

Mind the Gap....




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Basics.....1 Planet



UK buildings responsible for

- 50% of the country's CO₂ emissions
- 50% of water consumption
- 33% of landfill waste
- consuming 13% of all raw materials

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2050






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Context





- UK committed to 80% reduction in GHG emissions by 2050
- 45% of current carbon emissions from buildings; 27% from homes
- 87% of current building stock will still be here in 2050
- Social housing accounts for approximately 20% of UK housing stock

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Context




- Advanced efficiency/renewables
 - high cost, long pay-back
- Householders:
 - money as a major barrier to action
 - move before improvements pay back
- Government:
 - funding pressures
 - limited amount financed via bills
- **“There is no plan B”**





Carbon Reduction



- **50-60% possible through simple cost**

Percentage of 1990 emissions (154.4 MtCO₂)


Category	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Cost-effective refurbishment of existing stock	75.2 MtCO ₂ saved	76.6 MtCO ₂ saved	77.7 MtCO ₂ saved	78.6 MtCO ₂ saved	81.2 MtCO ₂ saved	88.8 MtCO ₂ saved
Target	80% target (123.5 MtCO ₂ saved)					
Shortfall	25.1 MtCO ₂ shortfall					






And the rest.....?



- Further carbon savings
 - more disruptive
 - more expensive measures
 - wider use of renewable heat/power sources.







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Paying for it



- >£20bn p a spent in UK on repair and maintenance of existing housing
- Necessary capital investment for carbon targets is huge
- Need to consider “Carbon £” & Whole Life Cost issue maintenance & refurb.






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Missing links



- Influencing occupant behaviour and lifestyles
- Learning about the technologies
- How will we cope?




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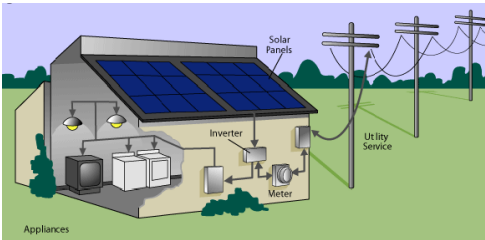

Air source heat pump





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Introduction to PV






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News Sport Comment

Environment > Energy

Plumbers unprepared for energy-efficient homes

Royal Academy of Engineers says poor installation will hamper UK's ability to switch to green energy.

Fiona Harvey, environment correspondent for theguardian.co.uk, Thursday 12 January 2012
Article history



Saturday 14 January 2012

The Telegraph

HOME NEWS SPORT FINANCE COMMENT BLOGS CULTURE TRAVEL LIFESTYLE

UK World Politics Obituaries Education Earth Science Defence Health News Royal Family

Earth News Environment Climate Change Wildlife Outdoors Picture Galleries Earth Videos

HOME > EARTH > ENVIRONMENT

Overhaul of nation's homes needed to meet carbon target

Some homeowners who install solar panels and eco-friendly 'heat pumps' have seen their energy bills increase more than eightfold because of bad installation.



The Government is currently consulting on its flagship 'green deal' policy, which will provide up to £10,000 in the upfront costs of making homes more energy efficient. Photo: ALAMY

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Environment

News > UK News > Science > Science News > Earth >

IN ENVIRONMENT

... report finds

... into spending large sums of

... understanding of how it





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Performance and People

Functional **Technical/
environmental**

Behavioural

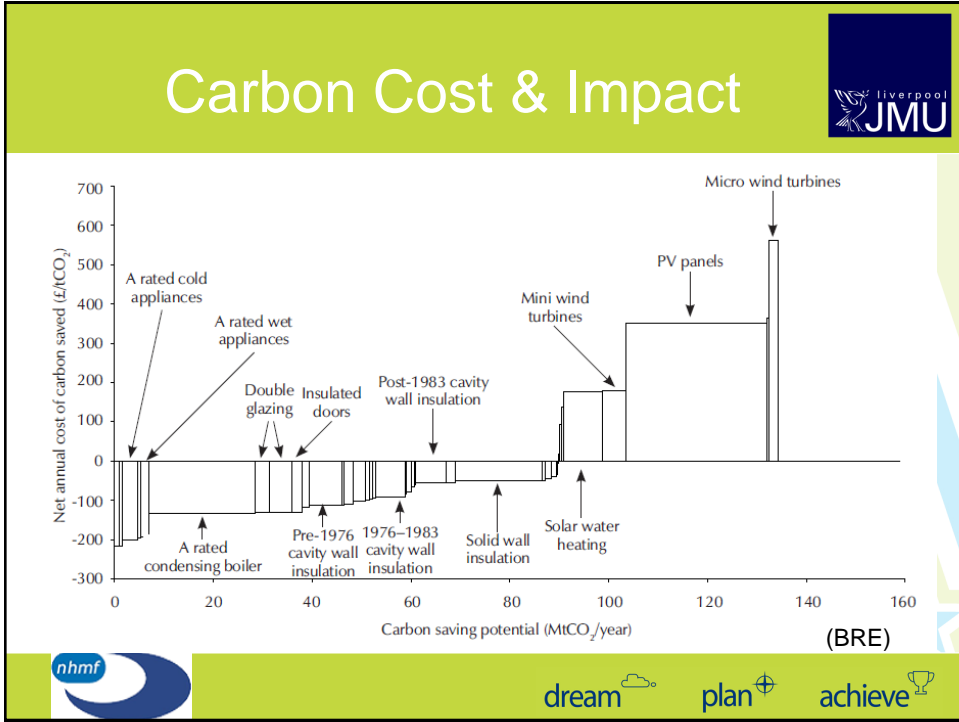
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Occupiers and organisations must be able to:

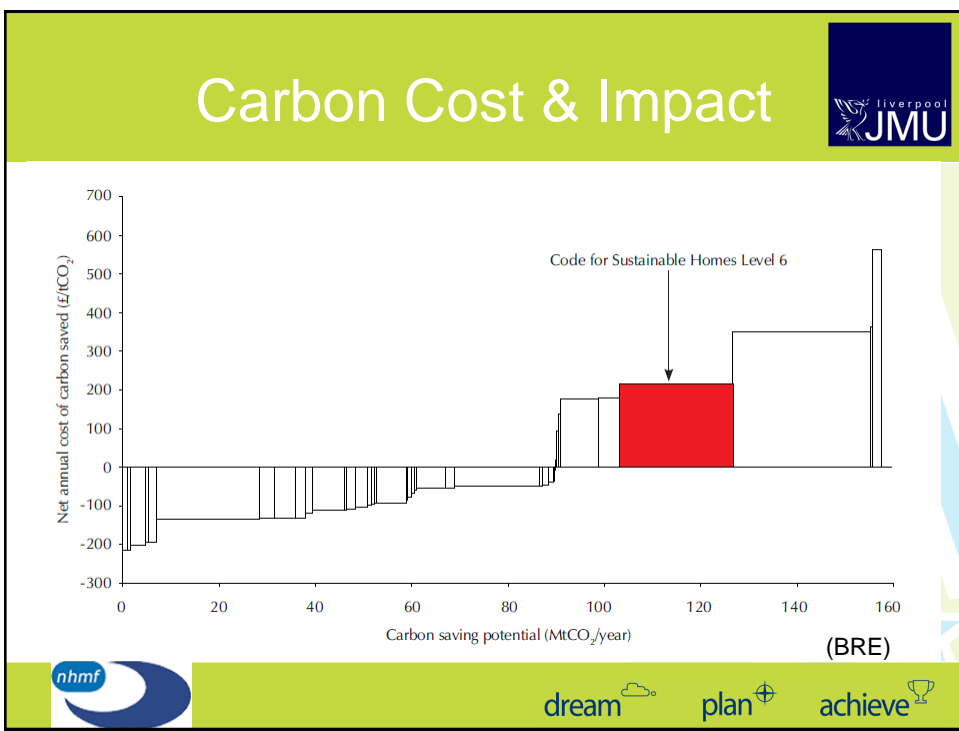
- Appreciate impact of energy use
- Recognise opportunity & risk
- Implement plan to reduce consumption
- Manage & review continuously
- Celebrate & communicate achievement

(Carbon Trust)

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Some comments.....



- **Watch out for things that Whir: they often don't work**
- **Make sure that responsibility between linked bits of kit is very clear**
- **Don't assume that anyone knows their job**
- **If it takes more than 3 paragraphs to explain how to commission a system, don't touch it.**



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Shared Understanding




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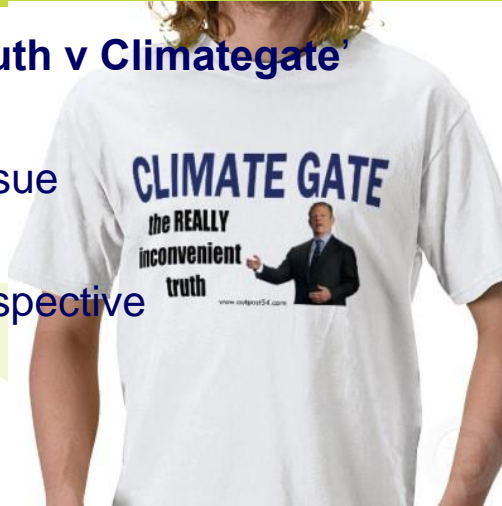
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Engaging Users






‘An Inconvenient Truth v Climategate’


- Acceptance
- Ownership of the issue
- Facts not Flannel
- Local context & perspective
- Tangible benefits
- Footing the bill










POE-Assessing performance




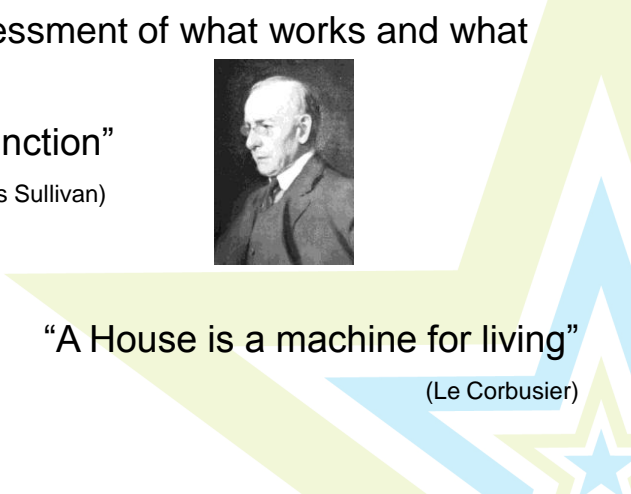
Systematic assessment of what works and what does not:


“Form follows function”
(Louis Sullivan)






“A House is a machine for living”
(Le Corbusier)









2050

nhmf

liverpool JMU

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This slide features a large, stylized number '2050' in a light blue, gradient font. The background is white with a large, abstract graphic of a star or arrow shape in shades of blue and green. The top and bottom of the slide have a green header and footer. The footer contains the NHMF logo, the text 'dream plan achieve' with small icons, and the Liverpool JMU logo.



1974


nhmf

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In 1974.....




- Average UK House Price £10 990
- Gallon of petrol 42p (in 'new' money)
- 1st McDonalds opens in London
- Watergate
- **World's Population** reaches 4 billion
(7 billionth baby born in 2012!)



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Sears Tower in Chicago becomes the worlds tallest building





Building Name	Height (m)
BURJ DUBAI	600
Taipei 101	508
Petronas Towers	452
Sears Tower	442
Jin Mao Tower	420.5

Style & sophistication








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Since 1974.....















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Changing Worlds










"I think there is a world market for as many as 5 computers." - Thomas Watson, head of IBM, 1943.

Computers in the future may weigh no more than 1.5 tons - *Popular Mechanics*, 1949

"We now live in an age where a computer can fit into a single room" - Jim Lovell, NASA, 1970

"There is no reason anyone would want a computer in their home." - Ken Olsen, founder of Digital Equipment Corporation, 1977



Technology... reality better than fiction



- Professor Kevin Warwick
- Human- technology interaction
- The man with the chip in his arm....









Influencing Behaviours




The Shimizu Corporation incorporate aroma systems into their buildings, diffusing lavender or rosemary into the lobby, and lemon or eucalyptus in general office areas to keep the workers alert.








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The realistic future



- Acceptance
- Technological shifts
- Smart buildings ..not just smart meters
- Remote sensing
- Real-time data
- Energy harvesting grid
- Shift from IT Terrorists to IT Natives
- Making the right choices
-but who will foot the bill?



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