

TOUCH  
STONE

EXTRA

# Money to Burn?

*Driving energy efficiency in  
the commercial sector*



*by Mark Rowney*



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### ***About the authors***

This report was prepared by IPPR Trading Ltd for the TUC and authored by Mark Rowney, former Research Fellow for the IPPR. The TUC is also grateful to Will Straw, Associate Director for Climate Change, Energy and Transport at IPPR, for his insightful comments on the final draft.

### ***Touchstone Extras***

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# *Introduction*

Although there are many examples of businesses seriously improving their building's 'footprint', this often happens despite, rather than because of, help from good government schemes. This Touchstone Extra sets out the need to improve the efficient use of energy in the commercial services sector – in hotels, offices, supermarkets, other retail outlets and business premises. That covers organisations that are not in the public sector and that occupy existing buildings (not new properties). Manufacturers in the energy intensive industries are excluded.

Chapter 1 will argue why improving commercial energy efficiency is important to the UK and domestic performance to date. We then set out five strategic areas where public policy could be much enhanced to improve commercial energy efficiency.

Chapter 2 provides example of tried and tested policies from Japan, Germany, the Netherlands and the USA to address these gaps.

Chapter 3 will then make policy recommendations for UK commercial energy efficiency policy.

# 1 Why is improving commercial energy efficiency important?

'Commercial energy efficiency' refers to efforts to reduce the amount of energy required to operate a business. Business' biggest demand for energy, other than heavy manufacturing processes, is heating and lighting. This means that the technical measures with the highest potential to improve commercial energy efficiency are better heating, ventilation and air conditioning (HVAC) systems, lighting controls and building shell improvements like insulation or draft proofing.

These measures account for 79 per cent of potential energy savings in commercial buildings. The balance is made up by installing more efficient appliances and refrigerators (five per cent), electronics (six per cent), and light bulbs/tubes (10 per cent).<sup>1</sup>

Improving commercial energy efficiency is important for four reasons:

- 1 It will reduce the UK's total greenhouse gas (GHG) emissions. In 2012, 10 per cent of the UK's GHG emissions came from commercial buildings. Eighty-two per cent of those emissions were indirectly caused by demand for electricity from the national grid. The remainder were direct emissions from commercial buildings caused by burning fossil fuels, e.g. in gas boilers.<sup>2</sup>
- 2 It will reduce demand for electricity and the need for expensive new generation, and enhance energy security. Electricity demand in the UK in 2030 could be reduced by 36 per cent if electricity efficiency measures for all sectors are implemented in full. However, current policy is on course to achieve a demand reduction of just 13 per cent. Of the total potential reductions in electricity demand that could be achieved by the UK, almost a third (29 per cent) came from the commercial sector.<sup>3</sup>
- 3 The buildings efficiency and energy management industry is an expanding market, providing jobs and growth for the UK economy. Already this sector accounts for 136,000 jobs. Sales have grown four per cent annually since 2007/08 and are projected to increase to five per cent for the period 2010/11 to 2014/15. Increasing commercial energy efficiency fulfils the further potential of this market.<sup>4</sup>
- 4 The process of improving a workplace's energy efficiency can enhance employer-employee relations and also improve the health and wellbeing of employees. For example, following improvements to the Angel Centre in London, Derwent London plc found that its employees felt much more engaged and positive, and enjoyed work relationships a good deal more than before.<sup>5</sup> Studies have also shown<sup>6</sup> how 'green buildings' reduce worker stress and 'sick building syndrome', increasing productivity and reducing absenteeism.<sup>7</sup>

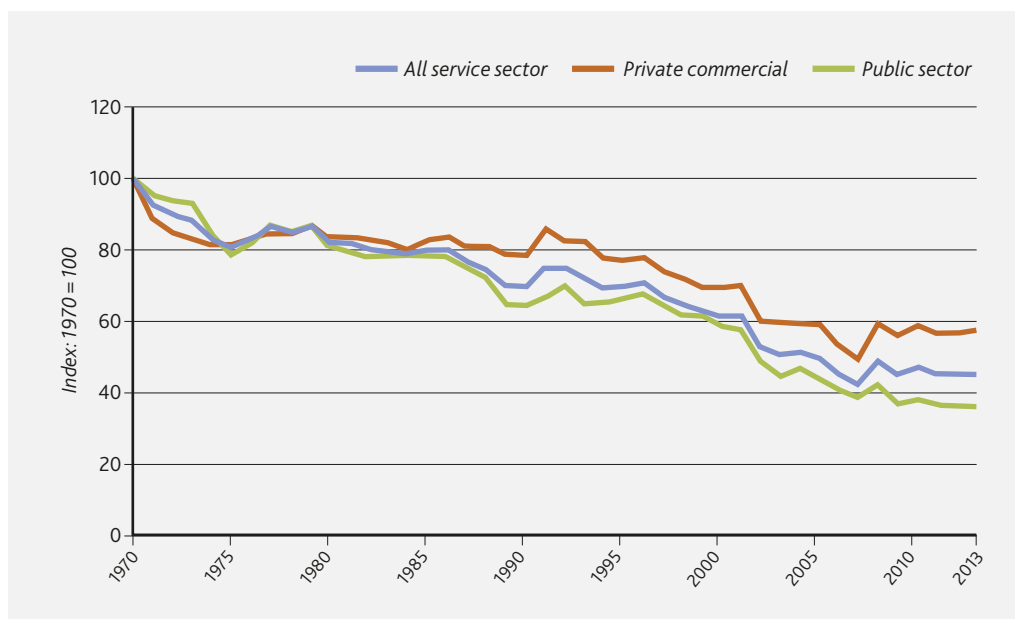
## UK commercial energy efficiency

The rate of improvement to UK commercial energy efficiency has stagnated since 2007.

The commercial sector in the UK uses a diverse property portfolio. This creates challenges for policy aimed at improving commercial energy efficiency, including quantifying and understanding the nature of commercial energy efficiency needs. The Department of Energy and Climate Change (DECC) says that there is “currently no representative data series measuring the energy efficiency of the [commercial] building stock”.<sup>8</sup> Instead, the government measures commercial energy efficiency over time by comparing the value of goods and services produced relative to the energy used to produce them. This is imperfect as other factors (e.g. labour and materials) can influence price. The relationship between energy costs and output prices over time may not be direct or causal.

Nonetheless, the available data strongly suggests that average rate of improvement to UK commercial energy efficiency has not improved for seven years. Commercial energy intensity per unit of output has essentially flatlined between 2007 and 2012, as the chart below shows.

**Figure 1: Energy intensities for the whole service sector and private commercial and public sectors in the UK**



Source: DECC, ECUK Table 5.20/5.21/5.22

Other evidence corroborates this conclusion. Using data collected from Emission Performance Certificates (EPCs), the Committee on Climate Change (CCC) stated that “there has been little progress on energy performance in the [commercial] sector” and that no improvement at all was found in properties registered during 2012–2013. The CCC also estimates that total emissions from commercial buildings increased by nine per cent during 2012.<sup>9</sup> In the past IPPR has stressed that more needs to be done to “encourage businesses to be more energy-efficient and promote demand reduction”.<sup>10</sup>

Small- and medium-sized enterprises may be doing particularly badly. Only a quarter of businesses employing between 50 and 249 people rated energy management as very important, possibly due to other short-term pressures caused by the economic crisis.<sup>11</sup>

If the sector is to achieve the benefits outlined in the preceding section both business and government must do more. Notably, business feels that government is not playing its part. In a CBI Survey of 100 of its members: "Only five per cent of respondents consider the current framework to effectively encourage energy efficiency... Almost 90 per cent of responses were mixed to negative when asked about how government works with business to improve energy efficiency. Moreover, many respondents felt that, to date, energy efficiency has too often been neglected by government in favour of a focus on energy generation."<sup>12</sup>

### **Commercial barriers to increased energy efficiency**

There are several commercial barriers to businesses increasing their energy efficiency. A recent report by the Westminster Sustainable Business Forum and Carbon Connect put them into three categories.<sup>13</sup>

- 1 A lack of understanding, awareness and experience of how to increase energy efficiency. Business, as a whole, does not know how to collect and interpret data on energy usage or develop solutions. As a result, many businesses are forced to outsource improvements, thereby increasing costs.
- 2 Energy efficiency suffers from being disconnected from the strategic targets and aims of businesses. The government has estimated that "for most businesses energy costs are a small proportion of total business costs – less than three per cent on average for the UK manufacturing sector. By contrast, employment costs represented around 18 per cent of the total".<sup>14</sup> The upfront capital costs of insulating buildings and installing new HVAC systems could push a business with poor liquidity into financial difficulties. As such, it is no surprise that "few businesses were taking advantage of longer payback periods".<sup>15</sup> In large businesses, this disconnection has led to some departments (e.g. an estates department) prioritising energy efficiency whereas another department (e.g. finance) does not.
- 3 In larger businesses, communications between departments can cause problems. This can be exacerbated by differing priorities. However, they can also lead to an increase in hidden costs, e.g. if different departments in a business implement energy efficiency measures in isolation this can increase disruption unnecessarily and therefore increase costs.

Even if business has overcome these barriers, introducing energy efficiency measures requires upfront capital expenditure to pay for new lighting, motors and drives, boiler equipment, refrigeration, etc. Obtaining capital finance is a problem for all business, but particularly for SMEs where investing in energy efficiency might be instead of other essential investments.<sup>16</sup> In a recent survey,<sup>17</sup> 60 per cent of SMEs who consider increasing energy efficiency to be important said that they did not have the cash resources required to make energy efficiency investments.<sup>18</sup>



Government can help address these barriers through five key areas of policy:

- 1 regulation
- 2 fiscal and tax incentives
- 3 access to finance
- 4 information gathering and dissemination
- 5 changing workers' behaviour.

The remainder of this chapter focus on these policy areas.

### **Regulation**

The government uses regulations to encourage the supply of energy-efficient products but the standards are often set too low, are too complex and are not well enforced.

Energy product standards in the UK are captured under DEFRA's "energy using products" programme, which implements EU law.<sup>19</sup> This requires certain products to meet minimum standards for environmental performance, and for comparable energy efficiency ratings to be included on product labelling. However, this policy does not cover any lighting control or building efficiency products. Products policy for heating, ventilation and air conditioning only covers 49 per cent of the savings potential of those products.<sup>20</sup>

### **Energy performance certificates**

As well as driving the supply and demand of the products and materials necessary to improve a building, forthcoming policies hope to push business into making improvements to their buildings. From April 2018,<sup>21</sup> landlords of non-domestic private rented properties will not be able to re-let their holdings unless it has a minimum energy performance standard<sup>22</sup> certified by an energy performance certificate (EPC).

This has significant potential to capture a large share of the commercial sector over time: the majority (61 per cent) of businesses were in leased premises in 2011.<sup>23</sup> That year, the average length of a new lease was 10 years, with most leases having a term of five years or less. The average actual letting was just under five years (including where a break clause was exercised).<sup>24</sup> So natural market turnover could mean that in a relatively short time many commercial properties would have a minimum energy performance standard.

In addition, EPCs also serve to cut through the problem that the benefit of energy efficiency is borne by one party to a lease, whilst the cost is borne by the other. The requirement to have an EPC forces landlords and tenants to negotiate compliance with this regulation as part of their negotiations for a new lease.

The required EPC standard is currently unspecified and unfortunately the intention is for it to be set at a low level: grade E.<sup>25</sup> There is also no forward plan for EPC policy – will the regulation become stricter with time? This reduces the effectiveness of the EPC regulation. If the required efficiency level was initially set at a higher level and accompanied by future periodic rises in the level of required efficiency, say from grade E to grade A in a 10-year period, this measure would have the potential to drive real change and encourage businesses to invest in higher grade efficiency improvements sooner.

Furthermore, there are concerns over whether the requirement will be effectively enforced. EU law<sup>26</sup> currently requires all newly built, sold or rented properties to have their energy performance certified with an EPC. The distinction with future regulation is that there is no requirement for these EPCs to certify a minimum standard. To date, over 500,000 Non-Domestic EPCs have been issued.<sup>27</sup> Although there are no official statistics on compliance, government data suggests that by 2012 only 48 per cent of non-domestic sales and 39 per cent of non-domestic rentals had been accompanied by an EPC. Without an effective measure to ensure enforcement of current or future EPC regulation, it will not have its full effect.

Finally, the Carbon Reduction Commitment (CRC) Energy Efficiency Scheme targets high-energy users in the public and private sectors. It is an allowance trading scheme designed to capture energy usage not otherwise covered by the EU Energy Trading Scheme or other climate change agreements. The CBI has criticised it as “overly complex, bureaucratic and costly, without actually having any impact on business behaviour or investment decisions”.<sup>28</sup> In response, the government has passed legislation to simplify the scheme. These measures are being implemented during 2014 and it is too early to tell if they have had a positive effect.

### ***Fiscal and tax incentives***

Businesses can claim allowances to offset the cost of energy improvements. Helpful though these can be, the system is complex and may not be the best way to achieve change.

Plant and machinery writing down allowances of eight per cent are available to businesses for improvement to thermal insulation in non-domestic buildings.<sup>29</sup> In addition, businesses can access 100 per cent first year capital allowances for energy and water-saving plant and machinery. These capital allowances are funded by the Climate Change Levy and a list of the qualifying assets is managed by the Carbon Trust.<sup>30</sup> The list has 53 categories and approximately 16,500 products, including HVAC and lighting systems.

However, its length and changing nature make it complex and difficult to understand. As the CBI stated, “many find the process [of navigating the list of available allowances] overly complex and time consuming, putting off those with more limited resources or a need to conclude a transaction within a reasonable time period. It also requires a level of technical understanding in order to choose the right equipment.”<sup>31</sup> Unlike the domestic sector, where the greatest energy efficiency improvements are driven by appliances and electronics, the majority of commercial energy efficiency is driven by lighting controls, HVAC systems and building shell improvements. Tax incentives that encourage business to buy efficient appliances and electronics may not be the most strategic way of targeting limited public funds.

## Access to finance

Introducing energy efficiency measures requires upfront capital expenditure to pay for new lighting, motors and drives, boiler equipment, refrigeration, etc. Access to finance is a problem for all businesses but particularly for SMEs<sup>32</sup> where investing in energy efficiency might crowd out other essential investments. In a recent survey 60 per cent of SMEs who consider increasing energy efficiency to be important said that they did not have the cash required to make energy efficiency investments.<sup>33</sup>

The UK has two main sources of finance for energy efficiency, though neither are ambitious enough:

- 1 The Green Investment Bank (GIB). The bank has allocated funds specifically to support SMEs making energy efficiency improvements. The GIB committed £100m to specialist energy efficiency funds that to be made available to non-domestic energy efficiency investments: £50m each to Sustainable Development Capital and Equitix.<sup>34</sup> The GIB has also joined forces with Société Générale to create a £50m fund to finance non-domestic energy efficiency projects.<sup>35</sup> McKinsey has calculated that for the commercial sector to achieve its full energy efficiency potential, capital expenditure of £20.6bn will be required.<sup>36</sup> The amount offered by the GIB so far is a drop in the ocean of the third party investment requirements that businesses will likely need.
- 2 Non-Domestic Green Deal (NDGD): the scheme was launched in January 2013. However, no loans have been made to businesses as the Green Deal Finance Company (GDFC) has not yet opened up the Non-Domestic Green Deal to applications from the commercial sector.<sup>37</sup> If it was open, a business could apply for a loan from the GDFC to pay for energy efficiency improvements to their property and repay it through a levy charged on their energy bills. Green Deal loans would be structured so that the cost of the loan repayments is the same or lower than the savings achieved, effectively enabling a business to install measures for free.

The decision not to open the Non-Domestic Green Deal for business is a consequence of a decision by the GDFC to prioritise energy improvements in the domestic sector over the commercial sector. However, IPPR research shows that the domestic Green Deal is not working partly because the interest rate is too high<sup>38</sup> and any bill savings a consumer makes under the scheme are offset by the principal and interest repayments i.e. there is no upfront financial benefit to the consumer.

Major reforms of the domestic Green Deal to provide immediate savings for consumers and reduce the cost of loans is needed if the policy is to be a success. Nonetheless, businesses may be better placed to benefit from the model since they are more familiar than households with making up front investments in order to deliver a return over time.

### ***Information gathering and dissemination***

Any businesses wanting to improve its energy efficiency needs easily accessible information on how to get going. Larger businesses face the additional problem of employees using energy for different purposes, in different places at different times of the day. A learning process is needed to understand how and when energy is used, so that a business can lower energy demand. As businesses start to develop practices for improving their energy efficiency, public dissemination of their learning experiences would allow for the emergence of best practice across the industry.

Despite the flaws in EPC policy for commercial buildings, those EPCs that have been issued are publically available, although they do not teach how to undertake energy efficiency initiatives. Nor is the information that they contain organised in an accessible manner.

To address this, the government's Energy Efficiency Deployment Office (EEDO) is creating an online 'one-stop-shop' to explain how the different policies fit together to target the barriers identified in the government's energy efficiency strategy. Precise details of its content are not yet available, but the one-stop-shop could contain a private sector finance guide and potentially profile key case studies. This could highlight key insights learned from energy efficiency projects on the ground. The government's original aim was to complete the one-stop-shop by June 2014 but this has slipped to the end of 2014.<sup>39</sup>

This initiative seems welcome but our research suggests that it will not provide practical tools to allow a business to take initial steps in improving its energy efficiency, e.g. basic energy consumption modelling tools. Business would need to contract the services of a private company for that work.

One example is the Building Research Establishment (BRE). BRE does provide some free services such an online guide of the environmental impact of building materials and an online database to help business identify products and services that might help it reduce its environmental impact.<sup>40</sup> It does not provide basic practical tools free of charge. For a small business with no experience of energy efficiency, there is currently no easy and affordable point where basic information, tools and services are available. Nor is the experience that businesses are developing (see further below) being properly collected, organised and disseminated.

### ***Greening the workplace***

Key to improving commercial energy efficiency will be workers changing their energy use customs and habits, in particular how they operate office machinery and personal devices in the workplace.<sup>41</sup> One survey of 279 business customers about lighting, air conditioning and heating behaviours showed that although approximately half of those surveyed had the ability to take conservation actions, a smaller percentage of the respondents actually perform the actions. In the case of lighting, for instance, 52 per cent of the respondents had the ability to turn off lights in unoccupied spaces, but only 39 per cent actually reported doing so always or often.<sup>42</sup>

The EU's Energy Efficiency Directive specifically recognised the need for steps to encourage "policies to promote behavioural change" through exemplary projects and workplace activities. Member states were required to increase social dialogue over the benefits of energy efficiency by working with stakeholders to promote "information, awareness-raising and training".<sup>43</sup>

Essential to achieving behaviour change is the embedding of knowledge in the general population of both the importance of improving energy efficiency and how to do it. Without that cultural shift, bottom up approaches to energy-efficient improvements will only happen on a sporadic basis.

In the workplace, primary responsibility for this cultural shift lies with employers and other key stakeholders such as trade unions. The TUC recently published a report, *The Union Effect* (2014), that brought together practical case studies on energy efficiency in both the public and private sector.<sup>44</sup> It concluded that in a variety of different workplaces trade unions can and do play an active part in improving their workplace's energy efficiency, working with management and often taking the lead. Employee involvement in improvements was "crucial" to encouraging behaviour change.

The report includes three commercial case studies:

- 1 At EDF Energy, measures to boost energy efficiency were being driven by its long-standing global commitment to environmental action and corporate social responsibility (CSR), which did "unusually ... [translate] into an agreement with the unions at global level". Negotiations over this agreement began in 2003 through a new forum to discuss CSR, organised jointly by EDF and its European Works Council.<sup>45</sup> Unions from a range of countries signed the agreement in 2005, including UK unions GMB, UNISON, Prospect and Unite. This process helped ensure that, in Britain, EDF Energy was willing to actively involve the unions in achieving its sustainability goals.<sup>46</sup> The agreement provided a global forum on which unions were represented; the presence of UK union representatives on that forum helped ensure that in Britain, EDF Energy was willing to actively involve the unions in achieving its sustainability goals.<sup>47</sup> Environmental issues are raised in the Company Council<sup>48</sup> and also at quarterly meetings with CSR union representatives. At these meetings, sustainability issues are discussed and progress reviewed. There is also a rotating union representative on the EDF Energy's Sustainability Panel.<sup>49</sup> As a result of this union/management co-operation, EDF Energy's commercial buildings CO<sub>2</sub> reduction target was met in early 2013.
- 2 At financial services group Allianz Insurance union involvement has been essential to ensure that employees were actively engaged with the process of cutting office energy use. Unite works with management on a number of issues including on the environment, and the union believes it has helped to influence the process, both through the joint Corporate Social Responsibility group and in other discussions on specific issues.
- 3 At the Port of Felixstowe, the UK's largest container port, unions have been involved at various stages in environmental improvements since 2007, through a joint environment committee with management.

*The Union Effect* shows that in each of these commercial sector case studies, management's cooperation with employees and unions to varying degrees has helped to improve commercial energy efficiency. The TUC acknowledges the value of engagement between partners at work, "but this does not mean that progress has been universal and straight line. Not all targets set have been achieved." Improving commercial energy efficiency currently depends on voluntary commitments by both management and unions. Although in the case studies examined, management was being proactive.

There is therefore a case for government examining whether there is a more formal role for environmental representatives within the workplace.

### **Skills and training policy**

To address behavioural change, UK policy has a focus on addressing the skills gap for energy efficiency assessors and product installers, and on developing apprenticeships in facilities' management. The government also provided grants<sup>50</sup> to commercial training organisations to provide energy efficiency training to individuals with day-to-day responsibility for energy management in a workplace.<sup>51</sup> Furthermore, recognising employers' role in improving commercial energy efficiency, the government has passed two further measures:

- 1 The Energy Savings Opportunity Scheme was introduced to comply with EU law.<sup>52</sup> It requires large enterprises<sup>53</sup> to undertake a full energy audit before 5 December 2015 and every four years thereafter. The audits<sup>54</sup> will "require organisations to measure their overall energy use, including from buildings, transport, and industrial processes, and identify cost-effective energy efficiency recommendations." However, businesses are encouraged, but not required, to publish this audit (meaning that other businesses may not benefit from shared learning). The government will only publish a list of businesses that have notified it that they have carried out an audit and any information that they voluntarily disclose for sharing.<sup>55</sup> If government were to require audits to be published, this could be a real lever to improve commercial energy efficiency. It could help create an online library of information and shared experience (addressing the problem of businesses needing more information gathering and dissemination). This in turn could help promote the development of an energy services industry.
- 2 Mandatory greenhouse gas (GHG) reporting. From October 2013, all Stock Exchange listed companies<sup>56</sup> must include an account of their GHG emissions in their annual report.<sup>57</sup> It does not require listed companies to report on how GHG emissions are being reduced (e.g. through increased energy efficiency) or to share any lessons with other companies.

Government has also recognised that it has a leadership role to play. The 'greening government commitments' made in 2010 require the central government estate to reduce its GHG emissions by 25 per cent by 2015. By 2012, it had succeeded in reductions of 12 per cent.<sup>58</sup> This is welcome but without a systematic way for government to engage with a large section of the commercial sector, the average SME may not ever know about these initiatives.

Although these measures are welcome, government is not complying with the spirit of the EU's Energy Efficiency Directive and engaging in meaningful social dialogue with key stakeholders.

Instead, government relies upon the private sector to take the initiative and continues to take a back seat when it comes to encouraging cultural change. Although there are other examples of leadership from business,<sup>59</sup> these isolated instances will not deliver the change in attitudes required within the whole population. Government needs to take a more prominent role in carrying out such 'civic education' along with business and, trade unions and other stakeholders. Trade unions need to be empowered to drive a bottom-up approach to improving energy efficiency wherever management remains uninterested.

## 2 *How our competitors drive commercial energy efficiency*

In Chapter 1 we outlined the need for commercial energy efficiency to improve in the UK and identified five strategic gaps in the current policy framework. In this chapter we examine each of these gaps in turn – regulation, tax incentives, finance, information sharing and employee engagement – by drawing lessons from policy in Japan, Germany, the Netherlands and the USA.

### *Regulation*

In Chapter 1 we outlined that regulatory policies in place to encourage the supply of energy-efficient products covered only a few of the products necessary for improving commercial energy efficiency. However, Japanese policy has taken a very different approach to the UK/EU in encouraging supply of energy efficiency products; one which aims to drive continual improvements in the market, rather than just removing the worst performers.

### *Japan*

The Japanese Top Runner programme, launched in 1999, divides products into categories. Its basic principle is that the most efficient product in each category (the 'Top Runner') sets the efficiency standard that all other products must meet by a target year. Products eligible for the programme are those which:

- are used in large volume in Japan
- consume a significant amount of energy
- have the potential to achieve efficiency improvements.

Target years can be between three and 11 years from the date of selection<sup>60</sup> and are set on the basis of factors such as a product's technological cycle and likely demand.<sup>61</sup> The target itself is set by assessing the potential technological development by the target year from a baseline set by the Top Runner. The energy efficiency rate is based on the weighted average of the shipment volume for all products in the same category.<sup>62</sup>

As of December 2013, there were 28 listed categories of product in the programme, ranging from air conditioning systems, lighting equipment and gas boilers to electric toilet seats and computers. Building insulation, window glass and window frames (i.e. building shell products) have just been added.<sup>63</sup>



Failure to meet targets leads to a public censure of that failure and a possible reduction in the quantity of the product that can be manufactured or imported.<sup>64</sup> Most products are required to display an energy saving label showing progress in achieving the required standard. Some also have a uniform label showing additional information – such as the likely annual electricity charge – that the retailers may display.<sup>65</sup>

The programme “is credited as the most influential programme in Japan’s energy efficiency toolkit” having “resulted in the spawning of whole new industries around energy-efficient machinery and equipment”.<sup>66</sup> Air conditioners, for example, have seen improvements in electricity consumption of 30 per cent between 2001 and 2011.<sup>67</sup>

Japan’s approach to encouraging the supply of energy-efficient products does not address the UK’s specific problem of its policy not covering enough products. Japan still has to choose a Top Runner product in each category. However, Japan’s approach has a positive knock-on effect of driving innovation.

### *Fiscal incentives*

In Chapter 1 we outlined that policies in place to finance energy efficiency improvements in the commercial sector were limited. To encourage demand for energy-efficient products and materials, capital allowances are made available. However, business finds the list of eligible products difficult to navigate. The lack of targeting of these allowances towards HVAC systems, lighting controls and building shell improvements was questionable.

The Netherlands has a similar system to the UK for encouraging demand for these products whereas the US has taken a very different approach, focusing on buildings rather than products. We shall examine each of these approaches in turn.

### *Netherlands*

The Netherlands has a similar product specific approach to energy efficiency tax incentives to that in the UK, and uses three different schemes. The Energy Investment Allowance (EIA) and the Environmental Investment Allowance (Milieu-investeringsaftrek or MIA) provide capital allowances<sup>68</sup> for energy saving, sustainable energy technologies and environmental technologies. Allowances claimed under the EIA cannot be claimed again under the MIA and vice versa. Each scheme has its own list of products. The EIA’s energy list<sup>69</sup> has 160 products, split between five categories.<sup>70</sup> The MIA’s environmental list has 310 products.<sup>71</sup> The third scheme, known as VAMIL, allows accelerated depreciation of qualifying assets, all of which are found on MIA’s environmental list. These are all updated annually.

Originally the duplication of technologies on both the environmental list and the energy list created an overlap between the three schemes that resulted in some confusion and reduced their overall effectiveness. That overlap has since been removed as part of a number of measures to improve these schemes.<sup>72</sup>

Government reviews of MIA, VAMIL and EIA have judged them to be a success. The MIA and VAMIL had a high level of impact – between 2000 and 2010 they supported over €24.6bn of investment.<sup>73</sup> The EIA is described as a “pivotal instrument of Dutch energy policy”, generating an average of 15,000 annual applications and around €1bn of investment annually. In particular the use of the energy list has been praised as it allows the policy to be flexible and apply tighter standards if necessary. Its greater value however is in giving investors confidence in new technologies with which they might be unfamiliar. This latter benefit appears to be lost in the UK. Having a smaller list of products gives business confidence that the government has reviewed and approved those products as being energy efficient, compared to the array of alternative models available. A long list of products erodes this implicit guarantee of quality by government, making the process of choosing which product to invest in more difficult.

By restricting the list of products, the Netherlands shows that Britain’s approach could be simpler and more strategic. Meanwhile it retains a level of flexibility that is not present in the US approach (see below). The drawback is that public funds may be spent on products that do not materially improve energy efficiency.

## USA

Under s179d of the Federal Tax Code, tax deductions worth \$1.80/ft<sup>2</sup> are available<sup>74</sup> against US corporate income tax for buildings that have achieved 50 per cent power cost savings. The only products considered in evaluating a building’s efficiency are HVAC, lighting, hot water and insulation improvements (walls, windows, roof and doors). This helps remove the complexity of the UK system and provides a more targeted approach. If only some of these products have been installed, the amount of deduction available is reduced. The Building Technology Office website (see further below) hosts an online s179d calculator that makes the process of calculating a business’ eligibility for s179d deductions even simpler.<sup>75</sup> Currently, the US Department for Energy is redesigning s179d deductions to make them more generous and more likely to encourage businesses to retrofit their properties.<sup>76</sup>

The American approach to this policy is much more strategic than the UK’s thus avoiding the risk that fiscal expenditure promotes products that do not promote increased commercial energy efficiency to a material extent. It is also simpler for business to navigate than the UK’s approach.

## Access to finance

Chapter 1 showed that the only publicly funded support for improving commercial energy efficiency was the Non-Domestic Green Deal (which, as we saw, was not yet lending) and the Green Investment Bank (which does not yet have borrowing powers). Although all four study countries provide direct subsidies for commercial energy efficient, Germany provides the best case study.

## Germany

Germany's primary approach to improving access to finance for commercial energy efficiency is through low interest loans. These are provided by the retail banking sector, supported by Germany's state owned development bank, Kreditanstalt für Wiederaufbau Bank (KfW).

In 2005, KfW research showed that finance was the most commonly cited barrier (by 47 per cent of respondents) to a business improving its energy efficiency. SMEs in particular were most likely to need third party financing.<sup>77</sup>

The KfW developed a two strand package for financing energy improvements:

- initial energy checks<sup>78</sup> carried out by a KfW approved consultant
- finance for new equipment if it leads to prescribed energy savings.<sup>79</sup> Available financing is capped at €25m for 100 per cent of energy efficiency costs. The term of the loan can be up to 20 years with interest fixed for 10 years. Some applicants are given the loan interest free for up to three years. Importantly this is available to freelance professionals and to specialist energy savings companies that provide specialist services to small business. This helps ensure that micro businesses benefit from the policy.

Germany's KfW supported 2,315 projects providing over €3.5bn in financial support for commercial energy efficiency in 2012.<sup>80</sup> This dwarfs the investment made available by the GIB in the UK (or the GDFC for that matter). It is clear that there is material role for a state-backed national investment bank in improving commercial energy efficiency.

## Information gathering and dissemination

Chapter 1 established that businesses need better data, information and shared learning of their experiences to allow them to improve energy efficiency. Of the four international comparators examined, the United States was the exemplar in this area.

The US Department for Energy set up the Building Technologies Office (BTO) to help achieve President Obama's goal of reducing energy intensity in the commercial and industrial sectors by 20 per cent by 2020.<sup>81</sup> Its remit covers all types of buildings including commercial buildings.

The backbone of BTO's work is made up of the Better Buildings Alliance (BBA) and the Better Buildings Challenge (BBC). BBA was launched in 2008 and is a network of representatives across seven commercial sectors that work with the BTO's staff to improve energy efficiency. Members set and share an annual energy savings goal. Members receive account management support, engagement opportunities, newsletters and webinar notifications. In 2013, BBA members reported average savings of two per cent on the previous year's energy use.<sup>82</sup>

The BBC challenge was launched in 2011 by President Obama and now has over 170 partners. They commit to 20 per cent energy savings by 2021 and increased transparency of their practices and progress in increasing energy efficiency. BBA members joining the BBC are recognised at 'top-level' for participating, sharing data, developing replicable

models, and meeting goals.<sup>83</sup> BBC partners improved the energy performance of their portfolios by over 2.5 per cent a year since their respective baseline years, with around a quarter achieving average improvements of over 20 per cent. This is in line with the President's 2020 goal.<sup>84</sup>

Key to the BBA's and BBC's success is the recognition that a lack of high quality and detailed information and data for building owners and managers is a gap to greater commercial energy efficiency. The BTO has put in place a number of initiatives to address this, which together constitute an impressive package.

A nationwide map provides information on the data access that utilities provide to their customers so that comparisons can be made easily. The Building Energy Data Exchange Specification acts as a 'data dictionary' by providing common formats and definitions for data on measuring energy performance of commercial buildings. The Buildings Performance Database allows users to compare performance trends across similar buildings. This lets them identify and prioritise cost saving efficiency improvements and assess the range of likely savings from these improvements. The Commercial Buildings Resource Database is an online library of energy efficiency reports, guides, policy papers, etc. BTO provides energy modelling software that allows architects and building designers to simulate efficiency designs.

Other measures include the Standard Energy Efficiency Data Platform provides a business with a large number of properties with a standardised format to store and analyse data. The Technology Performance Exchange is an online portal that allows business to share energy performance data that allows other businesses to calculate, the real world energy efficiency characteristics of a product (which may differ to a manufacturer's claims) before buying it. The BTO has also published Advanced Energy Design and Advance Energy Retrofit Guides for business; and is developing a Commercial Building Energy Asset Score programme that will act as a national standard against which to measure the physical characteristics and energy efficiency of a building.<sup>85</sup>

The US government's scheme is available on a single website, providing a wealth of readily accessible and understandable information to the uninitiated businesses. The US government is directly facilitating the free dissemination of learned behaviour through a programme of measures, to enable a business to undergo efficiency improvements with less help from a private contractor.

### ***Greening the workplace***

Chapter 1 concluded that the key to encouraging behaviour changes at work was embedding knowledge of how to increase energy efficiency across civil society. We found evidence of this kind of activity in all four comparator countries, including the teaching of energy efficiency in schools, but the USA showed the highest level of systematic engagement with the population.

The US government's BTO programme of workforce development covers commercial buildings industry and other agencies. It develops training tools, materials and voluntary guidelines in order to further its Better Buildings Workforce Framework. This consists of the development of technical standards, skills standards, curricula and training programmes, industry recognised certification, third party accreditation for the training and certification programmes; and driving market demand for a high quality workforce with strong energy efficiency skills.<sup>86</sup>

In addition, the BTO frequently organises demonstrations of new technologies with an open invitation to potential collaborators. Reports of past demonstrations are available on the Commercial Buildings Resource Database (see above).<sup>87</sup> BTO also has mechanisms in place to promote energy efficiency at the state and local level.<sup>88</sup>

What makes the US approach so different to the UK's is not just the breadth of activities but their penetration. The scheme's membership now covers one seventh of the US commercial building sector. The US government is already engaging with a large proportion of business, and this could grow in the future. By doing so, it encourages employers to do more to engage with their employees on energy efficiency. A watching brief should be maintain on the BTO's progress and lessons learned from its successes.

# 3 Conclusions and recommendations

Chapters 1 and 2 identified five strategic policy areas to improve commercial energy efficiency and looked at approaches taken by other countries. We will now draw on those lessons, and other elements of our research, to make recommendations for further policy investigation.

## 1. Better regulation

Chapter 1 highlighted that the introduction of minimum standards for Energy Performance Certificates (EPCs) provided by landlords could have a significant impact on future commercial energy efficiency. However a low standard and lack of enforcement could undermine its effectiveness.

Government must consider how regulations could be made more effective. It should look into increasing the initial mandatory Energy Performance Certificate standard to a level higher than a grade E grade and set a pathway for future rises to give industry certainty. It also needs to improve enforcement of EPCs. As many commercial leases must be registered with the Land Registry, it should investigate the possibility of requiring EPCs to be noted on the Land Registry. This would improve enforcement because the lease would not be legal, valid and binding and commercial activities could not commence (or continue) until the EPC had been issued and registered. The government should also consider extending the requirement for public buildings to issue a Display Energy Certificate<sup>89</sup> to commercial buildings.

It is clear that the UK's energy products policy is not delivering the support business needs to improve energy efficiency. The government's energy efficiency office (EEDO) should lobby the European Commission to rectify this and could look to the Japanese Top Runner programme for lessons in better approaches to this policy area.

Finally, there remains a need to support the development of an energy efficiency business sector. We believe that the government should introduce a "jobs guarantee" to anyone who has been unemployed and claiming JSA for more than 12 consecutive months, as advocated by IPPR<sup>90</sup> and include jobs in the energy efficiency sector in that policy.

## **2. New tax incentives**

The list of products eligible for capital allowances in the UK is long, cumbersome and difficult to use. In addition to capital allowances for products, the UK also has plant and machinery allowances for thermal improvements to buildings. Better approaches in The Netherlands and the USA provide simpler lists of products, or focus on the overall energy efficiency of a building. The government should research ways of consolidating and simplifying its fiscal policies.

## **3. Better access to finance**

In stark contrast to the large scale programmes funded by the KfW in Germany, current UK policy is regrettably only delivering a small proportion of the capital required to improve UK commercial energy efficiency. The GIB does not have the powers it needs to borrow these powers should be granted as soon as possible. Meanwhile, the GDFC is not yet investing in commercial energy efficiency. Although the failure of the domestic Green Deal overshadows the viability of the whole initiative, it may be the case that Non-Domestic Energy Efficiency is a better fit for the Green Deal finance model, because businesses are used to making up front investments for the delivery of returns over a longer payback period.

## **4. Better information gathering and dissemination**

Government needs to do far more to promote the evidence for making a building energy-efficient. The United States shows that it is possible for government to give direct assistance to a business to improve its commercial energy efficiency through the provision, on a single website, of practical tools to make basic changes. Without delaying the launch of its 'one-stop-shop', the UK should expand the ambition to something akin to what is provided across the Atlantic. A good first step would be to consider requiring audits produced under the energy savings opportunity scheme to be published.

The government also needs to be much more proactive in helping business achieve commercial energy efficiency. It should look into the possibility of establishing a formal network or alliance of businesses who are trying to improve their energy efficiency, modelled on the BBA and BBC in the USA.

Finally consideration should be given to extending the energy savings opportunity scheme to smaller businesses.

## **5. Greening the workplace**

The government needs to be far more proactive in encouraging behavioural change at work and encouraging the entire population to think differently about how we use energy, food and other resources at home. Only with a cultural shift in attitudes to resource consumption can change be driven successfully. The IPPR has recommended that a new government Office of Resource Management should lead this work, through activities such as worker- and consumer-awareness campaigns. This body should be established and begin working as soon as feasible.

Establishing a formal network (see above) of businesses focused on improving commercial energy efficiency could do a lot to change management's attitudes. To initiate the network, a national stakeholder body involving government, industry and trade unions should be created and tasked with increasing commercial energy efficiency. However, that network is unlikely to include all or even the majority of businesses. Trades unions should therefore be empowered to encourage a bottom-up approach within firms.

As the TUC has argued, encouraging energy efficiency projects in the commercial sector currently depends on voluntary commitments made by both unions and management. The government should investigate the possibility of formalising union rights to appoint environmental representatives in firms of a certain size who would hold regular meetings with management on energy efficiency improvements. This would include the right for those representatives to receive appropriate training and to take part in joint consultation with employees and management on improving their workplace's energy efficiency. These new statutory rights would have to encourage a shared focus and commitment between unions and management on improving commercial energy efficiency. They would drive a 'transformative effect' on workplace efficiency and sustainability, particularly where employers are currently less than enthusiastic about improving energy efficiency.



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- 89 Display Energy Certificates focus on operational energy use and are designed for prominent display in buildings. They are only required for a building if it is at least partially occupied by a public authority (e.g. council, leisure centre, college, NHS trust); it has a total floor area of over 500 square metres; and it is frequently visited by the public. They are distinct from EPCs, which are required on property transactions and only provide a theoretical rating of energy efficiency.
- 90 [www.ippr.org/assets/media/images/media/files/publication/2011/09/jobs-for-the-future\\_UK\\_Sep2011\\_7938.pdf](http://www.ippr.org/assets/media/images/media/files/publication/2011/09/jobs-for-the-future_UK_Sep2011_7938.pdf)





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