

Energy Efficiency in the UK Housing Sector

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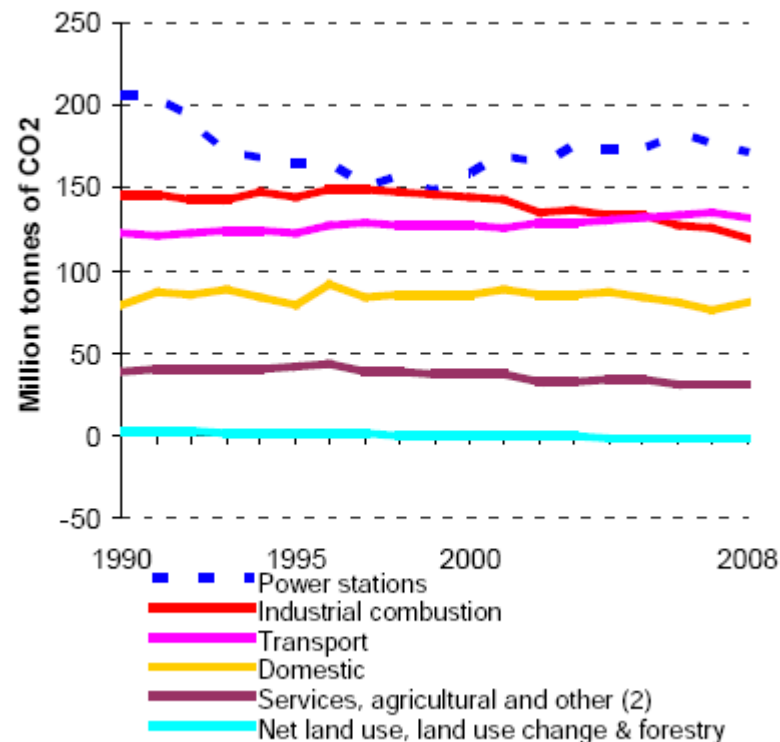
Where do the emissions come from?



Emissions from homes

- 15% of UK direct CO2 emissions are from housing
- This rises to 27% if electrical emissions are included

1.1 Total carbon dioxide emissions by sector⁽¹⁾



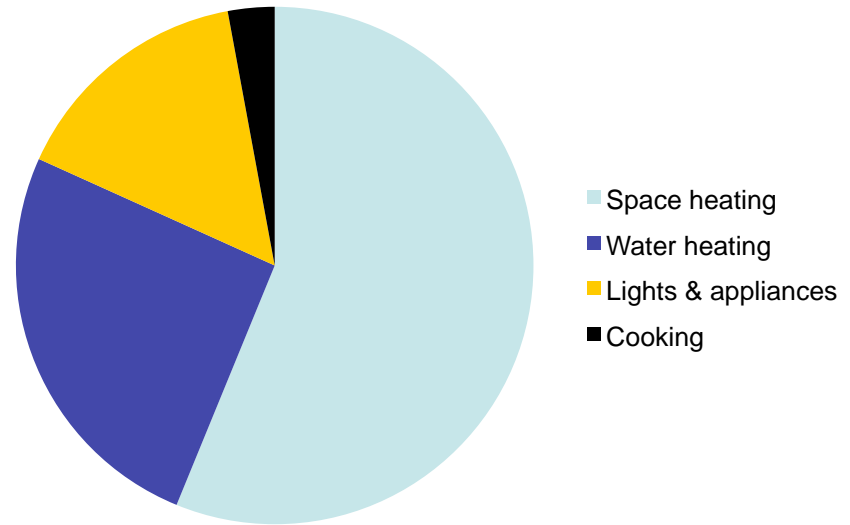
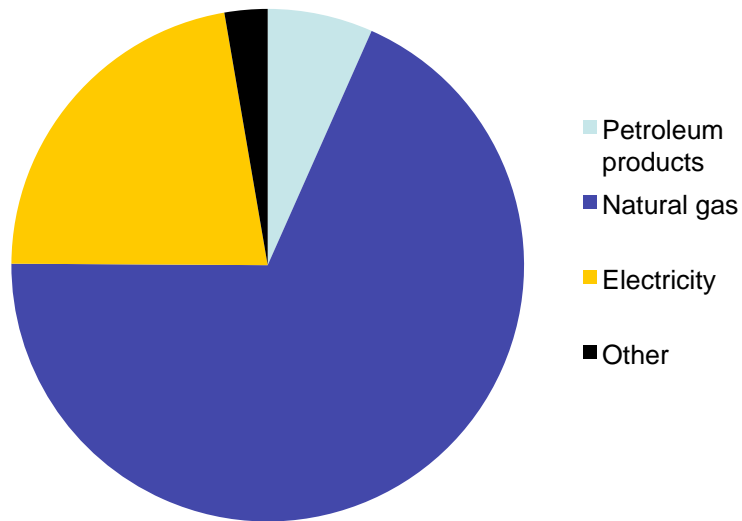
Data from DECC statistics publications – UK GHG emissions and UK Energy Sector Indicators
<http://www.decc.gov.uk/en/content/cms/statistics/publications>



Where do the emissions come from?



Domestic Energy Use



Data from DECC statistics publications – Energy consumption in the UK
<http://www.decc.gov.uk/en/content/cms/statistics/publications>



Where do the emissions come from?



Trends in demand for energy

- Energy demand per household has been roughly constant since 1970
- Electricity consumption increasing (more stuff per house)
- Heating energy demand is decreasing slowly – insulation and boiler efficiency working against a trend to warmer homes



Where do the emissions come from?



Where are the big wins in the UK?

- Loft Insulation
 - Remaining potential ~**1** MtCO₂/yr
- Cavity wall insulation
 - Remaining potential ~**5** MtCO₂/yr
- Efficient heating
- Solid Wall Insulation
 - Remaining potential ~**15** MtCO₂/yr
- Behaviour change



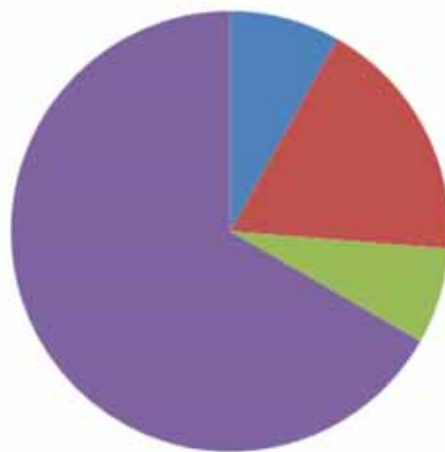
Where do the emissions come from?



The policy landscape

Housing Stock by Tenure – 2008

Source Domestic Energy Factfile 2008 - BRE



- Privately Rented
- Local Authority Stock
- Registered Social Landlords
- Owner Occupied

Data from the English House Condition Survey
<http://www.communities.gov.uk/housing/housingresearch/housingsurveys/englishhousecondition/>



Existing Homes

- Key policies
 - Carbon Emissions Reduction Target
 - Community Energy Saving Programme
 - Warm Front
 - Decent Homes
 - Building regulations
 - Product policy

Carbon Emissions Reduction Target

CERT - Objectives



- A GB wide obligation on gas and electricity suppliers to meet household carbon emission reduction targets;
- Commenced 1st April 2008 and ends 31st March 2011;
- Target of 185 Million lifetime tonnes of CO₂ - critical to achieving our climate change targets;
- At least 40% of the carbon saving obligation has to be achieved in a priority group of low income and elderly vulnerable households;
- Suppliers achieve targets by promoting, typically through subsidised offers, low carbon and energy efficiency measures.



Why energy suppliers?



- Suppliers can help overcome key barriers to householders take up of low carbon measures i.e. lack of information or knowledge, the hassle in finding products and offers and of course high up-front costs;
- Suppliers are uniquely placed to provide information about consumers' energy consumption through billing and metering processes;
- Suppliers are well placed to inform consumers about the potential measures on offer through billing processes;
- Suppliers can mitigate some of the risks and uncertainty around the value of energy savings;
- Suppliers can access economies of scale in sourcing measures; and in having the available capital to subsidise measures.

CERT - how does it work?



Government sets carbon saving ambition



Ofgem assign each obligated supplier a target based on customer numbers



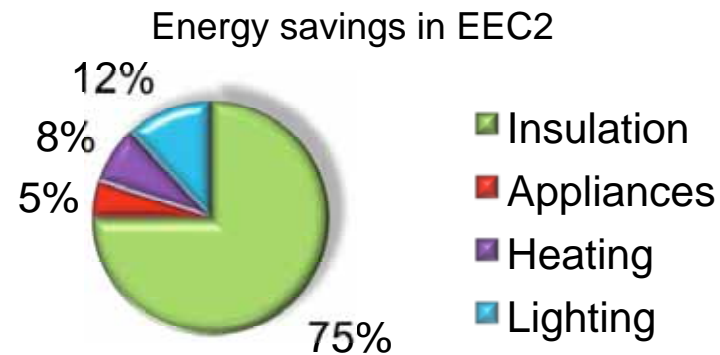
Suppliers are free to choose any mix of measures and to promote these to any home



Have to install a combination of measures equal to that target (Government prescribe the lifetime carbon saving scores)



Insulation typically over 70% of savings...



CERT – how does it work?



Suppliers typically subsidise the measures to get consumers to take them up (on average 50% to able to pay; 100% to Priority Group)



Suppliers must agree their schemes upfront with Ofgem



Suppliers use a number of innovative routes and partners to meet targets



e.g. Direct marketing; Local Authorities; Social Housing Providers; Charities; Retail



Report achievement to Ofgem, percentage of schemes audited

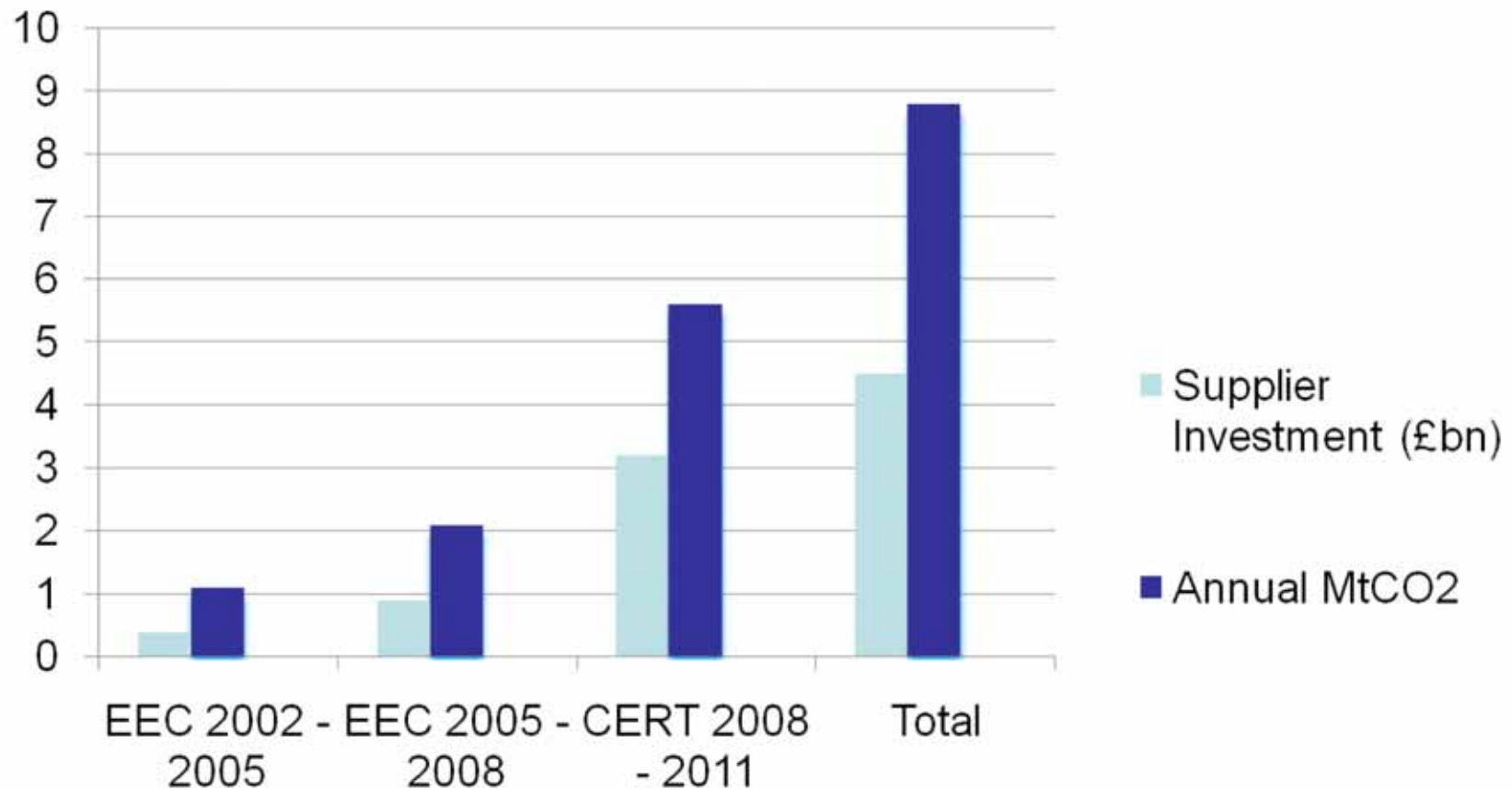


Ofgem report to DECC on suppliers progress to targets on a quarterly basis



Ofgem has powers to fine companies up to 10% of turnover for non-compliance

CERT – Benefits



CERT – Value for Money?



- Total investment including from households and local authorities expected to be £5.3bn;
- Suppliers have an incentive to keep the costs of their obligations under CERT as low as possible;
- Expected pass through onto consumer bills expected to be £41 a house a year for the 3 years of the scheme;
- Costs are balanced by average annual benefits, in terms of lower energy bills or increased comfort, of about £45 per household per year for the lifetime of the measures;
- Independent analysis of previous 3 year scheme showed that for every £1 added onto household bills to pay for the supplier obligation, people see an average saving of £9 on their bills;
- “there are some signs that these [Government] programmes have begun to reverse the long term trend of rising energy consumption and analysis shows that [the programmes] have been cost-effective”. NAO July 2008

Success on the ground



Measures	EEC1: April 2002 – March 2005	EEC2: April 2005- March 2008	CERT: April 2008 – March 2011		Rounded Total
			First Year	Second Year First Quarter	
Cavity wall insulation	791,524	1,760,829	545,594	172,052	3.3 million
Loft insulation (top up)	528,496	1,297,257	689,353	224,460	3.5 million
Loft insulation (virgin)	226,245	490,770			
DIY loft insulation (per 40m2)	399,483	799,573	533,227		1.7million
Solid wall insulation	23,730	41,319	8,626	5,578	80 thousand
Numbers of Households Insulated	5 Million (based on 1.3 measures per house).		1 Million		6 million
CFLs	35.7 million	101.8m	152.7 m	17.2 m	307million
Fuel Switching	41,000	78,000	15,733	4,412	140 thousand
Heat Pumps	-	-	545	142	687

CERT – what happens in practice

- Suppliers advertise subsidised offers to consumers – in bills, on TV, etc
- Installer companies can self generate work and ‘sell’ their jobs to a supplier
- The level of subsidy differs for PG homes/measures
- Products are also subsidised at retail
- Primarily delivers loft and cavity insulation, and energy efficient lighting
- Suppliers can buy delivered carbon from each other

Community Energy Saving Programme

- New obligation on energy companies (inc. generators)
- Small but innovative programme focused at low-income areas
- Deliver expensive measures through local, intensive schemes
- Building industry capacity (SWI)
- Learn lessons for the future

Warm Front

- Primarily a fuel poverty programme
- Government funded at ~£400m/yr
- Only applicable to vulnerable groups
- Likely to disappear in 2010-2011
- Delivers efficient heating and insulation
- Does not deliver to social housing

Decent Homes

- Social housing programme only
- Similar to Warm Front but includes new kitchens, new bathrooms and double glazing
- Aims to make all social homes of 'decent' standard by 2010

Building Regulations

- Effects existing homes through boiler standards
- All new boilers must be A or B rated
 - Apart from exceptions!
 - Old boilers are typically 60-70% efficient
 - New boilers are typically 90% efficient
- Has transformed the sales market and is delivering big savings but working quite slowly
- Also regulations on glazing standards

Product policy

- Mostly traded sector (electrical) savings
- Work through labels and minimum standards
- Heavily linked to EU EuP directive
- Labels on TVs, boilers, windows, fridges, washing machines, etc
- Standards on lights, motors, standby power, etc

HEM – Ideas post 2012



- The Home Energy Management programme is an ambitious plan to cut carbon emissions from homes to as near zero as possible by 2050.
- The key objective for HEM is to ensure that the household sector meets its contribution to our carbon targets. This means:
 - Insulating all lofts and cavity walls by 2015
 - Reducing direct emissions from households by 29% by 2020 (2007 baseline)
 - 7m homes to receive ‘whole house’ packages by 2020
 - Looking at new community solutions for heating

What are the big challenges?



What are the risks to savings?

- Consumer demand for products!!!!
 - Solid Wall Insulation
 - Need huge roll-out
 - Very expensive
 - Renewables and Micro-gen
- Consumer energy demand
- District Heating



New Homes

- By 2050 new homes will be 20-30% of the stock
- Building regulations (CLG)
 - 2002, 2006, 2010, 2013, 2016 (ZCH)
 - ZCH will be ~75% better than current
 - Remaining 25% met through ‘allowable solutions’