

# The case for including energy efficiency investment in the fiscal stimulus package

A report for Greenpeace  
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## EXECUTIVE SUMMARY

Including energy efficiency in the government's planned fiscal stimulus package will ensure that employment is boosted and will also help us tackle fuel poverty, meet housing policy aims and reduce carbon emissions.

The government recognises the real opportunities for UK businesses in the transition to a low carbon economy. It is essential that these opportunities are not lost in the current economic crisis: government investment in key sectors, including energy efficiency, will ensure that businesses in these sectors are well placed to take advantage of economic recovery when it happens.

Support for a stimulus package that focuses on green industries is already widespread. With advocates from the UK and other countries including the United Nations Environment Programme, the Local Government Association, the Environmental Industries Commission, the Federation of Master Builders and the Grantham Research Institute on Climate Change and the Environment, the government should find broad support for a green investment programme in the UK.

This report describes the evidence that demonstrates the potential for energy efficiency programmes to create employment – employment that is both immediate and sustained over the longer term.

As investment programmes are implemented, jobs are created in construction, energy advice provision and surveying, energy efficiency measures and programme management and administration. Furthermore, as households save money on their fuel bills and transfer expenditure to other sectors of the economy that are more labour-intensive than energy supply, more employment is generated in a wide range of sectors.

This report draws on case studies of energy efficiency and employment from around the world. For example, in Germany around 140,000 jobs were created or retained as a result of a retrofit programme, and in California 1.5 million new jobs were generated through a suite of policies. The report also summarises EU research that modelled the employment impacts of a range of existing policy programmes together with theoretical scenarios in which EU Member States implemented large scale investment programmes. Across the EU, case studies indicate that an additional €1 million of investment creates between eight and 14 person-years of direct employment, with indirect employment effects contributing a further nine to 40 person-years.

Energy efficiency investment is one of a number of options that the government could choose to generate immediate employment benefits. The energy efficiency sector can generate jobs quickly, provided the increase in demand is visible and robust.

At the same time, the sector can deliver public sector fuel bill savings that in turn release public funds for other uses, and it can also increase the competitiveness of UK businesses. In fact, as they increase their energy efficiency and so improve cost-effectiveness, UK businesses could save as much as £2.5 billion over the next 12 months alone.



The carbon emissions reductions that could result from energy efficiency investments are significant: in the domestic sector alone, a £5 billion investment would reduce annual emissions by around 1.6MtCO<sub>2</sub> – leading for example to a total reduction of 16MtCO<sub>2</sub> if operating for 10 years. This investment would also deliver around 55,000 jobs directly and hundreds of thousands of jobs indirectly. This is the scale of investment that would be required to tackle the energy inefficiency of the UK housing stock in the space of several decades, and more would need to be invested sooner to tackle it more quickly.

There are many policy programmes that the government could implement. This report offers a number of suggestions that could form the core of an optimal energy efficiency strategy.

**To provide a short term stimulus, the government should:**

- ❑ immediately implement a government-funded energy efficiency programme for low income households that would invest a minimum of £525 million per year just to meet fuel poverty needs. To meet longer term needs public and private investment will need to be of the order of £5 billion per year
- ❑ reform the Winter Fuel Payment so that it is targeted at those in genuine need and use the £2 billion per year saved to fuel poverty-proof the homes of those in need. This will simultaneously tackle fuel poverty and carbon emissions and will also benefit the public purse
- ❑ use its control over the public estate to ensure that energy efficiency in public buildings is upgraded significantly, realising savings of up to £45 million per year from the central government estate alone
- ❑ reduce VAT on refurbishment to 5%, to encourage people to invest in refurbishment and also to provide the opportunity and funds for more energy efficiency work.

**To support sustainable market development, the government should:**

- ❑ invest in skills and capacity building in the energy efficiency sector
- ❑ set up a Home Energy MOT
- ❑ offer incentives for energy efficiency upgrades, such as Stamp Duty waivers or Council Tax rebates
- ❑ set up new financing mechanisms, offering subsidised loans for energy efficiency work, and support the development of energy services companies, known as ESCOs
- ❑ consider far greater use of forward commitment procurement procedures to encourage development of newer technologies
- ❑ meet its own commitments on low or zero carbon homes, pushing the building regulations towards the highest levels of the Code for Sustainable Homes (and the equivalents for non-domestic buildings as they are developed).

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## 1.0 INTRODUCTION

Energy efficiency should be at the heart of the government's response to the current economic crisis. This report explains why.

The World Economic Forum has neatly summarised the essential argument:<sup>1</sup>

*On top of the monetary stimuli, policy-makers around the world are designing fiscal stimulus packages. As they do so, it is vital that every dollar should be made to multitask: it should support short term consumption and jobs, as well as building the long-term productive capacity of the economy, and at the same time moving us forward towards key long-term goals such as a sustainable energy system.*

This report offers evidence that investment in energy efficiency can create and sustain jobs in the short term, and provide long term economic, environmental and social benefits.

### 1.1 The importance of the energy efficiency sector

The scale of the energy efficiency industry is difficult to estimate due to its diversity, but a recent report for the Energy Efficiency Partnership for Homes (EEPh)<sup>2</sup> estimated that, in terms of the housing sector alone, the industry had a market size of £8,250 million in 2007. Estimating employment is also difficult. However the EEPh report identified 77,500 manufacturing jobs that - are supported by the domestic energy efficiency industry, in addition to 5,000 jobs in insulation installation, 65,000 in sales and installation of replacement windows and doors and 120,000 as CORGI registered gas fitters.

The energy efficiency industry is an important component of the wider construction industry, which in the UK is made up of over 250,000 firms and employs around 2.1 million people in a wide range of roles.<sup>3</sup> The industry as a whole contributes 8.7% of the UK's gross value added (GVA) and is the second largest construction industry in the EU.<sup>4</sup> Imports of construction products total less than 10% of the industry's GVA and are almost balanced by exports.<sup>5</sup>

The impact of the economic downturn on the construction industry can be seen in the latest Communities and Local Government figures on house building. These demonstrate that in the last quarter of 2008, new building starts were 58% down on the same period in 2007. Private sector starts were

<sup>1</sup> World Economic Forum, 2009, *Green Investing: Towards a clean energy infrastructure*.

<sup>2</sup> Energy Efficiency Partnership for Homes, 2008, *An Assessment of the Size of the UK Household Energy Efficiency Market*, report prepared by Element Energy and Quantum Strategy and Technology.

<sup>3</sup> The Department for Business, Enterprise & Regulatory Reform (BERR) defines the construction sector as 'one which embraces the construction materials and products; suppliers and producers; building services manufacturers, providers and installers; contractors, sub-contractors, professionals, advisors and construction clients and those organisations that are relevant to the design, build, operation and refurbishment of buildings'.

<sup>4</sup> BERR, 2008, *Globalisation and the Changing UK Economy*. Available at [www.berr.gov.uk/files/file4432.pdf](http://www.berr.gov.uk/files/file4432.pdf), accessed, 20 February 2009.

<sup>5</sup> The Office for National Statistics reports that imports in the first three quarters of 2008 totalled £8.7 billion while exports totalled £7.9 billion (see [www.statistics.gov.uk/downloads/theme\\_economy/Mq10Q308.pdf](http://www.statistics.gov.uk/downloads/theme_economy/Mq10Q308.pdf), accessed on 23 February 2009).



particularly affected, with 64% fewer starts than in 2007. Overall, housing starts during 2008 were 37% lower than in 2007.<sup>6</sup>

## **1.2 The opportunities offered by a move to a low carbon energy system**

The UK government recognises the opportunities offered by developing a low carbon energy system. While addressing a UK Low Carbon Economy Summit in June 2008, Prime Minister Gordon Brown stated:

*By 2050 the overall added value of the low carbon energy sector could be as high as \$3 trillion per year worldwide and it could employ more than 25 million people. So my goal is simple: I want Britain to achieve a disproportionately large share of these new global jobs.*

In the current economic climate it is important that the potential for the UK energy efficiency industry to respond to these opportunities is not lost. And supporting the energy efficiency industry now, to safeguard existing jobs and encourage investment in new people, is necessary if we are to meet our housing, carbon emissions reduction and fuel poverty elimination policy goals.

## **1.3 Support for a green economic stimulus**

In recent weeks, many stakeholders and expert commentators have made calls for a move to a green economy.

The Environmental Industries Commission is calling on the Prime Minister 'to use the 2009 Budget's emergency spending measures to create a green jobs strategy to tackle the recession'. Its Green Jobs Growth Strategy<sup>7</sup> recommends the creation of a £10 billion green jobs investment fund, which would include £6 billion for an infrastructure fund to build 50,000 low carbon social houses on brownfield sites and cash for energy efficiency retrofits of family homes, schools and hospitals.

But it is not just environmentally minded organisations that are in support of a green stimulus.

A Grantham Research Institute policy brief,<sup>8</sup> issued in February 2009, outlines the case for a green fiscal stimulus. The report states:

*If the appropriate mix of policies is adopted, action to tackle climate change could form a central part of a fiscal package designed to moderate the economic slowdown. A 'green' fiscal stimulus can provide an effective boost to the economy, increasing labour demand in a timely fashion, while at the same time building the foundations for sound, sustainable and strong growth in the future.*

The report goes on to note that, while it is difficult to put precise figures on an appropriate size for the green element of a fiscal stimulus:

<sup>6</sup> [www.communities.gov.uk/documents/statistics/pdf/1150294.pdf](http://www.communities.gov.uk/documents/statistics/pdf/1150294.pdf), accessed on 19 March 2009.

<sup>7</sup> Environmental Industries Commission, 2009, *EIC's Green Jobs Growth Strategy: Investing for the future*.

<sup>8</sup> Bowen A, Fankhauser S, Stern N and Zenghelis D, 2009, *An Outline of the Case for a 'Green' Stimulus*, Policy Brief, Grantham Research Institute on Climate Change and the Environment and Centre for Climate Change Economics and Policy.

*...a case can be made for a 'ball-park' figure of some US\$400 billion of extra public spending worldwide on 'green' measures over the next year or so. Unblocking the financial system will allow the private sector in due course to finance a greater share of the continuing investment in 'greening' the economy that will be necessary.*

The Local Government Association is calling for a Green New Deal,<sup>9</sup> and has sketched out a programme that includes a national energy loans fund to enable access to capital for solid wall insulation and a council-led area-based national basic insulation programme.

The Federation of Master Builders recognises the new business opportunities in transforming the UK's existing housing stock.<sup>10</sup> It estimates that the market for green refurbishment and improvement could be worth between £3.5 billion and £6.5 billion per year.

A green economic stimulus could have cross-party political support. The Prime Minister's enthusiasm for green jobs has been noted above. The Conservative Party has published a policy consultation paper outlining its vision for a low carbon economy,<sup>11</sup> which includes an entitlement for all households to an immediate loan covering the cost of up to £6,500 worth of approved energy efficiency measures. In December 2008, the Liberal Democrats published their report *Green Road Out of the Recession*,<sup>12</sup> which includes proposals for a five year programme to insulate every school and hospital, funding of insulation and other energy efficiency measures for one million homes and provision of a £1,000 subsidy for each of a further one million.

Other countries are implementing similar programmes. For example, President Obama has outlined an American Recovery and Reinvestment Plan that includes modernising more than 75% of Federal buildings and improving the energy efficiency of two million homes.<sup>13</sup> Germany, Japan and South Korea have announced growth plans for their environmental industries and China's economic stimulus plan includes a significant programme of environmental measures.<sup>14</sup>

## 1.4 Structure of the report

The next section of this report considers the links between investing in energy efficiency and generating employment. In addition to reviewing some current estimates of the potential scale of employment generation, the report summarises a detailed EU study on the subject and focuses on some of the UK case studies included within that work. Following this, the report considers the other benefits of deploying a fiscal stimulus in the energy efficiency sector. Finally, it offers practical policy suggestions that would provide a swift stimulus and also underpin the longer term sustainable development of the market.

<sup>9</sup> Local Government Association, 2009, *Creating Green Jobs: Developing local low-carbon economies*.

<sup>10</sup> Killip G, 2008, *Building a Greener Britain: Transforming the UK's existing housing stock*, report for the Federation of Master Builders by the Environmental Change Institute, University of Oxford. Available at [www.fmb.org.uk/information-and-help/publications/masterbuilder/2008/august-2008/the-fmb/?entryid19=2830](http://www.fmb.org.uk/information-and-help/publications/masterbuilder/2008/august-2008/the-fmb/?entryid19=2830), accessed on 19 March 2009.

<sup>11</sup> The Conservative Party, *The Low Carbon Economy: Security, Stability and Green Growth*, Policy Green Paper No. 8.

<sup>12</sup> The Liberal Democrats, 2008, *Green Road Out of the Recession*.

<sup>13</sup> [www.whitehouse.gov/agenda/economy/](http://www.whitehouse.gov/agenda/economy/), accessed on 18 February 2009.

<sup>14</sup> As reported in Environmental Industries Commission, 2009, op. cit.



## 2.0 ENERGY EFFICIENCY INVESTMENT AND EMPLOYMENT

Recent calls for investment in the green economy, some of which are referred to in the previous section, generally quote estimates of the amount of employment that could be created by a green stimulus. For example:

- ❑ an assessment of the German Alliance for Work and the Environment's initiative to retrofit German homes<sup>15</sup> suggested that, for the period 2002 to 2004, the programme supported 140,000 jobs (either new jobs or avoided redundancies). The programme is estimated to support 25,000 jobs for every €1 billion invested
- ❑ a 2005 Ecofys study of new EU member states<sup>16</sup> called for a programme to retrofit the existing building stock and suggested that investment of €4.7 billion per year could support 185,000 jobs
- ❑ Canadian government estimates<sup>17</sup> suggested that a national-scale energy efficiency retrofit programme could generate 20 jobs for every \$1 million invested
- ❑ an evaluation of California's energy efficiency policies<sup>18</sup> suggested that the State's policies between 1978 and 2007 had created 1.5 million new jobs
- ❑ in Italy, an estimated 75,000 jobs were created in the construction sector by reducing VAT on refurbishment work to 5%<sup>19</sup>
- ❑ a report investigating the cost of alleviating fuel poverty in the UK<sup>20</sup> estimated that the current overall annual investment in energy efficiency in the UK of around £3.6 billion was supporting over 29,100 jobs.

The estimates above concern the immediate, direct employment involved in the manufacture and installation of energy efficiency measures. There has been little in-depth study of the overall direct employment effects of energy efficiency programmes. However, a study completed in 2000 for the European Commission did look at these impacts, together with indirect effects and the longer term impact of energy efficiency investments on employment. Its findings are discussed in more detail in the next two sections of this report.

### 2.1 Short term expenditure and jobs

The EU study involved detailed case studies of 44 separate energy efficiency programmes in nine EU Member States (Austria, Finland, France, Germany, Greece, Ireland, the Netherlands, Spain and the United Kingdom).

The programmes covered housing, non-domestic buildings, industry and the public sector. In 38 of the 44 cases, the study found that additional employment resulted from the initiative. In two of the remaining six cases the policy programmes had resulted in no additional energy efficiency investments and hence no additional employment, and in the remaining four

<sup>15</sup> Reported in UNEP, 2008, *Green Jobs: Towards decent work in a sustainable, low carbon world*.

<sup>16</sup> Ibid.

<sup>17</sup> Ibid.

<sup>18</sup> Roland-Holst D, 2008, *Energy Efficiency, Innovation and Job Creation in California*, Centre for Energy, Resources and Economic Sustainability, University of California Berkeley.

<sup>19</sup> Pers. comm. from Peter O'Connell, Federation of Master Builders.

<sup>20</sup> Preston I, Moore R and Guertler P, 2008, *How Much? The cost of alleviating fuel poverty*, report by Centre for Sustainable Energy, Richard Moore and Association for Conservation of Energy, funded by eaga Charitable Trust.

cases the quality of the available data was insufficient to enable employment calculations.

Across the case studies, an additional €1 million of investment in energy efficiency typically resulted in the initial stimulation of between eight and 14 person-years of additional employment.

The immediate impact of energy efficiency investments, in terms of direct employment in the manufacture and installation of energy efficiency measures, tells only part of the story. There may also be a counterbalancing impact on employment if the money used to finance the energy efficiency investment is withdrawn from elsewhere in the economy, for example if a household chooses to spend on energy efficiency rather than buying something else, or if the government supports energy efficiency rather than some other programme. However, since most energy efficiency investments are in particularly labour-intensive areas of the economy, increased spending on energy efficiency is also likely to increase employment when compared with other uses for the same money.

The EU work included lifestyle-orientated input/output modelling of the housing energy efficiency programme case studies from six of the nine Member States under consideration.<sup>21</sup> The results of this modelling showed that care should be taken when designing government support programmes to ensure that funds are not withdrawn from more labour-intensive sectors of the economy, for example from public services. However, with this proviso, the modelling results demonstrated that diverting funds from general expenditure towards investment in energy efficiency had a positive net initial effect.

In addition to these immediate impacts, there are long term effects resulting from savings on energy bills. These are explored in section 2.2.

### **2.1.1 Types of jobs**

Many of the programmes studied, in particular those focusing on energy efficiency in housing, generated direct employment mainly in manual occupations – often referred to as blue-collar jobs. Programmes demonstrated the potential to generate local employment, since individual projects were geographically dispersed. Additional employment opportunities for advisors, consultants, technicians and engineers – often referred to as white-collar jobs – were also identified within the case studies.

### **2.1.2 Speed of industry response to additional investment**

The EU study included some commentary on the variation in employment levels over the duration of each programme, but did not address how quickly any initial employment generation impact would occur. Indeed, there seems to be very little consideration of this issue in the wider literature. However, industry representatives<sup>22</sup> suggest that the response to a new stimulus could be immediate within the surveying industry and very quick within the installation industry, provided that the increase in demand was visible and

<sup>21</sup> Jeeninga H et al., 1999, *Employment Impacts of Energy Conservation Schemes in the Residential Sector. Calculation of direct and indirect employment effects using a dedicated input/output simulation approach*, report by the Netherlands Energy Centre (ECN) as part of the SAVE contract XVII/4.1031/D/97-032.

<sup>22</sup> Based on information from Paul Roche, Director – Sustainable Products, SIG plc and other representatives of major UK energy efficiency companies.



considered to be robust. The response among manufacturers would be slower and some materials might have to be imported initially. However, a sustained stimulus would eventually result in increased output from UK manufacturers and hence additional jobs in this sector too.

## 2.2 Longer term impacts on employment

Investment in energy efficiency has a sustained impact on spending patterns – it reduces spending on energy, and increases the amount of money available for other expenditure. Energy supply is relatively labour-extensive compared to other sectors in which households and businesses spend their money, and hence this change in expenditure patterns tends to have a positive impact on employment levels.

If the initial investment in energy efficiency is financed from current household expenditure there are no other long term impacts. However, if the investment is financed by a loan the loan repayments will reduce expenditure across all sectors. Equally, if it is financed from savings, the subsequent loss of interest will reduce funds available for general expenditure. But, provided that the energy efficiency investment is cost-effective, the fuel bill savings will more than compensate for the loan repayment or the effect of the loss of interest on savings, and therefore net employment impacts will be positive.

The input/output modelling in the EU study considered the effects mentioned above for a 15 year period of each housing energy efficiency programme. There was one case in which a loan programme had financed investments that were not cost-effective and where there was a net reduction in employment. In the other 14 cases studied using this approach, the net impact on employment over the 15 year period (taking into account the immediate impacts and the longer term effects) was positive. The level of employment generation per €1 million invested ranged from nine to 40 person-years.

The EU study also included general equilibrium modelling (GEM) of the macroeconomic impacts of hypothetical large scale energy efficiency investment programmes.<sup>23</sup> The theoretical nature of the GEM approach limits its relevance here, but it is worth noting that it confirmed the other approaches main finding: the overall impact of energy efficiency investment programmes is that they increase employment.

Details of the longer term effects for the UK case studies are discussed in section 2.3.

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<sup>23</sup> Capros P, Paroussos L and Stroblos N, 1999, *Energy Saving Investment and Employment: Analysis through the GEM-E3 model*, report by the National Technical University of Athens as part of the SAVE contract XVII/4.1031/D/97-032.

## 2.3 The UK case studies in more detail

The following UK case studies are reported in detail in a 2000 publication from the Energy Saving Trust:<sup>24</sup>

- ❑ The Home Energy Efficiency Scheme (HEES – now Warm Front), between 1991 and 1996
- ❑ Heatwise, during 1996
- ❑ Phase one of the Energy Efficiency Standards of Performance (now the Carbon Emissions Reduction Target), between 1994 and 1998
- ❑ The Fridgesavers initiative, over the period 1997–98
- ❑ Two utility demand-management initiatives, between 1992 and 1994
- ❑ The introduction of the 1995 Building Regulations.

The most relevant of these to policy decisions today are HEES, the Energy Efficiency Standards of Performance and the 1995 Building Regulations.

### 2.3.1 The Home Energy Efficiency Scheme (HEES)

The forerunner of England's current Warm Front programme, HEES provided investment in home energy efficiency on behalf of low-income households. Loft and cavity wall insulation were the main measures installed, with additional measures including draught proofing, hot water jackets, heating controls, efficient lighting and energy advice.

From 1991 to 1997 installations under the scheme were as follows:

- ❑ 1,550,000 homes were draught-proofed only.
- ❑ 447,000 homes were draught-proofed and also fitted with loft insulation.
- ❑ 128,000 homes were fitted with loft insulation only.

A National Audit Office (NAO) review of the scheme in 1998 estimated that it had created 5,000 extra jobs per year. Of these, 1,600 were in installation and the majority of the remainder in manufacturing, transport and distribution. 170 staff were employed at Eaga, the scheme's managing agent, in management, technical and clerical positions.

The case study took into account the potential negative effects of the diversion of government funds from other spending and estimated the following direct employment impacts:

- ❑ 7,800 person-years of direct blue-collar employment over the six years of the scheme
- ❑ 840 person-years of direct white-collar employment over the six years of the scheme.

The input/output modelling for the EU work added in the longer term effect on employment of reduced fuel bills. This produced the following estimate:

- ❑ 22,000 person-years of indirect employment over 15 years.

<sup>24</sup> ACE, 2000, *Energy Efficiency and Jobs: UK issues and case studies*, a report for the Energy Saving Trust by the Association for the Conservation of Energy.



**Each £1 million invested in HEES thus resulted in 24 person-years of direct employment and 61 person-years of indirect employment.**

The additional indirect employment effect was so large because the energy efficiency investments carried out on behalf of low income households by the programme were highly cost-effective. Consequently the initial investment generated much larger savings in fuel bills over the 15 year period, so diverting household expenditure away from fuel bills and towards more labour-intensive goods and services. This is also true for the other two case studies detailed here.

### **2.3.2 Energy Efficiency Standards of Performance**

During the first phase of the Energy Efficiency Standards of Performance (between 1994 and 1998) over seven million energy efficiency measures were installed in homes. This energy supplier obligation remains active, and is now known as the Carbon Emissions Reduction Target (CERT).

The case study of employment impacts of the Energy Efficiency Standards of Performance considered the following measures: cavity wall, loft and floor insulation; draught proofing; tank and water pipe lagging; efficient boilers and heating controls; and double glazing.

The case study was based on information from two of the energy suppliers involved and from manufacturers and installers. Employment at the Energy Saving Trust for the management, monitoring and marketing of the scheme was also considered. Employment within local authorities and housing associations involved in managing schemes for their tenants (estimated at 81 person years over the period) was excluded, as the activity was generally incorporated within an existing role.

The employment generated by the scheme was largely concentrated in installation and administration, as there was over-capacity in the manufacturing industry at the time. While the scheme may have safeguarded some manufacturing jobs, the impact is thought to have been slight and was therefore discounted for the purpose of the case study.

Direct job creation was estimated at 184 full time jobs in installation, 205 jobs with energy suppliers in management, marketing, advice, monitoring and consultancy, and five jobs at the Energy Saving Trust, for the duration of the scheme.

The conclusions of the case study and input/output modelling, including the longer term effects of savings on fuel bills, were that the scheme had the following employment impacts:

- ❑ 736 person-years of direct blue-collar employment over the four years of the scheme
- ❑ 840 person-years of direct white-collar employment over the four years of the scheme
- ❑ 12,000 person-years of indirect employment over 15 years.

**Each £1 million invested in the Energy Efficiency Standards of Performance resulted in 11.4 person-years of direct employment and 87 person-years of indirect employment.**

### 2.3.3 The 1995 Building Regulations

Estimates from the Building Research Establishment<sup>25</sup> suggest that compliance with the 1995 Building Regulations Part L required additional expenditure of £68 million per year on new buildings in 1996 and 1997. This case study explored the employment impacts of this additional expenditure.

The increased cost of new buildings was associated with expenditure on improved thermal characteristics and also on provision of a Standard Assessment Procedure (SAP) energy efficiency rating<sup>26</sup> for each dwelling. The change was expected to improve energy efficiency by between 25% and 35%.

Detailed evaluation of the methods of complying with the regulations had been carried out, and this included estimates of how the additional costs were to be split between materials and labour.<sup>27</sup> This work estimated that one additional person-year of employment in the construction industry would be generated for every 95 dwellings built to the new regulations. In addition, one person-year of employment would be generated in the manufacture of energy efficiency measures for every 200 dwellings built. Finally, for every 1,000 new properties given a SAP rating in a year, one additional energy surveyor would be employed.

The conclusions of the case study and input/output modelling, including the longer term effects of savings on fuel bills, were that the regulations had the following employment impacts:

- ❑ 2,678 person-years of direct, blue-collar employment over the two years of the regulations
- ❑ 180 person-years of direct white-collar employment over the two years of the regulations
- ❑ 7,000 person-years of indirect employment over 15 years.

**Each £1 million invested in response to the energy efficiency requirements in the 1995 Buildings Regulations resulted in 29.8 person-years of direct employment and 70 person-years of indirect employment.**

<sup>25</sup> As reported in Department of the Environment, 1993, *Draft Compliance Cost Assessment: Proposed revisions to the requirements of the building regulations for the conservation of fuel and power*.

<sup>26</sup> A measure of the energy efficiency of a dwelling, on a scale of 0–100, where 100 is most efficient and 0 is least efficient.

<sup>27</sup> Davis Langdon Consultancy, 1993, *Part L Conservation of Fuel and Power: Primary and secondary construction costs*.



### **3.0 MAKING SURE THAT THE MONEY IS MULTITASKING**

The sections above have demonstrated the extent to which an energy efficiency investment programme can create and support new jobs. However, there remain a series of more fundamental and long term reasons why energy efficiency investment is needed – reasons which reinforce the argument for including such investment in the government’s fiscal stimulus package.

#### **3.1 Meeting climate change, fuel poverty and housing policy aims**

The Climate Change Act 2008 sets out the government’s commitment that the UK should reduce its carbon emissions by 80% by 2050 and defines an interim target of a 26% reduction by 2020.

In January 2007, the European Commission set out proposals and options for an ambitious integrated climate change and energy policy.<sup>28</sup> EU leaders endorsed this vision in March 2007 and committed the EU to cutting its greenhouse gas emissions by 30% by 2020 (from a 1990 baseline), provided other developed countries commit to making comparable reductions under a global agreement. Leaders also committed the EU to cutting emissions by at least 20%, independently of other countries’ decisions to act.

As a key part of the long term UK legal framework set out in the Climate Change Act, the Committee on Climate Change (CCC) has been created to assess independently how the UK can best achieve its emissions reductions goals for 2020 and 2050.

The CCC’s inaugural report, *Building a Low-Carbon Economy – The UK’s contribution to tackling climate change*,<sup>29</sup> was published on 1 December 2008. It contains the CCC’s recommendations on the 2050 emissions reduction target and advises on the levels for the UK’s first three legally binding carbon budgets for 2008–22. The report notes that for the EU’s 30% by 2020 reduction target to be met, the UK must take substantial action and its buildings-related emissions<sup>30</sup> will to fall by a total of 42MtCO<sub>2</sub>.

Since the publication of the 2003 Energy White Paper, energy efficiency investment has been recognised as one of the most cost-effective contributors to reducing carbon emissions. The current financial situation reinforces the need to find the lowest cost route to carbon emissions reduction and so re-emphasises the central role that energy efficiency must play.

Increased investment in energy efficiency is also vital if the government is to deliver on its commitment to alleviating fuel poverty. The Warm Homes and Energy Conservation Act 2000 sets out a legal duty for the government to ensure that, as far as possible, people do not live in fuel poverty. The

<sup>28</sup> European Commission, 2007, *Limiting Global Climate Change to 2 degrees Celsius: The way ahead for 2020 and beyond*. Available at [http://ec.europa.eu/environment/climat/future\\_action.htm](http://ec.europa.eu/environment/climat/future_action.htm), accessed on 19 March 2009.

<sup>29</sup> Available at [www.theccc.org.uk/reports/](http://www.theccc.org.uk/reports/) accessed on 19 March 2009.

<sup>30</sup> In other words traded and non-traded emissions reductions from the residential, commercial and public sectors.

government's overall approach is outlined in the UK Fuel Poverty Strategy,<sup>31</sup> which has a primary aim of ensuring that by 2010, as far as practicable, no older householder, no family with children and no householder who is disabled or has a long term illness need risk ill health due to a cold home.

In England, Defra has published *Fuel Poverty in England: The government's plan for action*,<sup>32</sup> which outlines how the government plans to eradicate fuel poverty in vulnerable households by 2010 and all fuel poverty by 2016, wherever practicable.

Recent work to quantify the cost of delivering fuel poverty policy aims suggested that investment of over £9 billion will be needed in the period to 2016.<sup>33</sup>

The government also has a series of policy aims linked to housing and sustainable construction: not only should all new buildings be zero carbon within the next 10 years, but emissions from existing buildings should also be approaching zero by 2050.<sup>34</sup> Delivering these ambitious aims will require a significant increase in the numbers of people with the skills needed to design and build zero carbon properties and to adapt existing buildings. As stated in the Federation of Master Builders report *Building a Greener Britain*:<sup>35</sup>

*A clear policy signal from government is needed to start a process of innovation, skills development and capacity-building in the construction industry, moving towards a future standard for housing refurbishment that is consistent with an 80% reduction in CO<sub>2</sub> emissions by 2050.*

### 3.2 Increasing the energy efficiency of UK businesses

The Carbon Trust estimates that UK businesses could save as much as £2.5 billion over the twelve months from March 2009 by implementing cost-effective energy efficiency measures.<sup>36</sup>

This potential for cost reduction from cost-effective energy efficiency investments make them an essential element of business resource efficiency programmes. Regional Development Agencies throughout England have recognised the value of such programmes in strengthening their regional economies. Between 2005 and 2008 the regions implemented activities with funding from Defra's Business Resource Efficiency and Waste (BREW) Programme, and many of these activities are now being adapted for delivery through the Business Link network.<sup>37</sup> There is considerable scope for further action at the national level as the government looks to strengthen the UK economy and pull it out of the current economic crisis.

<sup>31</sup> [www.berr.gov.uk/whatwedo/energy/fuel-poverty/strategy/index.html](http://www.berr.gov.uk/whatwedo/energy/fuel-poverty/strategy/index.html), accessed on 19 March 2009.

<sup>32</sup> [www.defra.gov.uk/environment/climatechange/uk/household/fuelpoverty/strategy/index.htm](http://www.defra.gov.uk/environment/climatechange/uk/household/fuelpoverty/strategy/index.htm), accessed on 19 March 2009.

<sup>33</sup> Preston et al., 2008, op. cit.

<sup>34</sup> HM Government, 2009, *Heat and Energy Saving Strategy: Consultation*.

<sup>35</sup> Killip, 2008, op. cit.

<sup>36</sup> [www.carbontrust.co.uk/LowerCosts](http://www.carbontrust.co.uk/LowerCosts), accessed on 22 February 2009.

<sup>37</sup> Examples of such activities include a series of projects to provide advice and support through a energy efficiency network developed by the East Midlands Development Agency, as well as provision of part-time energy managers to organisations in the region. The South West Regional Development Agency has funded the EnVision project, which provides intensive support and assistance for businesses on resource efficiency.



### 3.3 Releasing national and local government funds

Better energy efficiency can lead to an increase in the public funds available for delivery of other policy aims.

As the employment impacts described above occur, expenditure on unemployment benefits will reduce and tax income will increase – but there is also a more direct impact. As is the case for business, cost-effective investments in energy efficiency by the public sector will improve the efficiency of the sector and release funds that would otherwise have been spent on fuel bills.

This potential for the release of funds is already recognised by government. There are targets for energy efficiency improvement in the central government estate, and the new performance assessment framework for local government includes a use of resources assessment that has been broadened from simple consideration of the efficiency with which money is spent to a view that also encompasses the use of natural resources.

The NAO notes that energy consumption across central government departments and agencies costs £150 million per year. It also estimates that, if the government reduces energy consumption in line with its own targets, savings of £22.5 million per year could be achieved by 2010, rising to at least £45 million per year by 2020.<sup>38</sup>

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<sup>38</sup> National Audit Office, 2007, *Building for the Future: Sustainable construction and refurbishment on the government estate*.

## 4.0 THE POLICY PROPOSALS

This section makes recommendations as to how the government can best access the many benefits of energy efficiency within its response to the current financial crisis. A number of policy proposals are discussed below, which could form the core of an optimal energy efficiency strategy. Taken together, these proposals could provide a short term stimulus in response to the economic crisis and also support longer term sustainable market development.

### 4.1 Providing the short term stimulus

In the short term, the stimulus needs to be both large and guaranteed. Firms will only gear up to deliver additional work if they believe demand will grow. Therefore a programme of significant public investment in energy efficiency is needed.

- Firstly, the government should fund a large scale energy efficiency programme for low income households that will address fuel poverty in five million homes by 2016. This should be achieved primarily through investment in energy efficiency.

The Centre for Sustainable Energy (CSE) report *How Much? The Cost of Alleviating Fuel Poverty*<sup>39</sup> estimates that investment of up to £9 billion will be needed to ensure that 2016 fuel poverty alleviation targets are met. This implies an average annual investment of around £1.1 billion. The Fuel Poverty Advisory Group notes that energy supplier activity under CERT, together with Decent Homes activity by social housing providers, will result in annual investment of around £550 million.<sup>40</sup> More recent announcements, of the Community Energy Saving Programme and a potential 20% increase in CERT activity,<sup>41</sup> may increase this to around £750 million per year. This suggests that the government's programme should be designed to invest at least the remaining £350 million per year that is necessary.

However, this £350 million per year should be seen as only a minimum figure. *How Much?* looks only at lifting the majority of people just above the fuel poverty threshold: the report estimates that to fuel poverty-proof the housing stock would require an additional £1.4 billion. This implies an additional expenditure of £175 million per year, taking the total for a government programme to £525 million per year.

Furthermore, while £525 million per year would increase energy efficiency in the targeted homes to a SAP level of 65, this may no longer be sufficient: for example energywatch, in its submission to the 2008 Environment, Food and Rural Affairs Committee inquiry into energy efficiency and fuel poverty, calls for housing to be improved to a SAP level of 81.<sup>42</sup>

<sup>39</sup> Preston et al., 2008, op. cit.

<sup>40</sup> Fuel Poverty Advisory Group, 2008, *Sixth Annual Report: 2007*.

<sup>41</sup> Department of Energy and Climate Change, 2009, *Community Energy Saving Programme: Consultation document and Amendments to the Carbon Emissions Reduction Target*.

<sup>42</sup> House of Commons Environment, Food and Rural Affairs Committee, 2008, *Energy Efficiency and Fuel Poverty, fifth special report of Session 2007-08*, TSO HC 1099.



Greater expenditure must also be considered if the government's aim is to improve the housing occupied by low-income households to a standard that contributes fully to the achievement of climate change objectives.

**For the government to deliver its overall climate objectives, a retrofit programme for all housing will need to be implemented, with public and private sector investment totalling somewhere between £3.5 billion and £6.5 billion per year<sup>43</sup> every year until 2050. Greater annual expenditure would be required in order simultaneously to tackle emissions and fuel poverty more quickly.**

**A programme of around £5 billion per year would deliver emissions reductions of 1.6MtCO<sub>2</sub> for every year of its operation, or a drop of 16MtCO<sub>2</sub> in annual emissions by 2020 if operating over 10 years. Employment generated can be estimated on the basis of the analysis reported in section 2. A conservative view of the range of estimates suggests that at least 55,000 jobs would result directly from the programme and hundreds of thousands of jobs indirectly.**

- Increased government expenditure on energy efficiency should be at least partially funded from the reform of the Winter Fuel Payment system.

The government will have spent £2.7 billion on this system in 2008–09 and yet very little of this contributes to the fuel bills of fuel-poor households. Only 12% of households currently in receipt of the payment are fuel-poor,<sup>44</sup> and it is unlikely that these will choose to spend all the payment on their fuel bills. Even assuming that they did spend all the money on fuel bills, this still leaves £2.4 billion being paid to households that are not fuel-poor. The government should, in the first instance, better target the payment so that it reaches only those who are most in need of it. This would release over £2 billion per year that could be spent on energy efficiency measures directed towards the homes of those in fuel poverty.<sup>45</sup> As homes are improved to the extent that they are fuel poverty-proof, the need for such payments to any households should eventually be removed.

**Funding energy efficiency from a reform of the Winter Fuel Payment system would simultaneously address the challenges of fuel poverty, carbon emissions and constraints on the public purse.**

- The government should use its control over the public estate to ensure that energy efficiency in public buildings is significantly upgraded. Local government performance assessment against the new use of resources criterion must be robust.

The NAO notes that targets for the central government estate are not currently being met.<sup>46</sup> Alongside meeting these targets, there should also be a robust assessment of local government performance against the new, broader use of resources criterion. Savings from cost-effective investments in this sector could easily exceed those from central government. For example,

<sup>43</sup> Killip, 2008, op. cit.

<sup>44</sup> Energy Retail Association and Environmental Change Institute submissions to the Environment, Food and Rural Affairs Committee inquiry into energy efficiency and fuel poverty (House of Commons Environment, Food and Rural Affairs Committee, 2008, op. cit.)

<sup>45</sup> The figure is less than the 'wasted' £2.4 billion because, according to Department for Work and Pensions calculations reported by the Fuel Poverty Advisory Group, some £350 million should be redirected to fuel poor households that are not at present receiving the payment.

<sup>46</sup> National Audit Office, 2007, op. cit.

Woking Borough Council has invested £2.2 million in energy and water efficiency projects over the past nine years, leading to savings of nearly £700,000 per year.<sup>47</sup> Similarly, Kent County Council is saving £160,000 annually from cost-effective investments financed through loan funding from Salix Finance.<sup>48</sup>

**Central government could save as much as £45 million per year by achieving its own energy efficiency targets. Savings from cost-effective investments by local government could easily exceed those from central government.**

- The government should reduce VAT on refurbishment to 5%.

Although increased public spending on energy efficiency provides the most definite stimulus for the market, there are steps that the government could take that would rapidly stimulate an increase in private investment. A similar reduction of VAT on refurbishment in Italy is thought to have created up to 75,000 jobs in the construction sector.<sup>49</sup>

**If VAT on refurbishment was reduced to 5%, more people would be encouraged to invest in refurbishments and this would also provide the opportunity and funds for more energy efficiency work.**

## 4.2 Supporting sustainable market development

While a short term stimulus is currently necessary and indeed helpful to the longer term development of the market for energy efficiency, it is not in itself sufficient to ensure this development. Many commentators suggest that the government needs to demonstrate much more commitment and ambition if UK businesses are to develop to take full advantage of the future opportunities offered by the greening of the economy.<sup>50</sup>

- **The government needs to invest in skills and capacity building in the energy efficiency sector.**

Increased investment in energy efficiency will require more skilled builders, fitters and joiners, more energy auditors and managers, and a high level of awareness among architects and engineers. It will also require a well resourced planning consent service and a building control inspectorate that has the time and inclination to ensure that energy efficiency plans are actually put into practice during construction.

- **The government should set up a Home Energy MOT scheme.**

Just as cars are required to meet roadworthiness standards, so homes should be required to demonstrate their fitness for purpose in a low carbon world.

<sup>47</sup> Woking Borough Council, 2001, *Recycling Savings as Well as Energy!*

[www.woking.gov.uk/environment/climate/Greeninitiatives/sustainablewoking/rsawae.pdf](http://www.woking.gov.uk/environment/climate/Greeninitiatives/sustainablewoking/rsawae.pdf), accessed 19 March 2009

<sup>48</sup> [www.energysavingtrust.org.uk/nottingham/Nottingham-Declaration/Why-Sign/Five-reasons-to-sign/Save-money-and-access-new-resources](http://www.energysavingtrust.org.uk/nottingham/Nottingham-Declaration/Why-Sign/Five-reasons-to-sign/Save-money-and-access-new-resources), accessed 19 March 2009.

<sup>49</sup> Pers. comm. from Peter O'Connell, Federation of Master Builders.

<sup>50</sup> See for example the views of a number of experts expressed in the TUC Touchstone Pamphlet (no. 5) *Unlocking Green Enterprise: A low-carbon strategy for the UK economy*.



- ❑ **The government should offer incentives for energy efficiency upgrades.**

Incentives such as waiving stamp duty or providing Council Tax rebates would increase the acceptability of imposing a Home Energy MOT.

- ❑ **The government should offer financial support for investments.**

The government could work with the financial sector to develop a system of subsidised loans to fund energy efficiency investments, with repayments linked to reductions in energy bills.<sup>51</sup> Another approach that the government should support, including as it upgrades the efficiency of its own building stock, is the development of energy services companies known as ESCOs.

- ❑ **The government should consider far greater use of forward commitment procurement procedures to encourage development of newer technologies and create lead markets.**

The power of public sector procurement will have an immediately positive impact on the market for energy efficiency as the government invests in currently cost-effective energy efficiency technologies, but this effect could go much further. Forward commitment procurement programmes have a long history of successful implementation in countries such as Japan, Sweden and the USA.<sup>52</sup>

- ❑ **The government must meet its own commitments on low or zero carbon homes.**

The government must push the Building Regulations towards the highest levels of the Code for Sustainable Homes and also towards the equivalents for non-domestic buildings as they are developed.

**These policy proposals will help to ensure that demand for energy efficiency is sustained and that UK industry is able to meet this demand.**

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<sup>51</sup> As has been carried out successfully in Germany through the KfW programme. For more details see Sunikka M, 2008, 'Lessons from other European Countries' in *Housing, the Environment and Our Changing Climate*, Chartered Institute of Housing.

<sup>52</sup> For more details, see Wade J and Hinnells M, 1995, 'Chapter 2: policy initiatives' in Boardman B et al., *DECADE second year report*, Environmental Change Institute, University of Oxford.





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