

Key Trends in Policy for Low-Energy Built Environments: a 20-year Review

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Introduction

It is widely known that energy use in buildings accounts for about 50% of CO₂ emissions (GOS, 2008). Such carbon emissions can be reduced through changes to the built fabric of new and existing built stock, the development of decentralised forms of the generation and distribution of energy, heat and coolth and altering energy consumption behaviour (Rydin, 2010). But how have policy frameworks evolved to match this understanding? This paper reviews policy in the UK, particularly in England over the last two decades to assess the key trends in policy support for a shift to a low energy built environment (see Figure 1). Four main periods are discussed: pre-2002; 2002-2006; 2007-2010 and post-2010. It focuses specifically on buildings rather than travel patterns associated with urban form.

Pre-2002: a slow start

The decade to 2000 sets the backdrop to our analysis. This was a period where the climate change agenda was just beginning to influence British policy development. The UK government had recognised the importance of GHG reductions in the 1990 Environment White Paper, *This Common Inheritance* (HMG, 1990) and the follow-up 1994 Sustainable Development Strategy (DEFRA, 1994) but it was taking time to follow through. The Pearce Report developed an influential critique of using the atmosphere as an unregulated carbon dump (Pearce et al., 1989), proposing ‘market-based policy instruments’ to shape the decision-making of market actors through measures such as taxes, subsidies and tradable permits. However action was slow to follow. Similarly, debates on the relevance of the built environment for tackling climate change emissions were increasingly widespread across Europe in this period (Wilson,

2009, EC, 1990)¹ but targeted policy measures were only just emerging. The main emphasis was on reducing emission from travel as set out in the 1990 Environment White Paper (HMG, 1990).

The key policy instruments, where the energy efficiency of new buildings was concerned, were baseline building control (which was generally agreed to be operating at a very low level) supplemented by voluntary information tools operating within the market place. In 1990 BREEAM was established as the market benchmark for environmentally-responsible new development. In 2000 EcoHomes became the voluntary standard for sustainable new housing, the same year that the DETR launched a strategy for a more sustainable construction sector (DETR, 2000). Policies for the energy efficiency of the existing stock were mainly targeted at vulnerable groups in fuel poverty, such as the Home Energy Efficiency Scheme (later called Warm Front) also introduced in 2000.

2002-2006: greening energy systems, greening buildings

The election of a New Labour government in 1997 did not immediately alter this policy landscape. But by the year 2002 the UK government was making a more concerted shift towards an energy policy that encompassed climate concerns (HoC, 2003). This was set out in the 2002 Energy White Paper, *Our Energy Future – creating a low carbon economy* (DTI, 2003), 2003 Sustainable Energy Act and 2004 Energy Act (HMG, 2004, HMG, 2003). A new goal of CO₂ cuts of 60% by 2050 were established – a significant

¹ See also the activities of the EU Expert Group on the Urban Environment at http://ec.europa.eu/environment/urban/policy_initiatives.htm

increase over the 1997 Kyoto commitments - all set in the context of New Labour's revised sustainable development strategy *Securing the Future* (DEFRA, 2005).

There were measures for increasing renewable energy capacity but, at the same time, the inter-relationship between energy systems and the built environment in influencing carbon emissions was being recognised. At the European scale it was estimated that energy efficiency measures could save up to 28% of EU's energy demand for buildings (CEC, 2006) and the 2006 European Energy Efficiency Action Plan (CEC, 2006) specifically identified buildings as a sector of importance.

A variety of measures were introduced to tackle the energy efficiency of the UK's building stock. The 2002 Environmental Performance of Buildings Directive (Wilson, 2009) required information on the energy efficiency of buildings to be provided to buyers or renters of property and, where there was public access to the building, to be displayed. In 2003 the Housing Corporation (the umbrella institution for UK's social housing providers) stepped up the application of the Eco-Homes standard for new social housing to *Good* followed by *Very Good* in 2006. Financial incentives for energy efficiency measures were extended through the Energy Efficiency Commitment on utilities introduced in 2002.

The first recognition of how decentralised energy schemes could bridge the divide between energy systems and the built environment also emerged in this period. The 2002 Clear Skies and Major Photovoltaic demonstration programmes provided subsidies for trying out new energy technologies and in 2006 the Low Carbon Buildings Programme provided another package of grants for microgeneration, all set in the

context of the Climate Change and Sustainable Energy Act (HMG, 2006) and the Micro-generation Strategy (DTI, 2006).

Initially planning regulation was seen as a barrier to widespread uptake of micro-generation rather than a positive driver of change (BERR, 2008) and this would later (in 2009) lead to the removal of such installations from development control. However, planning regulation came to be seen as a useful governance tool for promoting simultaneous change in the built environment and energy systems. Local government was increasingly using the Merton Rule from 2003 onwards which required all new development to meet at least 10% of their energy use from on-site renewables (Wilson, 2009). Although much effort in planning circles in this period was directed towards the implementation of a major reform of the planning system (DCLG, 2001), the new spatial planning approach was also intended to enable local government to take a much more active role in coordinating infrastructure provision (including energy) and urban development. This was complemented by increasing regulation of the thermal efficiency of new development through the Building Regulations, strengthened in 2002 with further improvements in the pipeline.

2007-2010: fully appreciating the carbon reduction potential of the built environment

In the UK the landmark legislation of the 2008 Climate Change Act (CCA) established statutory carbon reduction targets for GHGs of 80% by 2050 or 34% by 2020, both against the 1990 baseline. Emissions from buildings were to be reduced down to zero. The Low Carbon Transition Plan published the following year (DECC, 2009). This set

out a national plan for the transformation of every sector, including targets, scenarios and five yearly carbon budgets. The aim was that by 2020 there would be 2.3m people in green jobs and – in a clear cross-reference to the importance of the built environment – 7m retrofitted homes and 1.5 m households to be supported in producing their own clean energy; all lofts and cavity walls would be insulated by 2015 and smart meters rolled out to all households by 2020 (DECC, 2009).

And in relation to the existing built environment, new forms of regulation were driving change. The Carbon Reduction Commitment (CRC) was introduced with effect from April 2010 to improve energy efficiency in large public and private sector organisations. At the same time, the 2008-11 Carbon Emissions Reduction Target (CERT) required the main energy suppliers to take action to reduce energy demand from domestic consumers. The implementation of the Energy Performance of Buildings Directive was also rolled out.

Where new development was concerned, the planning system sought to bring a mix of strategic plan making, regulation and community engagement to the pursuit of the goal of a low carbon built environment, as set out in Planning Policy Statement 1 in 2005 (DCLG, 2005). The Planning and Energy Act 2008 allowed local authorities to specify the percentage of energy to come from on-site renewable in their plans and to set energy efficiency standards that exceeded the building regulations in force (HMG, 2008b).

Particularly significant was the *Building a Green Future* policy package which established the aim of all new housebuilding being zero-carbon by 2016 (DCLG, 2007); the target for non-domestic buildings was later set for 2019. This was to be achieved by tighter regulation through the Building Regulations, increasing energy efficiency standards by 25% in 2010, 44% in 2013 and moving up to zero carbon in 2016 for

houses. EcoHomes was replaced by the Code for Sustainable Homes (2007) and, in a significant move this was linked in to planning regulation and the Building Regulations.

In response the development industry created the 2016 Task Force and a UK Green Building Council in 2007, to be followed later by the Zero Carbon Hub in 2008 for sharing best practice within the industry (Rydin, 2012). The Zero Carbon Hub has been influential in issuing detailed recommendations on how zero-carbon building is to be defined and suggesting a range of off-site 'allowable solutions'. However, the *Strategy for Sustainable Construction* launched in 2008 continued to concentrate on voluntary action within the industry to deliver more sustainable construction methods and products (BIS, 2008, While et al., 2010)

The Feed-in Tariff (FiT) introduced in the Energy Act 2008 (HMG, 2008a) sought to incentivise the installation of low carbon electricity generation equipment below 5 MW by making it compulsory for the top six electricity suppliers to pay households and communities for electricity generated and guaranteeing a minimum payment for all exports to the grid for a given period of time. Another key initiative, the Renewable Heat Incentive (RHI), encouraged shifts to renewable heat technologies such as solar thermal, ground and air source heat pumps and wood pellet boilers by both households and commercial organisations through subsidies for the installation of technology during 2011/12 and new tariffs from 2012; the latter were also encouraged to participate in district heating schemes (HMG, 2008a).

There was also growing acknowledgement of the importance of community-led initiatives for reducing built environment-related carbon emissions, moving the emphasis out from individual buildings and developments to neighbourhoods. DECC

announced the Low Carbon Communities Challenge in 2009, building on the grass-roots Transition Towns movement. Many schemes benefitting from the FiT were community rather than individual or household based and the Community Energy Savings Programme (CESP) sought to promote a 'whole house' approach to energy efficiency through community-based partnerships of NGOs, local authorities and energy companies.

Post-2010: where next?

May 2010 saw the New Labour Government replaced by a Conservative-Liberal Democrat Coalition; it also saw the introduction of stringent cuts to public sector finance. The question is whether the measures that are now being introduced are likely to undermine the policy package that had been achieved by 2010. The work on a low carbon transition is continuing through the DECC Business Plan for 2011-15 (DECC, 2010) and the UK Carbon Plan (DECC, 2011a). In many areas there has been continuity and details of policy announced in the last period (such as RHIs) are only now being worked through. New energy tariffs, a certified installer scheme for micro-generation equipment (for the FiT and RHI), smart meters and better information are all part of the policy mix. The Microgeneration Certification Scheme for installers of technology is particularly interesting as it uses regulation to address concerns about poor workmanship that had acted as a barrier to the take-up of subsidies.

The Building Regulations will continue to be revised and become more stringent in line with the zero-carbon and energy efficiency targets that the Coalition Government has also committed itself to, and, at the European level, the Energy Performance of

Buildings Directive has been revised to require change in national building codes so that all new buildings should be ‘as near zero energy as possibly by 2020’ (EC, 2010).

Housing Information Packs, launched in 2007 were suspended in May 2010; however, there is still the requirement for sellers to give an Energy Efficiency Report to home buyers.

The Coalition Government have introduced their own Energy Act (HMG, 2011).

Among the measures that it currently includes are: a framework to guide the development of a smart grid; requirements for more information on energy bills; the creation of a Green Investment Bank and the Green Deal (see below), and a new Energy Company Obligation to replace CERT and CESP focussed on vulnerable households and hard-to-treat properties.

Perhaps the single most important advance in this period is the Green Deal, an innovative market instrument encouraging take-up of loans for energy retrofits which will be paid from energy savings and remain attached to the property not the borrower, with loans available from January 2013. This has been linked to the Green Investment Bank, a ‘public bank’ created in 2012 to support low carbon innovation.

But in recognition of the current fiscal constraints and concerned at the costs of a successful scheme with considerable take-up, DECC introduced a review of the FiT scheme and a significant reduction in the incentives for installing decentralised energy generation technology. While this largely affected the domestic sector, the commercial sector was also hit by the conversion of the CRC from a revolving fund, rewarding innovative measures by firms, effectively into a tax on energy bills, cutting off one half of the incentives offered under the previous scheme.

At the community scale, a £30 million Local Energy Assessment Fund (2011) was announced for community developed energy projects and energy efficiency in schools, universities, hospitals, local authorities and other public sector buildings (DECC, 2011b); and a £15 million Rural Renewable Energy Fund was also launched for supporting rural communities to meet the upfront cost of developing renewable energy projects (DEFRA, 2011). The Renewable Heat Incentive is to be extended to domestic properties and £6 million set up for local authority heat networks (with another £1 million in specifically negotiated City Deals) supported by a new Heat Networks Delivery Unit within DECC (DECC, 2013).

Conclusions

So how might one summarise the policy trajectory towards low-energy buildings in England? There are five key trends that can be discerned.

First, there is the clear use of regulatory targets both in relation to national carbon cuts but also where the built environment is concerned. Instead of relying on voluntary and information measures or indicative policy guidance, universal application of regulation is being pursued where the energy efficiency of the new stock is concerned. These will also be ramped up over time to achieve the increasingly stringent targets that have been set by central government.

Second, there is the growing acceptance of the retrofit agenda where the existing built stock is concerned and the use of a variety of instruments to achieve this. However, there have been considerable challenges in achieving retrofit through simple tools such as subsidies and a more sophisticated policy package is now being used.

Third, subsidies – whether for retrofit or low carbon energy generation - are increasingly being tightly targeted on specific groups and specific policy goals. This is accentuated by the fiscal constraints on budgets for such measures.

Fourth, market-based instruments have developed from high-level means of adjusting fiscal policy at central government level to much more targeted interventions in the market place through measures such as the FiT and Green Deal. Here significant restructuring of specific markets (energy, insulation) is being promoted through such means.

And finally, it is interesting to note the evolution of English policy discourse for low-energy built environments from the reliance on market drivers and processes post-2000s and in the early 2000s to a wider and more complex understanding of change in the built environment, in the late 2000s, arising from a mix of tailored governance tools used to influence market rationality, technological change and social engagement so as to mesh change in the built environment with change in energy systems.

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	Policy	Legislation/ Regulations	Building guidance	Planning guidance
		1990s Privatisation	1990 BREEAM (established)	
		2000 DFGEM (established)	2000 EcoHomes (established)	
2002	Energy Review			
		2002 Renewables Obligation		
2003	Energy White Paper 2003: our energy future - creating a low carbon economy			
		2003 The Sustainable Energy Act		2003 Merton Rule
		2003 Electricity Regulations (EU Renewables Directive 2001)		2004 PPS22 (Renewables)
		2004 The Energy Act		2005 PPS1 (Sustainable Development)
2006	The Micro-generation Strategy			
		2006 The Climate Change and Sustainable Energy Act		
		2006 Building Regulations – Part L (energy efficiency)		
2006	Energy Review Report		2006 EcoHomes 2006 (housing)	
2007	Meeting the Energy Challenge. A White Paper on Energy			
				2007 Planning White Paper (Planning for a sustainable future)
			2007 Code for Sustainable Homes	
			2007 Zero Carbon Homes (new built)	
				2007 Building a Greener Future: Policy Statement (Zero carbon new built)
				2007 Supplement to PPS1 (Climate Change)
		2008 Energy Act		
		2008 CERT (Carbon Emissions Reduction Target)		
			2008 Energy Performance Certificates (EPC)	
2008	Nuclear White Paper 2008: Meeting the energy challenge			
		2008 Climate Change Act	2008 BREEAM 2008 (commercial)	
		2008 Planning and Energy Act		2008 Permitted development (Microgeneration)
		2008 Planning Act		
2009	The Renewable Energy Strategy			
2009	Low Carbon Transition Plan			
		2010 Energy Act		
		2010 Building Regulations – Part G (sanitation, hot water and water efficiency; Part J (heat producing appliances) and Part L (conservation of fuel and power)		