climate zones: The UK's submission

Guidance: What main **climatic zones** which have a material bearing on building energy performance have been identified?

Zone	Centigrade
3	-40 / -35
4	-35 / -29
5	-29 / -23
6	-23 / -18
7	-18 / -12
8	-12 / -7
9	-7 / -1
10	-1 / 5

Unlike other parts of EU the majority of the UK are in 1 climate zone.



Building Tenure: The UK's submission

Guidance: What ownership and tenure have been identified?

Non-residential:

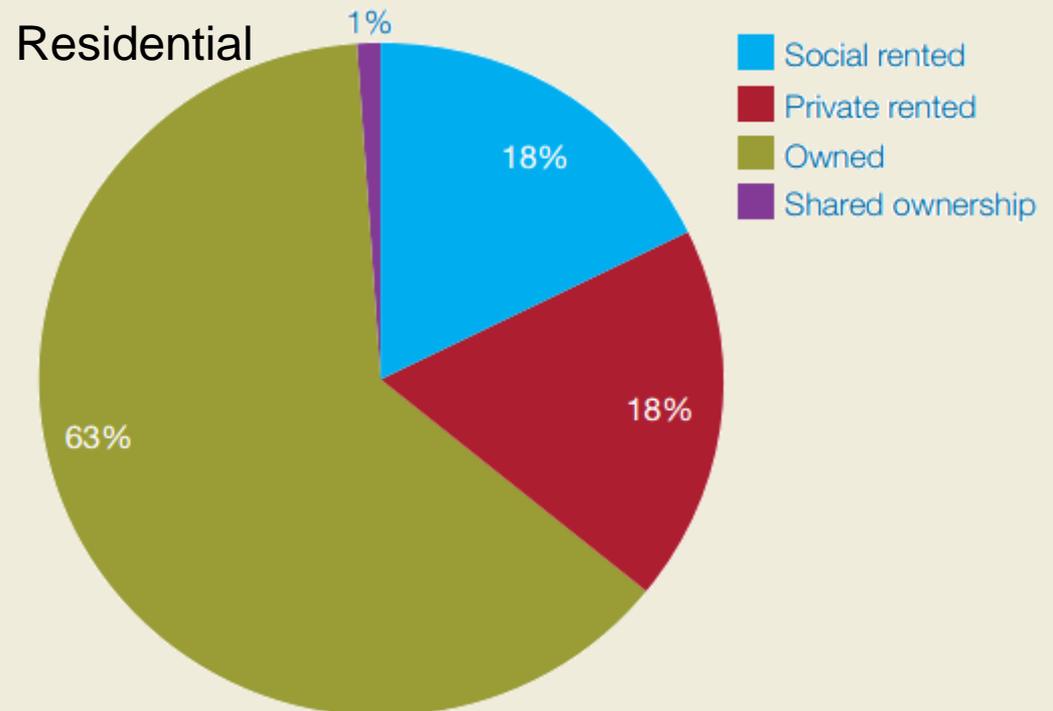
BPF data

Residential :

Good data on tenure and energy efficiency from the UK Census (2011)

Non-residential

In the UK, two thirds of commercial property is rented - British Property Federation (based on contract value)



Energy use and performance characteristics:

Guidance: What **energy use and performance characteristics** of each building combination have been identified?

Non-residential:

Some data available / some modelled

Residential :

Good coverage from Housing Surveys

i) U –values:

- Walls
- Roof
- Windows / Doors
- Floor

ii) Air infiltration rates

iii) Energy systems (HVAC) / Hot water / Lighting

iv) Use for:

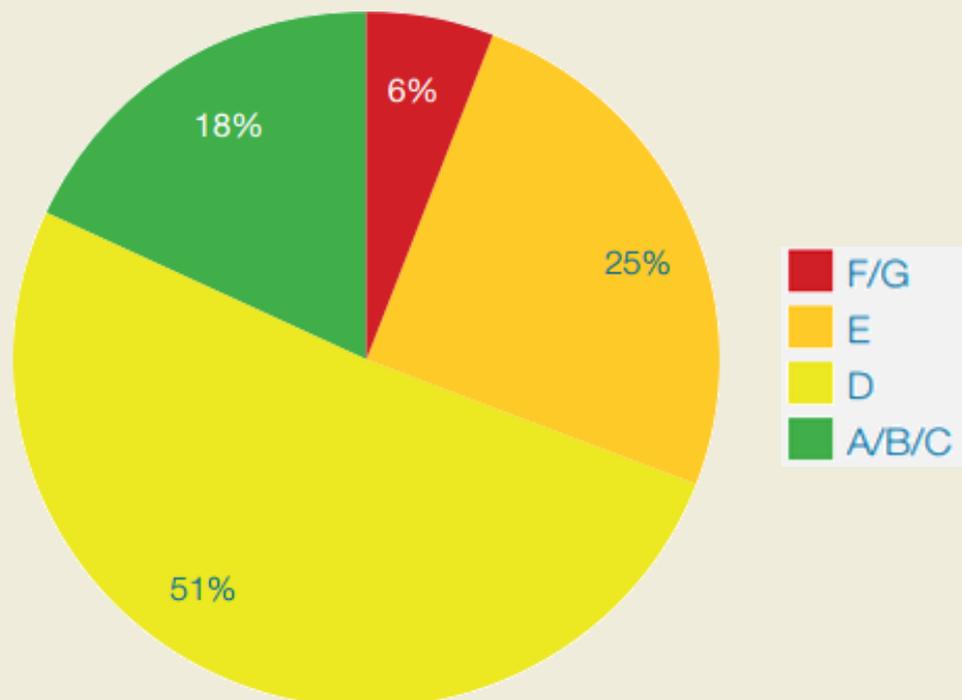
Heating / Cooling / Hot water/ Lighting / Appliances

vi) Energy carriers:

Energy use and performance characteristics: UK's submission

Residential:

- Energy performance certificate (EPC) rating
- Rating based on aggregate of U values / infiltration / and heating system



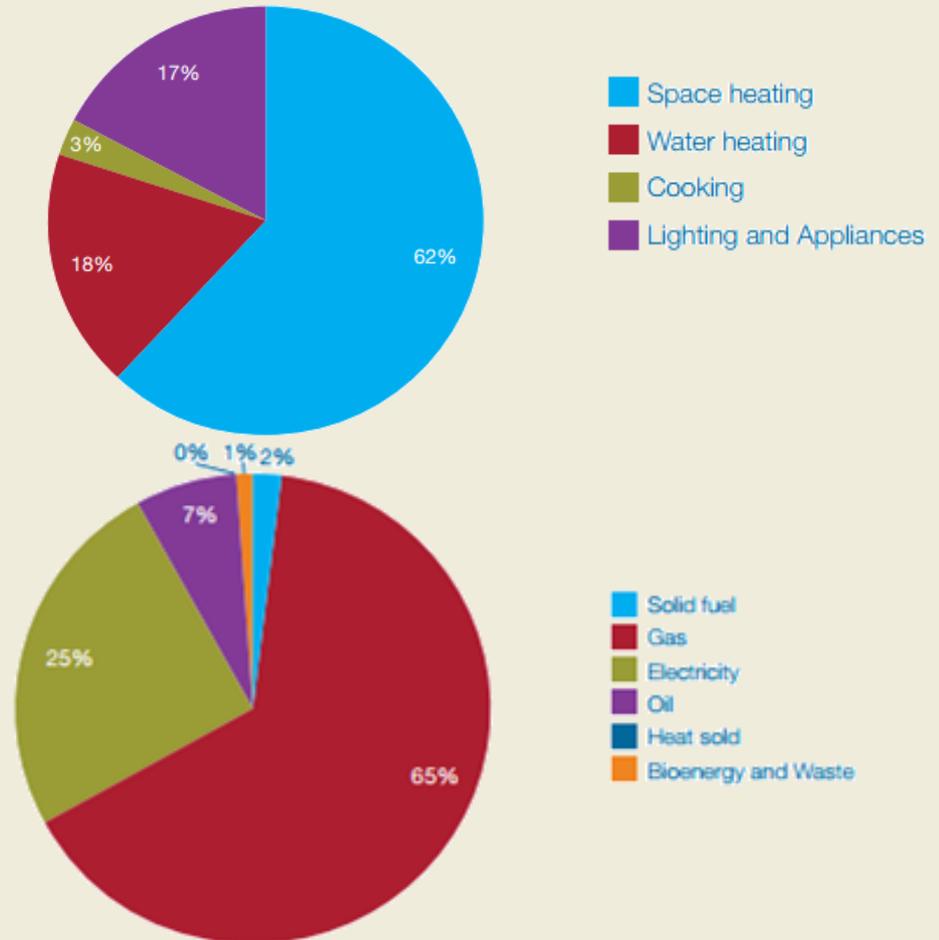
Energy use and performance characteristics: UK's submission

Residential: Energy Use:

- Based on housing survey scaled to national energy usage statistics

Split for:

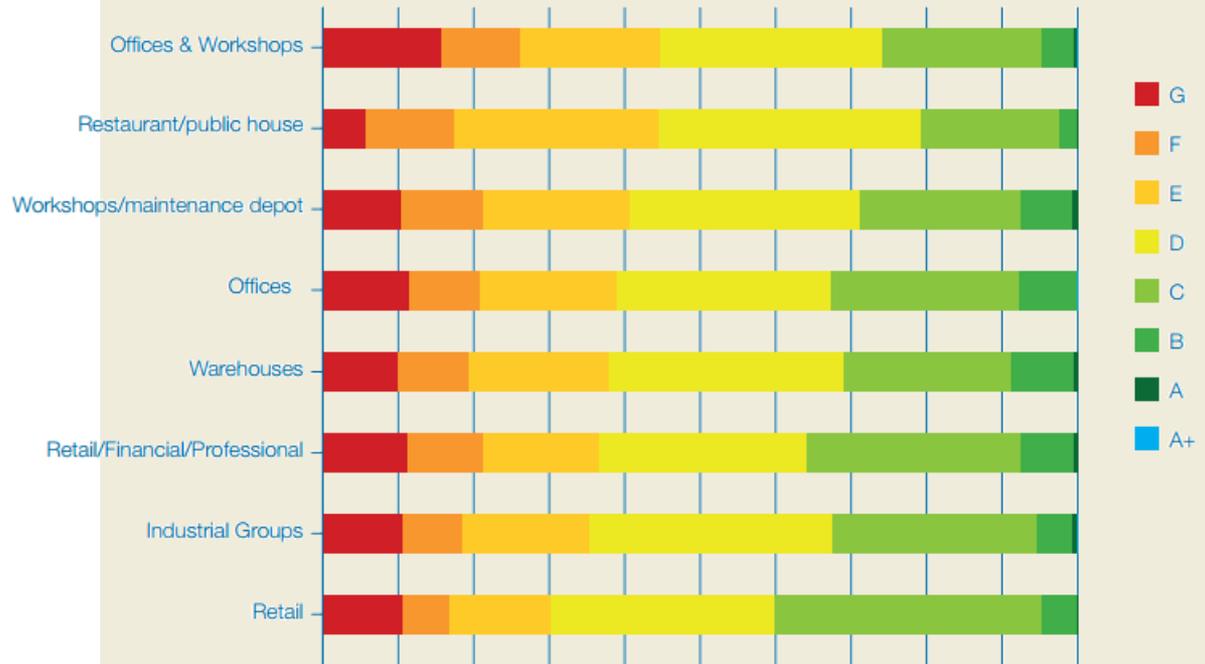
- space heating
- water heating
- cooking
- lighting and appliances



Energy use and performance characteristics: UK's submission

Non - Residential: Energy performance certificate rating

- Based on register
- Not representative of all building types

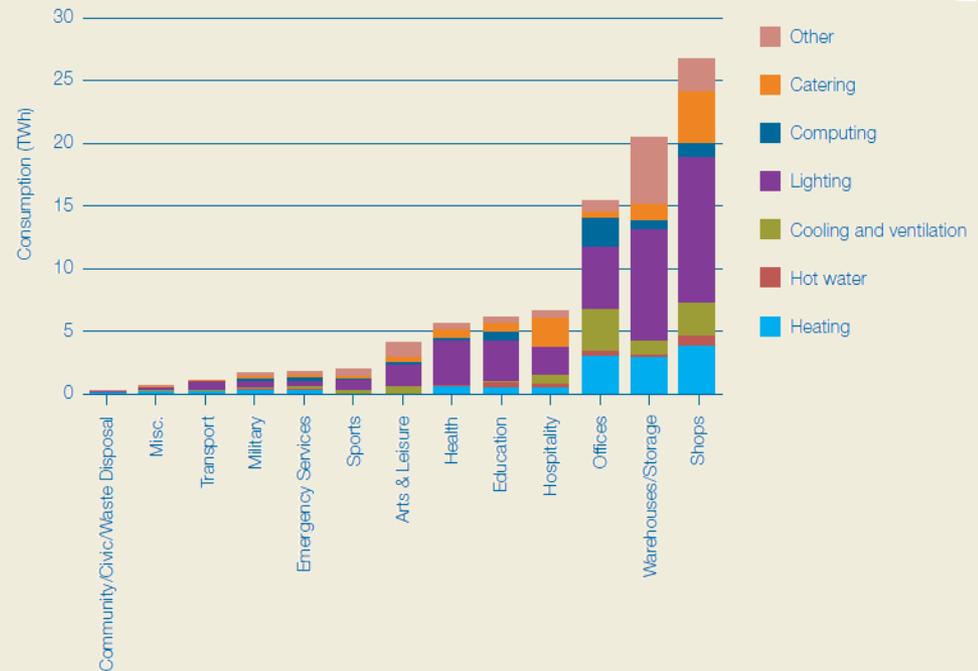


Energy use and performance characteristics:

UK's submission

Non Residential: Energy Use:

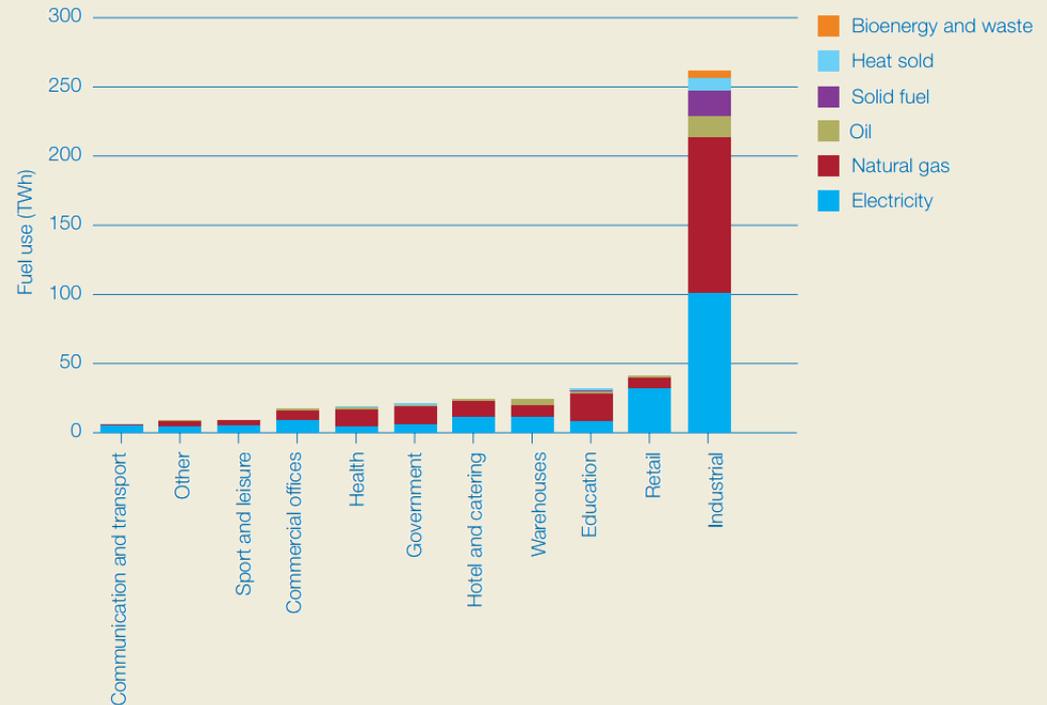
- Based on analysis of Display Energy Certificates (all properties over 1000 m²)
- Actual energy use
- Split modelled using CARB



Non-residential energy use: Energy carrier

Non Residential: Energy Use

- Total consumption from Energy consumption in the UK



Key data sets used:

English housing survey:

<https://www.gov.uk/government/collections/english-housing-survey>

- Annual survey of housing, includes all thermal performance elements (16,000 households per year)

Digest of UK Energy Statistics / Energy Consumption in the UK:

<https://www.gov.uk/government/collections/energy-consumption-in-the-uk>

<https://www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes>

- Annual publication, data collected from energy companies

DEC and EPC registers:

<http://www.epcregister.com/>

- Database of all DEC and EPC lodged in UK

NEED (National Energy Efficiency Data frameworks)

<https://www.gov.uk/government/collections/national-energy-efficiency-data-need-framework>

- Meter readings for dom and non-dom building categories

Thank you

