

The battle for better buildings

A lot is to be gained from improving the energy efficiency of buildings. But the obstacles are quite formidable. As exemplified by the British government, which is doing everything to set the wrong example.

| by *Chris Cragg*

In the current uproar in Britain about the claims for expenses by members of Parliament, little notice was made of another embarrassing admission by the British Government. Due to the persistent questioning by Greg Clark, the opposition spokesman on energy and climate change, it was forced in May to publish the fact that a significant proportion of its office buildings were rated G regarding energy efficiency. Since the scale goes

was a mere F and no building was higher than C and there was only one of those. Given the habit of the British central Government to lecture everybody else about energy efficiency and climate change, this admission should have attracted more attention than it did. It is not really a surprise. When former Prime Minister Blair famously demanded the introduction of energy saving light bulbs into No 10 Downing Street, the Prime

climate change, this record is lamentable. With the implementation of the European Energy Performance of Buildings Directive (EPBD) for all buildings coming into force in October 2008, the display of DECs is compulsory anyway, supposedly for everybody. Why it should have to be squeezed out of government departments by hostile questions in Parliament is in itself a mystery.

Criticism |

In any case the DECs have come into some pretty hostile criticism from one of the professors of physics at Cambridge, David MacKay. MacKay's personal crusade is to try and get people to actually put some energy numbers into the great climate change debate. He points out that the certificates may look pretty, 'but they convey amazingly close to no information at all'. The main problem is that the range A-G has its centre the figure 100. This is supposed to be the "average" for the type of building; A represents 0-25, B 26-50, C 51-75 and so on to G at over 150.

Consequently, since this "average number" is so closely connected to the "type of

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from A to G, this means that some 30 of the government's 267 office buildings have the lowest rating available under the Government's own Display Energy Certificate (DEC) scheme.

To further this embarrassment, one of the lowest rated buildings was the Department of Energy and Climate Change (DECC) itself. Overall, the government average

Minister's residence, energy efficiency experts could not quite understand what had taken him so long. He had been in office for nine years.

Given that the government has a target for CO₂ reduction by 80% by 2050 and has itself suggested that energy management and efficiency in offices is "cost-neutral" and the way to a quick win in the fight against

building” and the definition of which type of building is only apparently available to experts, it makes it virtually impossible for non-experts to compare buildings. Nowhere on the web, notes Mackay, is there an obvious definition of “the categories of building” involved. Equally, the very small graph on some certificates of total annual CO₂ emissions requires a magnifying glass to see and does not actually have a proper scale. Strangely the certificates devote more attention to who does the analysis than to the result. Equally strangely, the certificate for commercial buildings holds less information than that used for domestic households.

And there is another problem with the certificates, which MacKay does not mention. Since grade G is anything above 150 with 100 as average, it is impossible to judge just how far below average the G-rated buildings actually are. Consequently the Department of Energy and Climate Change could be just bad at energy efficiency, or it could be very bad, or indeed it could mean that the building has a tin roof with no insulation at all.

It can, naturally, be said that the DECs are at least a start. Yet with all the enormous effort involved in the EPBD and the Directive Implementation Advisory Group since 2002, plus the army of assessors recruited to inspect buildings and issue the DECs, the end result seems rather pathetic. What it does not allow is any green building owner to say: “My office building is more energy efficient than the Department of Energy and Climate Change!

This however may be about to change. According to the European Energy Commissioner, Andris Piebalgs energy efficiency is the “swiftest, most cost-effective and most publicly acceptable way of delivering our energy objectives. And the first place to start is where we live and work.” Equally, the European Parliament has now voted overwhelmingly by 549 to 51, to strengthen the 2002 EPBD. It is calling for governments to set the minimum percentages of existing

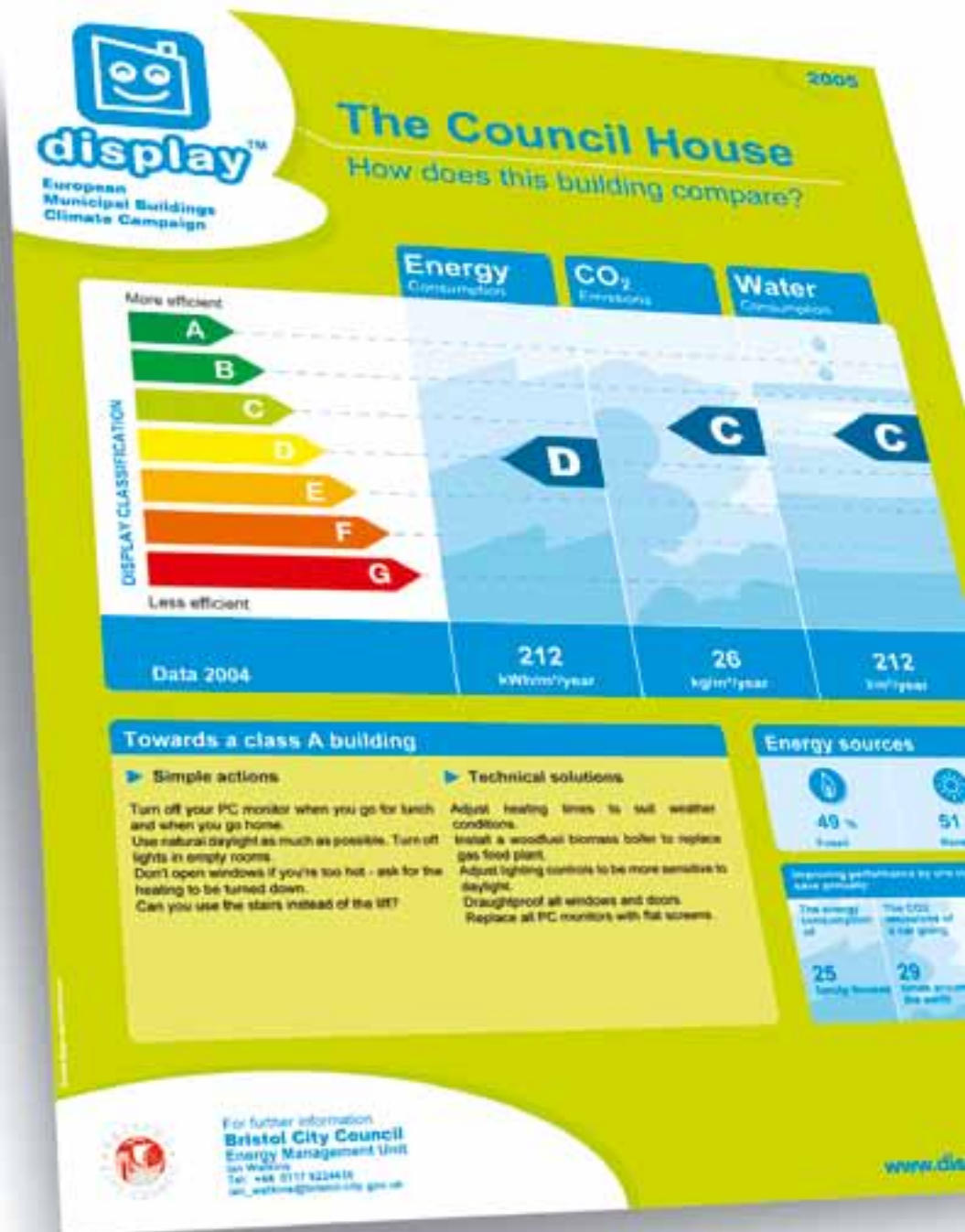
buildings, which should be energy neutral by 2015 and 2020 and should set up a fund to help finance it.

Minimal progress |

It may indeed be good to set some better targets, but achieving them is another matter. For a start the existing EPBD has taken seven years to implement and 2015 is only six years away. Indeed for all its good intentions the European Parliament may

be trying to legislate for the impossible. Whatever the percentage of energy neutral buildings decided, it will require a huge amount of new-build in a recession to achieve it.

One problem, as the Royal Institute of Chartered Surveyors (RICS) has pointed out, is that in the EU-25 countries more than 50% of the existing building stock was constructed prior to 1970. The estimated



Display Energy Certificate Scheme. Photo: Bristol City Council

annual replacement rate for non-residential buildings is 1-1.5% and 0.07% for residential buildings. Consequently if it is left to new buildings to improve the energy efficiency, the rate of progress will be absolutely minimal, particularly in the housing sector. This is certainly so now, when major construction has ground to a halt in the recession with work halted on 142 of the 1,324 skyscrapers currently being built, according to the German construction consultancy Emporis GmbH.

Clearly improving the energy efficiency of housing is a major task, since the sheer range of different types of house. By comparison office refurbishment offers a major and more direct route to energy conservation, not least because office property owners have centralised decision-making and a much wider access to information. However one major hurdle, according to RICS, remains the widespread belief that office refurbishment is not economically viable. The rate of return is too low.

Although specific evidence is fairly sparse, RICS cites an example from Hong Kong where one property rose in value by \$234 per square foot for a cost of \$39 per square foot in refurbishment costs. A RICS sponsored analysis "Doing Well by Doing Good" suggested that in the US, refurbishing office space increased rental income by 3-6% and the value of the building by 16%. Much valuable publicity has been gained by the decision to spend \$20 million on the Empire State Building, which is calculated to save \$4.4 million in energy costs a year.

Collapsing rents |

However there is another significant problem. Increasing rents by 3% is pretty small when rents are currently in freefall. RICS's own regular survey for the last quarter of 2008 shows a disastrous trend in both rents and capital values of office buildings. Capital values are predicted to fall by 25% in 2009 following on from a 25% fall since 2007. Rents are predicted to continue falling by 16% in 2010 and 2011.

In this kind of atmosphere, owners of property portfolios are obviously reluctant to refurbish their buildings even if – being empty – they have an obvious opportunity to do so.

Ironically in the UK, many companies are simply unaware of the incentives offered by government to improve their efficiency. A survey by the air conditioning company Daikin revealed last September that the vast majority of some 1,300 companies asked had no idea of the existence of the enhanced capital allowances offered by the taxman. Equally, the government has recently increased the interest free loans available for energy efficiency improvements from the Carbon Trust to £100 million over two years and doubled the maximum size of the loan to £200,000 for smaller enterprises.

All this is in very stark contrast with the situation in the US. In February, President Obama signed the American Recovery and Reinvestment Act (ARRA). This provides \$5.5 billion for the improvement of the

Federal buildings inventory. Of this sum, no less than \$4.5 billion is allocated to convert Federal buildings "into high-performance green buildings".

If the private sector is fearful that such refurbishment may not pay, the Obama administration clearly believes it will. According to the US General Services Administration, their 'projects across the country will serve to decrease energy consumption and increase the value of the nationwide portfolio of Federal buildings thus saving valuable tax payers dollars in the long term.' Some property analysts believe that this stimulus will have a knock-on effect on the private sector and talk of a potential \$400 billion 'greening programme' for offices across the country.

But returning to London, just what does it say about a government's real intentions, when the building that houses the policy makers in charge of combating climate change has the lowest possible rate for energy efficiency available? ■



Photo: Dutch Ministry of housing