

# Improving non-domestic energy efficiency after Brexit:

the challenge and the opportunity



# Table of contents

<b>1. Foreword.....</b>	<b>1</b>
<b>2. Executive Summary.....</b>	<b>2</b>
<b>3. The challenge of delivering non-domestic energy efficiency after Brexit.....</b>	<b>4</b>
<b>4. The opportunity to improve non-domestic energy efficiency after Brexit.....</b>	<b>5</b>
<b>5. Creating an effective policy framework.....</b>	<b>7</b>
<b>6. Smarter Policy.....</b>	<b>9</b>
i. Reform the Energy Performance Certificate	
ii. Use the MEES to force a progressive upgrade of the building stock	
iii. Reform ESOS to encourage large companies to take responsibility for their energy efficiency	
iv. Introduce world leading building standards for non-domestic new builds	
v. Reform policy to grow the energy services market in the commercial sector	
vi. Use financial incentives to increase energy efficiency beyond minimum standards, particularly for SMEs	
vii. Extend the scope of DEC's and improve them as a data source and reputational driver	
viii. Use the public sector estate to lead the way	
ix. Improve enforcement to increase the effectiveness of energy efficiency policy	
<b>7. Recommendations.....</b>	<b>21</b>
<b>8. Glossary of acronyms.....</b>	<b>22</b>
<b>9. Acknowledgements.....</b>	<b>23</b>
<b>10. Endnotes.....</b>	<b>24</b>

# Foreword

The UK was the first nation to set legally binding targets to reduce carbon emissions over a longer term time-frame. The recent Clean Growth Strategy builds on this by identifying the need for a 20% cut in business energy spend as a means to support progress towards our carbon goals alongside economic growth. This energy target brings into sharp focus the energy efficiency of the existing building stock where a significant chunk of emissions are from non-domestic buildings.

Yet improvement in energy use here has been limited. While decarbonisation of the grid delivered a 25% reduction in the UK's carbon factor in the past three years, building emissions themselves have only reduced by 1% on average between 2009 and 2014 (temperature adjusted), with progress particularly poor for commercial and public sector buildings. This suggests a broken energy efficiency market and policy framework with non-domestic properties failing to deliver on their energy efficiency potential.

A critical need is a simplified regulatory framework supported by strong enforcement and the necessary skills to deliver appropriate advice. The EIC Carbon Management & Sustainable Buildings Working Group has produced this report against the background of Brexit, showing how we can reset the regulatory landscape while keeping the most valuable EU regulations, and using technological change to enable a different approach to the way we collect performance information and drive enforcement (including learning from other sectors such as aerospace and automotive in how they are implementing data driven systems).

As part of preparing this report, we worked with EIC member EEVS Insight, who along with their research partners Bloomberg New Energy Finance, allowed us to include a series of questions on policy and enforcement in their widely respected quarterly energy efficiency trends survey. The results, which are referred through this report, show strong support for the sort of changes we are advocating, not just from energy efficiency consultants and technology firms, but from mainstream energy users.

Combining a prosperous economy and decarbonisation is going to be more important than ever after Brexit. I hope that this report, based on the deep expertise of EIC's members, will show that pragmatic ways forward to get energy efficiency moving again do exist and can be implemented if the will and determination is there.

**Sunil Shah,**  
**Chair of EIC Carbon Management & Sustainable Buildings Working Group**

# Executive Summary

This report proposes recommendations to increase energy efficiency in non-domestic buildings, specifically looking at the way in which Brexit poses an opportunity to refresh the current policy framework by building on the positives of current legislation, setting out *longer term ambitions* to provide **business with the certainty it needs** to make investment decisions, and implement new policies to meet our climate change commitments.

The report covers a range of policies, reflecting the broad interest of our members, there are four themes that run through it:

1. Better methodology must be used in producing energy performance certificates to better reflect real world energy efficiency.
2. The government must foster a greater sense of certainty for business by setting out a long-term roadmap for the energy efficiency policy framework.
3. The government must improve available information and utilise existing data better.
4. Enforcement should be considered a key priority for government to ensure that policy on paper is implemented effectively in practice.

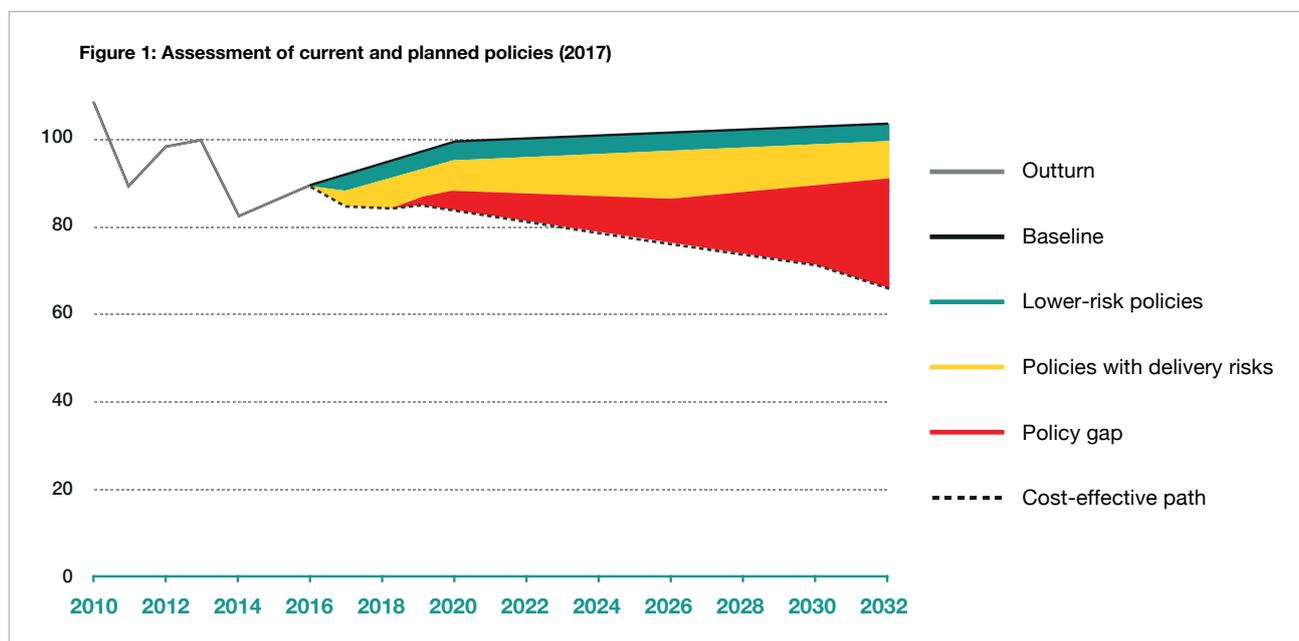


# The challenge of delivering non-domestic energy efficiency after Brexit

Non-domestic buildings include buildings used for commercial and public use. There are around 1.8 million non-domestic buildings in the UK, which account for around 12% of greenhouse gas emissions.<sup>1</sup> Unlike other emission areas such as power generation, building emissions are not in decline, particularly those related to commercial buildings. From 2009 to 2015 commercial building emissions did not decrease at all, while building emissions in 2016 increased by 2% adjusted for winter temperatures.<sup>2</sup>

In general, energy efficiency gains become more elusive the more efficiency projects are undertaken, **but non-domestic energy efficiency has thus far been a missed opportunity** and therefore the scope for improvement is still large. The Ministry of Housing, Communities and Local Government's Energy Performance Certificate (EPC) statistics from the first quarter of 2017 show that **only 8.31% of commercial buildings have an EPC rating of B or better**, and **only 0.69% have a rating of A or A+**. The Building Energy Efficiency Survey produced by the Department for Energy and Climate Change in 2016 identified potential for a **39% reduction** in energy use in non-domestic buildings.<sup>3</sup>

To meet our next carbon budget the Committee on Climate Change (CCC) estimates that building emissions in general must fall by 20%. In order to achieve this reduction, **new policy is required** – simply put, we will not meet our upcoming carbon budgets with the current approach.<sup>4</sup> The CCC refers to this as a “policy gap”: as shown in Figure 1, a further reduction of 19MtCO<sub>2</sub> is needed by 2030, nearly double the expected reduction with current policies. 9 MtCO<sub>2</sub> of the savings from existing policies are considered to be at risk due to the uncertainty of the future of these policies. While the policy gap refers to all building stock, we suggest that non-domestic buildings should lead the way in improving energy efficiency, and there should be targeted government policy to achieve this. Indeed, the failure of the Green Deal to incentivise uptake in homes suggests that we should look to business and the public sector to contribute more.



Source: Committee on Climate Change<sup>7</sup>

The energy efficiency policy framework therefore needs a rethink. Confidence in the government on this issue is low, with only 11% of Energy Efficiency Trends Survey respondents (hereafter referred to as ‘the Survey’) considering energy efficiency policy to be effective.<sup>5</sup> EIC strongly supports the CCC's assertion that ‘to be confident that the fourth carbon budget will be met, it is urgent that the government brings forward firm policies that go beyond those already issued.’<sup>16</sup>

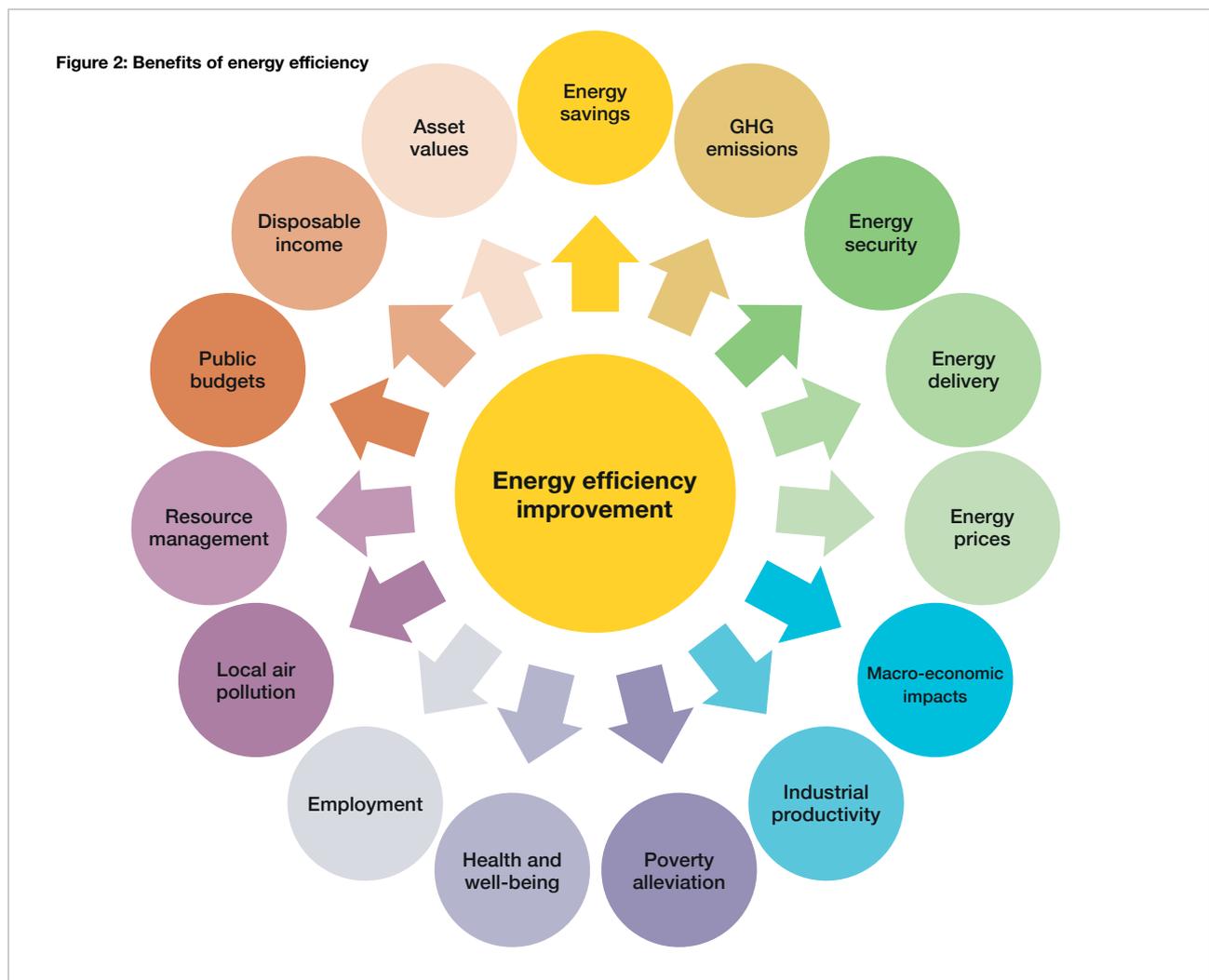
# The opportunity to improve non-domestic energy efficiency after Brexit

## The case for energy efficiency

There is a firm economic case to be made for energy efficiency in general as both a cost-effective means of cutting carbon emissions and a boon to the wider economy. The Building Energy Efficiency Survey found that implementing measures with a payback of 3 years or less would save business **£1.3 billion per year**.<sup>8</sup>

On the macroeconomic level, analysis by the International Energy Agency has shown that **large scale energy efficiency policies typically have positive GDP effects of 0.25% to 1.1% per year**. Job creation ranges from 8 to 27 job years per €1 million invested. It reduces the need to import fossil fuels – globally efficiency improvements between 2000 and 2015 avoided almost \$50 billion of expenditure on fuel imports – and improves energy security.<sup>9</sup>

Energy efficiency has an array of other benefits ranging from increased asset value to improving the health of occupants (see Figure 2).



Source: IEA<sup>10</sup>

## The policy background

The current energy efficiency policy framework in the United Kingdom is largely the result of European Union directives such as the Energy Efficiency Directive, and the Energy Performance of Buildings Directive, which set binding energy efficiency targets and require public energy efficiency labelling for buildings (e.g. EPCs).

Since the 2008 global financial crisis energy efficiency has slipped down the agenda. However, announcements in Autumn 2017 showed a renewed interest from government in the merits of energy efficiency. It was a central pillar of the Clean Growth Strategy, which announced a series of consultations on key policies such as ESOS and MEES to be undertaken in 2018. After a period of inertia it seems the government is now receptive to the notion that energy efficiency is one of the most cost-effective ways to reduce to carbon emissions.

The process of leaving the European Union brings the validity of many of the UK's primary energy efficiency policies into question. While the European Withdrawal Bill states that European law will initially be carried out over into UK legislation, the government will then have the opportunity to pursue a different path. At the very least, this process will cause the government to re-evaluate the existing framework.

In the interests of providing business with the long-term certainty it need to make investment decisions, EIC urges that the government continue down a similar path as was set out by the EU Directives. However, Brexit is an **unique opportunity** for the government to set out a bold vision that not only continues in the vein of past form, but seeks to mark the UK as a climate change world leader. In the broad sense this can be achieved by:

1. Setting out a long-term policy framework tailored for the UK's unique circumstances.
2. Refreshing existing policy to improve its effectiveness.
3. Implementing new policy to close the policy gap.
4. Better enforcing policy to ensure goals are met.

The Survey showed that there is a strong appetite from both consumers and suppliers for the government to be more ambitious - 68% of suppliers and 49% of consumers surveyed felt that the government's current target of improving commercial energy efficiency by 20% 'could be more ambitious'.<sup>11</sup> By setting out a bold energy efficiency policy agenda post-Brexit, the UK has a chance to both reduce carbon emissions and support the green economy.

# Creating an effective policy framework

The current energy efficiency policy framework for buildings is too confusing, too complex and is considered by business to be unstable – 21% of energy efficiency suppliers see policy uncertainty as their primary issue of concern.<sup>12</sup> The government's form in the past, with policies being continually downsized or cancelled, means that there is confusion about the level of the government's commitment to energy efficiency. The proclamations in Autumn 2017 were a step in the right direction in terms of providing business confidence, but the policy detail was scarce.

The first goal of an effective policy framework should be to provide certainty to businesses by setting a long-term trajectory for existing policies with a principle of **continual improvement**, scaled in order for the UK to meet each carbon budget. Policies should look to target the **whole lifecycle of a building**, from design to redevelopment. The objectives of each policy should be clearly defined, in order to provide a strong indicator of the level of its success.

Research from Deloitte found that energy efficiency policy is most effective when organised into **bundles**.<sup>13</sup> An extensive, international study<sup>14</sup> found that the most effective way to increase energy efficiency is through a policy bundle of:

1. **Standards** to set a minimum efficiency floor
2. **Labels** to measure performance against appropriate benchmarks
3. **Financial incentives** to increase energy efficiency beyond minimum standards

For points 1 and 2, there are two existing policies that go some way to fulfil these requirements.

1. Standards: The Minimum Energy Efficiency Standard (MEES), in place from April 2018, sets a minimum level of energy efficiency for private rented property. This can be expanded and improved, as will be discussed later in this report, but this serves an important purpose.
2. Labels: The legal requirement to display an Energy Performance Certificate upon the sale or rental of a building

For point 3, the most recent attempt by government to financially incentivise energy efficiency was the Green Deal, which as will be discussed in later section, failed to achieve its goals. This report will set out some alternative recommendations to provide the necessary financial incentives to increase energy efficiency.

## Setting out energy efficiency ambitions to 2050

The Climate Change Act 2008, with its legally binding 2050 target, has been one of the world's most innovative pieces of climate change legislation, meaning that the United Kingdom is one of the world leaders in this field. It is responsible for not only forcing the government to legislate to meet its 2050 ambitions, but to publicly report on its plans to meet the target. This was referenced by Climate Change Minister Claire Perry in her speech launching the government's Clean Growth Strategy, which was itself an expansion of the plan legally required of government by the Act.

Energy efficiency must play an integral role if the UK is able to meet its 2050 target. But until the Clean Growth Strategy made the first steps of a commitment to energy efficiency, it was not championed by the government. The Clean Growth Strategy set an important marker of its ambition by pledging to increase business energy efficiency by 20% by 2030, as was recommended by the Committee on Climate Change (CCC). We urge the government to build on this assertion by making a clear declaration of a 2050 objective in line with the CCC's recommendation – that **UK building stock should be as close to carbon neutral as possible by 2050 at the latest**. This would send a clear signal to the market that energy efficiency is a desirable long-term investment.



# Smarter policy

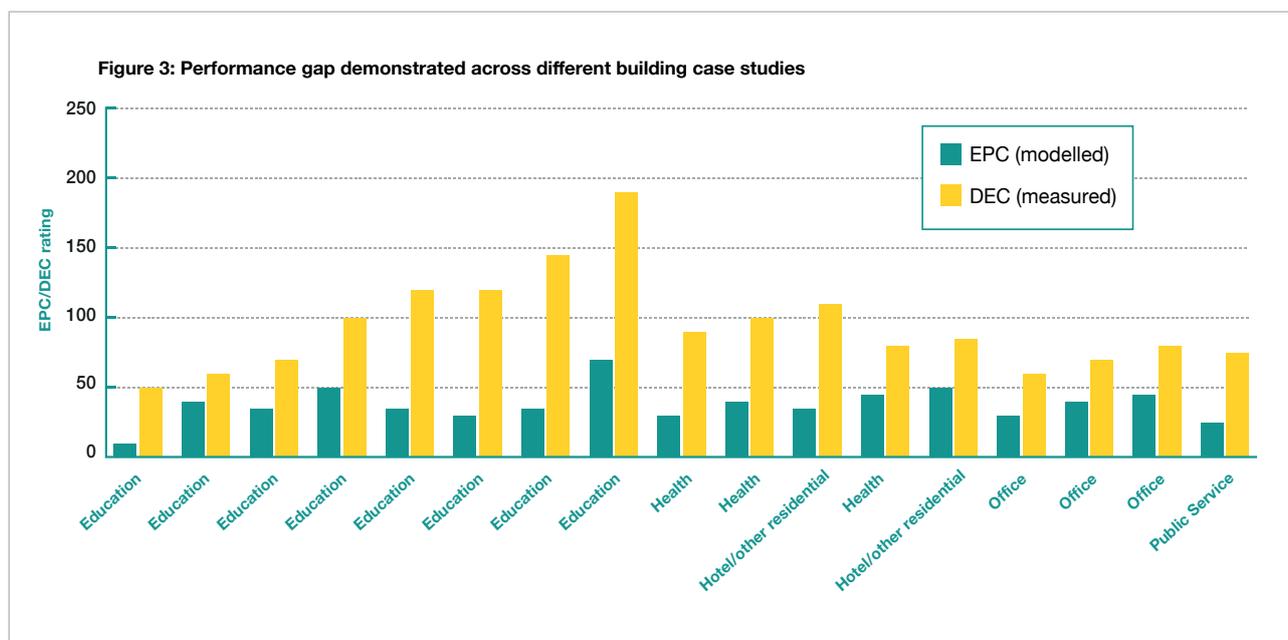
## i. Reform the Energy Performance Certificate

### The challenge

The requirement for buildings to have an Energy Performance Certificate originates from the EU's Energy Performance of Buildings Directive, and therefore is potentially at risk following Brexit.

Primarily, there is a basic issue of compliance with the EPC. **In 2012, half of all non-residential sales and lettings did not have an EPC despite this being a legal requirement** - only 694,000 have been made for non-domestic buildings since 2008, out of around 2 million total non-domestic buildings.<sup>15 16</sup>

For those that did produce certification, a Study by the University of Bath has shown that the projections of a building's modelled performance often differ greatly from their actual performance when operational. – this is called a “performance gap”.<sup>17</sup> Many of the buildings the report analysed used twice as much energy and emitted twice as much carbon dioxide compared to the predictions of their EPC. Another study, assessing around 2 million square metres of floorspace, found that average energy consumption of a building was very similar whether its EPC rating was C, D, or E.<sup>18</sup> Figure 3 below, produced by Innovate UK, shows this performance gap across several buildings under different usages, highlighting a significant performance gap in every example.



Source: Innovate UK<sup>19</sup>

According to the Bath study, this stems from the ‘modelling illiteracy of building modelling professionals’, the notion that assessments are sometimes performed to a poor standard and that can significantly alter a building's rating.<sup>20</sup> This may be a too simplistic an assertion. By placing the blame fully on the building modelling professionals the report underplays the fact that the modelling itself is problematic, and its quality is reliant on a range of factors such as the accuracy of the metering, build process and quality and occupant behaviour.<sup>21</sup>

Modelled emissions are limited in their scope, and only take into account what are known as ‘regulated loads’ – those which fall under Building Regulations 2010 such as heating, ventilation and lighting – and do not include ‘small power’ such as IT, which in some offices can be a significant user of energy.<sup>22</sup> Modelled emissions also ignore energy used outside working hours, despite the fact that in many buildings, such as those running 24 hour servers, energy use matches or even exceeds use during working hours.<sup>23</sup> Modelling also cannot account for key changes such as those made during construction, operation and in occupant behaviour.

Essentially, EPCs may be in theory useful to indicate the potential energy performance of a building, but during the operational stage of its lifecycle, the accuracy of the EPC is significantly reduced.

In a general sense, there is also an issue of lack of awareness, stemming from the poor dissemination of information about the policy. A survey of (domestic) landlords found that only 3 in 10 knew their property's EPC rating, whereas only 2 in 10 knew that the EPC rating could indicate the environmental impact of their property.<sup>24</sup>

### **The opportunity**

Brexit removes the automatic need to comply with the Energy Performance of Buildings Directive, and therefore the need for buildings to produce EPCs. It is vital however, that the UK retains some form of energy performance certification, as in general it provides a useful information source that increases the visibility of energy efficiency and supports the growth of the energy services sector. EIC members feel strongly that the EPC is a flawed tool, but has use because it is already understood by the market. In particular, the A-G rating system has wide public recognition and should be retained in the interests of maintaining continuity.

The use of modelled performance data rather than operational data is also fairer to landlords during the process of letting or selling a property. The use of modelled data means, for example, that a landlord is not penalised when trying to let a property because the previous tenant's energy use was significantly greater than average.

Therefore, we would urge the government use the opportunity of Brexit to transform the EPC and ensure that EPCs are not considered to only to be a bureaucratic nuisance but are regarded as **useful sources of information and a driver of efficiency**. The EPC must both better capture building energy performance and become a useful tool for stakeholders involved in the property sector. This should, in theory, also contribute to an increase in compliance.

The Association for Conservation of Energy, for instance, has recommended that they be transformed into an 'information hub of low carbon retrofit',<sup>25</sup> EPCs, like ESOS, could provide detailed indicators of the most cost-effective energy efficiency retrofits available, and what impact it would have on energy consumption of that building and on a national level. EPCs could provide a guide to implementing available retrofits, focusing particularly on deep retrofits with several stages. This would particularly assist SMEs without dedicated energy managers. These changes would require further investment in EPCs, but would have wider benefits in increasing awareness of energy usage and the merits of efficiency, which has been identified in numerous studies as a key barrier to energy efficiency investment uptake.

The Certificates (as well as DEC)s are currently valid for 10 years, this is too long a period and devalues them as a useful, up-to-date information source, especially if the original certification was completed to a poor standard. The government should **reduce the length of validity for EPCs to 5 years**.

Most importantly, the government should look into ways of ensuring that that the performance gap is reduced and that the EPC better reflects energy efficiency in real terms. While the industry is in favour of retaining the EPC if possible, if solutions are not found, there should be a consultation process looking at ways to move away from modelled data towards a focus on operational energy use, such as emulating the NABERS system used in Australia.

## **ii. Use the MEES to force a progressive upgrade of the building stock**

### **The challenge**

The Minimum Energy Efficiency Standard (MEES) sets a legally mandated base level for energy efficiency in privately rented property, currently the EPC rating of E. The basic idea behind this, that poor energy efficiency in buildings should be illegal, is sound, and research shows that regulations and building codes/standards are the most cost-effective way of changing behaviours of real estate market participants.<sup>26</sup> And while the MEES represents a short term challenge for individual businesses, in the broad sense it boosts the economy by growing the construction and renovation sectors.

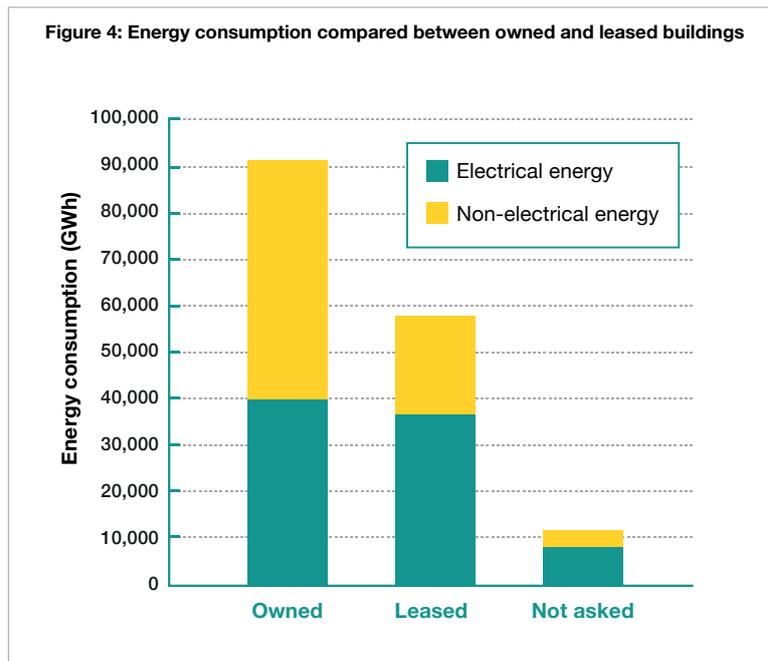
However, the current of formulation of the MEES is significantly limited in its scope in that it only applies to the private rental sector. As can be seen from Figure 4 below, from DECC's Building Energy Efficiency Survey produced in 2016, this means a substantial proportion of the building stock does not need to meet the minimum standard. While the

graph does take into account large industrial buildings covered by the EU Emissions Trading Scheme and/or Climate Change Agreements, industrial buildings only make up 16% of buildings surveyed in the BEES and therefore it still shows a large proportion of relevant non-domestic buildings not being taken into account by the MEES.<sup>27</sup>

Further, the MEES currently has too much scope for exemption, allowing landlords with a way to circumvent the standards if required. 56% of respondents to the Survey agreed with this view.<sup>28</sup>

Many of these exemptions have been brought in over past 12 months significantly undermining the regulation.

Another loophole in the guidelines is that landlords can claim an exemption using the evidence of self-certified 'narrative explanation'. This kind of evidence is difficult and time-consuming for already resource-pressed local authorities to investigate and hence offers landlords an easy route to avoiding the MEES.



Source: BEES<sup>29</sup>

### The opportunity

The government has committed to consult in 2018 on making the MEES more effective. EIC will put forward the following suggestions:

- i. The Clean Growth Strategy sets out an 'ambition' for 'as many homes as possible' to have EPC C by 2035. For the non-domestic sector, the government should simply look to **enforce EPC C as the minimum standard by 2030**. In line with the trajectory of the Climate Change Act and the legally mandated goal of reducing our emissions by 90% of 1990 levels, the government should make a bold long-term assertion by **aiming to have all non-domestic property be rated EPC A by 2050**. By setting out a clear pathway for the MEES, this will incentivise businesses to make deep retrofits to their property or move to more energy efficient premises in order to meet future regulatory standards.
- ii. **The MEES should be extended to apply at the point of sale for property.** The MEES is currently limited to the private rental sector. We suggest that the government should look into implementing the MEES for non-domestic property at the point of sale. By focusing on non-domestic property rather than homes, this does not penalise home ownership.
- iii. **All non-domestic properties should eventually be subject to the MEES.** Existing legislation should take into account most non-domestic property over time, but to ensure full coverage the minimum standard should eventually apply to buildings that have been in long-term ownership.
- iv. **The government should set out a long-term trajectory for the MEES that brings in the above recommendations on a phased basis.** Businesses involved in energy efficiency should be provided with long-term certainty of policy trajectory. Indeed, a working group convened by the government frequently cited this as being one of the most important elements of the MEES.<sup>30</sup> The government should be bold enough to set out a legally mandated trajectory for the MEES which both expands its scope and its potency over the period leading to the 2050 watershed.

Figure 5: A possible long term trajectory for the MEES



### iii. Reform ESOS to encourage large companies to take responsibility for their energy efficiency

#### The challenge

The Energy Savings Opportunities Scheme (ESOS) was established in 2014 to implement Article 8 (4 to 6) of the EU Energy Efficiency Directive, which requires all large companies to undertake audits identifying cost-effective ways to reduce their energy at least every four years.

While ESOS has had some success at improving energy efficiency in large companies, levels of compliance are currently poor. At the last compliance deadline of January 2017, around 6800 of roughly 10,000 covered companies submitted compliance – this number does not include those companies who self-declared but regardless this would still mean that several thousand companies are still not complying.<sup>33</sup>

It could be argued that because the majority of companies are complying with ESOS, it is somewhat successful. But even then compliance does not equal engagement, indeed the government's own assessment of the policy states that it 'was largely perceived as compliance activity first and foremost rather than as an energy saving opportunity'.<sup>34</sup>

This is evident in the behaviour of compliant companies. There is, for instance, a large spike in companies submitting compliance close or after the deadline. 83% of compliant companies used the cheapest and least burdensome option of external auditing, and this tended to be the most local assessor or one the company had had a previous relationship with rather than the most technically apt.<sup>35</sup> As one compliant organisation said to BEIS that '[ESOS] didn't have any business value for us. We wanted the cheapest option, it's just a regulatory report we were required to do'.<sup>36</sup>

The lack of impact ESOS is having is further reflected in the lack of interest in the policy at the senior level of compliant companies. Only 32% of companies said that senior management within the organisation discussed the results of ESOS. For the board of directors, it was just 24%.<sup>37</sup> The government's own evaluation of ESOS published 2017 stated that only a third of ESOS-mandated companies who had made efficiency improvements reported that ESOS was influential in making that decision.<sup>38</sup>

If it is not stimulating most companies to make improvements, then ESOS can be seen as little more than another burdensome bureaucratic exercise.

Equally, because of the lack of publicly available information about ESOS, it is currently difficult to properly discern how effective this policy is.

#### The opportunity

The Clean Growth Strategy indicates that the government will be consulting on a comprehensive re-assessment of ESOS. When we leave the European Union, we will no longer be required to implement Article 8 of the Energy Efficiency Directive. The government should use this opportunity to reform the ESOS to make it a policy that is worthwhile for both government and business. According to the Survey, this has support from consumers and suppliers, with 75% of suppliers and over 50% of consumers either strongly agreeing or agreeing that ESOS needs to be reformed.<sup>39</sup>

To make the ESOS a worthwhile policy that is not a drain on both government resources and company time, it firstly **must enforce some kind of action** and secondly, **it should seek to be a reputational driver to energy efficiency**.

A wide-ranging market survey from Deloitte has shown that policies that require an assessment be undertaken without mandating any action are almost always ineffective.<sup>40</sup> This is proven in the evidence gathered by BEIS of the lack of engagement with ESOS as an energy saving exercise. The Netherlands implements a similar policy to implement Article 8, which mandates that large enterprises must have an ESOS-like audit every 4 years. Under Article 2.15 of the Activities Decree, if the audit recommends an action with less than five years payback it **must** be acted on.<sup>41</sup> Progress must also be reported annually.

**EIC urges government to explore how the ESOS can emulate this best practice.** However a similar UK policy should reflect the average payback of a project in the UK – which the Survey found to be around **4 years**.<sup>42</sup> There would also need to be a detailed plan for properly enforcing the policy to ensure its effectiveness, whether this would be through carrot, stick, or a mix of both would require further consultation.

The ESOS is targeted at large companies, which according to studies, often consider wider corporate social responsibility concerns to be as important or more important than financial concerns when making budgetary decisions.<sup>43</sup> This suggests that policies targeted at large companies should incentivise energy efficiency through reputational drivers directed at these concerns. The ESOS should be at the forefront of this by **making it part of a company's annual report** and therefore publicly available. This could both provide a reputational driver for large companies to improve their energy efficiency, and provide data for research to properly discern the policy's effectiveness.

#### **iv. Introduce world leading building standards for non-domestic new builds**

##### **The challenge**

The government recently scrapped the requirement that all newly built homes should be zero carbon by 2020. This is a short-sighted decision, as these buildings will eventually need to be retrofitted anyway as the MEES is ratcheted up.

The European Union set a requirement in the Energy Performance of Buildings Directive that all new public buildings and all other new buildings, from 2019 and 2021 respectively, should meet their Nearly Zero Energy obligation. These buildings must have a very high energy performance, and the energy they do use must come largely from renewables. Brexit means that the UK's commitment to this initiative becomes uncertain.

##### **The opportunity**

According to the Clean Growth Strategy, 'the government will explore how voluntary building standards can support future improvements in business building performance'.<sup>44</sup> EIC urges that government to **re-introduce a zero-carbon build policy for all non-domestic buildings into the next refreshing of building standards**. This has been proposed in the Mayor of London's Draft London Plan and the public sector has already been setting a standard in this regard through the Greening Government commitment. This would perhaps be an easier political sell than strict standards for new homes due to the current necessity of new housing. This policy would ensure that new non-domestic buildings are highly energy efficient and can utilise low-carbon heating systems from the start.

Denmark is the world leader in terms of building standards, with some of the world's most stringent energy performance standards for new buildings.<sup>45</sup> The Danish Building Code sets out a clear long-term trajectory for the steady improvement of energy performance standards for new buildings, which are regularly updated every five years and made publicly available 10 years in advance. The most recent "class 2020" level (which businesses were notified about in 2010) correlates with the nearly zero energy buildings target required by the EPBD. This has had great success in improving the energy efficiency of new buildings, reducing energy consumption by at least 75% compared to 2006.<sup>46</sup> Policy initiatives of the last half-century have reduced heat demand of new builds to just 17% of 1961 levels. The Danish government's ambitions is the Building Code to aim towards a policy of only 'plus-energy-houses' being built.

Brexit brings into question the UK's commitment to the Nearly Zero Energy principle in the EBDP. However the case of Denmark shows its effectiveness. Therefore we urge that the government continue to follow the EU in obligating buildings to meet the NZE principle post-Brexit. We are already seeing positive action being taken in the mayoral regions, particularly in the London Plan, which sets the target of all non-domestic buildings to be zero-carbon from 2019. The UK government should follow the lead of the regions and implement a similar target on a national level.

EIC also represents member companies working in the water treatment sector. They have concerns that the current building regulations, including the non-domestic building services compliance guide, fail to give enough mention to the importance of considering water treatment in the design of a building. In areas of hard water, untreated heating pipes in buildings can waste vast amounts of energy and water, require more maintenance and must be replaced more often. Despite this, hard water scaling has almost no presence in the energy efficiency discourse, for instance the Building Research Establishment Environmental Assessment (BREEAM) - used to masterplan projects, infrastructure and buildings - does not include it. EIC would advocate that limescale in building heating be recognised as an important facet of energy efficiency, and that the importance of water treatment should be recognised in greater detail within the next refreshing of building standards.

## v. Reform policy to grow the energy services market in the commercial sector

In the Clean Growth Strategy the government made the assertion that it 'will work with stakeholders to improve the market for energy services, building confidence across commercial and industrial customers.' The energy services sector allows businesses to outsource their energy savings programmes to specialists and in turn reduce their operating costs and improve asset value. It was estimated in 2014/15 to be worth up to £750m.<sup>47</sup> The majority of market growth in this sector has been in the public sector (particularly energy performance contracting), and is attributed to the success of public procurement frameworks that provide standard procurement routes, contracts, process and subsidised project development support. However the "split incentives" of landlords and tenants in the commercial sector create a barrier to market growth.<sup>48</sup> To rectify this, the government should consider what components of project development support already used in the public sector it could offer to the private sector to encourage uptake.

Although information on energy services is becoming more available and therefore awareness is increasing, there is a perception amongst energy service providers that trust in the sector from customers is in fact decreasing.<sup>49</sup> To increase trust levels **the government should consider the promotion of the role of third party verification** and engage with programmes such as ICP and QualitEE.

For the energy services sector there has been a lack of clarity and leadership from government, restricting investment. **EIC asks that the government follows the example of the European Union and provides better and more localised guidance for companies providing energy services.** DECC published a model contract and guidance in 2015 but it is not being widely used. We suggest that the government also look into introducing minimum standards or a quality assurance scheme.

## vi. Use financial incentives to increase energy efficiency beyond minimum standards, particularly for SMEs

### The challenge

Returning to the "triple bundle" of policy referenced at the beginning of this report, financial incentives, in tandem with standards and labels, have an important role to play in increasing energy efficiency in buildings. Financial incentives in particular were overwhelmingly popular with the Survey respondents on both the consumer and supplier side, with over 50% strongly agreeing incentives to drive uptake 'should be a priority for the government.'<sup>50</sup>

However, the government has been reluctant to use direct financial incentives to increase uptake of energy efficiency. The Green Deal, which was largely seen as a policy for homes but was meant for non-domestic property too, was the flagship government policy in this area. It was by all accounts a failure: a 2011 DECC forecast that the Green Deal Finance Company would provide £1.1 billion in loans by end of 2015. The real figure was just £50 million, improving just 14,000 homes at a cost to the taxpayer of £17,000 per home.

Lessons must be learnt from this: though our members are particularly damning of the scheme's labyrinthine levels of complexity, the lack of success of the Green Deal points to a wider issue – that to affect widespread energy efficiency uptake, purely market-based solutions are insufficient. The Green Deal was constituted in such a way that it offered loans at high interest rates of 7-10% in order to make it commercially viable. But the government's own research showed that for energy efficiency, commercial loans (i.e. with commercial interest rates) for low cost measures have very little attractiveness for most consumers.<sup>51</sup> **The pay-as-you-save mechanism, upon which the Green Deal was based, is an idea that has promise, but failed to function when it was constituted as a purely commercial product.**

Therefore, the government must change its approach, and look to directly subsidise businesses (and homes), through tax breaks, financial support, or the subsidy of loan scheme interest rates, in order to provide them with the financial security required to undertake improvements. EIC advocates that this should be **targeted on a circumstance basis in order to overcome specific barriers. For non-domestic property, incentives should target small businesses with less available capital to invest in energy saving.**

### The opportunity

Our European neighbours display best practice in this area. As can be seen from Figure 6, German and Italian spending on energy efficiency (by the state and utilities sector) dwarfs the UK, and hence they have achieved better energy efficiency outcomes.

Unlike the UK, Italy's strategy to incentivise uptake has been to offer corporation tax credits for businesses to help cover the costs of making energy efficiency improvements. It incentivised 1.5 million improvements (on both homes and businesses) between 2007-2012 with minimal cost on business or the household.

Another world leader in energy efficiency is Germany, which uses the financial might of its state-owned development bank the KfW to finance large scale energy efficiency projects. Germany greatly exceeds every other country in energy efficiency spending per capita, as can be seen in the table above produced by the American Council for an Energy-Efficient Economy (ACEEE). The KfW's Energy-Efficient Construction Programme has funded major retrofits on 10 million homes since 2006. These investments are focused on **high-cost, high-performance improvements (deep retrofits)**, and based on the principle of an interest rate of 1%. The benefits of the programme were calculated to return five times more in tax revenue than it cost for the interest rates to be subsidised. The KfW only supports domestic property, and the UK in this area takes a different approach through the Energy Company Obligation. But the way in which funding is provided, for deep retrofits with subsidised interest rates, is one that that should be emulated in any similar policies for the UK, including for the non-domestic sector.

Figure 6: Spending on energy efficiency by country

Country	Spending in energy efficiency (\$/capita)
Germany	\$318.49
Italy	\$81.61
France	\$42.05
China	\$29.47
Canada	\$24.47
US	\$18.96
Taiwan	\$18.00
UK	\$12.50

Source: ACEEE<sup>52</sup>

The government should consider the following new policy options:

- i. Setting business rates to be relative to EPC grade of the property.
- ii. Linking a portion of stamp duty to EPC rating to both incentivise energy efficiency and to improve the enforcement of EPCs by making them a tax issue.
- iii. A tax break (either VAT or corporation tax) for businesses undertaking energy efficiency improvements in order to reduce the concern of lost revenue while performing renovations.
- iv. Reducing VAT rates for energy efficient products – currently EU State Aid rules would forbid this change, however Brexit may give Britain the opportunity to diverge from these rules.
- v. Using the pay-as-you-save mechanism, with interest rates kept artificially low either through government funding or cooperation with banks, to incentivise uptake of energy efficiency for small businesses with low levels of available capital.

## vii. Extend the scope of DEC's and improve them as a data source and reputational driver

### The challenge

The Display Energy Certificate (DEC) shows the operational energy performance of a building rather than a projection of energy performance. The Energy Performance of Buildings Directive mandates that all buildings 'frequently visited by the public' are legally mandated to produce a DEC and display them publicly. In the UK, current legislation does not exactly fit with this description – DEC's are mandated only if the building meets all three of the following criteria:

1. The building is at least partially occupied by a public authority
2. It has a total floor area of over 250 square metres
3. It is frequently visited by the public.

In 2014, the government published a consultation putting forward proposals to abolish the DEC's. Three years later the results of this consultation have still not been published. This uncertainty reduces the perception of the need for compliance and therefore reduces the utility of the DEC. Moreover, Brexit means that we will no longer need to comply with the Energy Performance of Buildings Directive and therefore the UK will no longer be legally required to implement the DEC.

### The opportunity

Data is fast becoming one of our most valuable resources. A new DEC should be utilised as a source of data, feeding into a publicly available database of building energy performance. There would be several benefits of this – big data can be utilised for smart technology purposes, while publicly available performance data would make owners of public-facing buildings more accountable to their energy usage and therefore driven to improve it. See the box below for our full recommendations on utilising energy data.

Real energy performance data is a useful resource and therefore the DEC should be retained. The UK should use Brexit as an opportunity to **be even more ambitious**. The 'frequently visited by the public' description is vague and easy to manipulate to suit any purpose. Instead the government **should create a long-term trajectory for the DEC** with the aim to **extend it to all commercial properties with a total floor area of over 250m<sup>2</sup>**. The recommendation was also made in 2018 by the CCC.<sup>53</sup> Some companies have already been voluntarily producing DEC's. A similar policy already exists in Australia, where the NABERS scheme has been highly effective in increasing building energy efficiency and is considered global best practice.

### Utilising our energy data better

Vast amounts of building energy data is currently compiled by the government as a result of various policies, such as the soon to be defunct CRC Energy Efficiency Scheme, ESOS, EPCs, and the DEC. But the existing data is currently stored in a multitude of locations and therefore is not being utilised in a way that extracts maximum value. Some of the proposals in the 'Streamlined Energy and Carbon Reporting Framework' consultation that closed at the beginning of 2018 were a step in the right direction, and we urge that the government move forward boldly in this area.

This would entail:

- Phasing out non-digital data collection as much as possible.
- Creating an anonymised, centralised database for building energy data that amalgamates all available data sets produced from various policies.
- Making this database available for academic research and to inform the work of the civil service.
- Making, where possible, the data available for public consumption. For corporations, this would create an effective reputational driver to improve building energy efficiency and foster a culture of more conscientious energy use.

We are on the cusp of a smart revolution, with advances being made in artificial intelligence across many sectors. The algorithms that underpin artificial intelligence rely on “big data” sets.

There already exist products that use energy data to advance the business case for energy efficiency, by assessing risk to effectively value energy efficiency and build investor confidence. A government-backed programme in a similar vein, used to inform both business and government decision making, could have a wider reach.

A central database for building energy performance could underpin an artificial intelligence project that in the future could perform functions such as calculating the most effective paths to improved efficiency and visually mapping building energy performance. This could then be used to inform policy making and technological innovation.

## viii. Use the public sector estate to lead the way

Even though energy efficiency levels are generally superior in public sector building stock, there is further scope for improvement. Research by Policy Exchange shows that the health, emergency services and military sectors are where the most cost-effective energy savings can be made.<sup>54</sup> Through investment in the efficiency of these sectors the public sector can drive market growth, create economies of scale and lead by example. For example the New South Wales government required of its building stock to have a 3\* NABERS rating or higher which helped drive take up of the scheme.

The Greening Government commitment covers a breadth of environmental causes wider than just energy efficiency, and commits government stock to aim towards these targets. It both sets targets for a range of goals including reduction in carbon emissions, and publicly displays the progress of each department towards that target, creating a reputational driver for departments to improve energy efficiency.

Salix provides an interest-free form of funding for some public buildings to make energy efficiency improvements, an incentive sorely missing for businesses. It has been a successful policy, involved in over 15,000 projects and saving nearly 700,000 tonnes of CO<sub>2</sub>e annually and over £135 million.<sup>55</sup> In contrast to the “boom-bust” approach to other energy efficiency policies by different governments, Salix has benefited from continuity in its support from government.

Salix has been a successful policy, though the government can improve its ambition further. This could be achieved by **extending the permitted length of payback to eight years for the wider public sector**, as has already been done for schools. **Actual loan repayment periods should be extended so that those undertaking comprehensive energy efficiency measures can benefit from immediate revenue.**

The government has now set out further ambitions, and EIC welcomes the Clean Growth Strategy's focus on the role the public sector can play in reducing carbon emissions. We urge that the 30% reduction target by 2020 is committed to. Further, the government estate could be used as a test bed for energy efficiency performance. The regular reporting of the effectiveness of energy efficiency measures to government property could provide a public source of much needed performance information to drive the market.

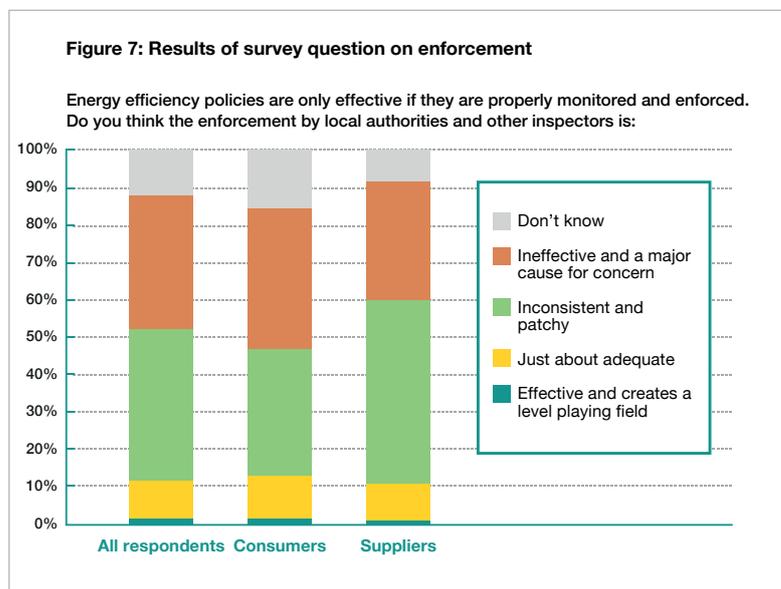
## xi. Improve enforcement to ensure the effectiveness of energy efficiency policy

### The challenge

What may be an excellent policy on paper can be undermined by poor enforcement in practice. Hence **the need to improve and sustain proper enforcement is vital.**

There is a widely-held perception amongst EIC members and the wider industry that the enforcement of energy efficiency policies is currently poor, having been hollowed out over the years through a combination of spending cuts to local authorities and regulators, lack of expertise in the inspecting bodies, and a general lack of policy certainty and clarity. As can be seen in the chart below, **77% of respondents to the Survey considered enforcement to be either 'inconsistent and patchy' (41%) or 'ineffective and a major cause for concern' (37%).**<sup>56</sup>

Inspections are currently performed by local Trading Standards officers. This office covers a wide range of areas from fair trading, to food standards, to health and safety, to fraud, to animal welfare. Trading Standards offices around the country have been facing budget restrictions as a result of government austerity since 2010 – the National Audit Office found that the amount of **Trading Standards officers had reduced by 56% since 2009, and that overall budgets for Trading Standards had reduced by 46% since 2011.**<sup>57</sup> With so few resources to cover so many important issues, many of which are particularly sensitive to the general public, it is highly likely that enforcing energy efficiency policy would be seen as a low priority issue for overloaded officers.



Source: EEVS, BNEF

According to a report by a working group formed by the government, there is a strong perception in the industry that compliance with EPCs is also low and that outside of the largest corporate property firms it is better to risk fines than to comply with regulations.<sup>58</sup>

To test these claims, EIC submitted Freedom of Information requests to all the Trading Standards offices in England, asking the following questions for the years 2015, 2016, and 2017:

- How many fines were issued for failure to display a valid EPC.
- How many fines were issued for failure to include the energy performance rating of a property (letters A-G) in sale or lease particulars.
- How many fines were issued for failure to display a DEC in a building

We received a near unanimous response from all Trading Standards authorities, that **finances were not being issued for these breaches of regulation**, with the exception of one council – who issued a small number of fines for failure to display EPCs in property advertisements. These findings could point to a range of causes. On one extreme it could be argued that these statistics show that energy efficiency regulations are simply not being enforced by Trading Standards officers, perhaps to due constraints on resources. On the other extreme it could theoretically point to total compliance with regulations.

The truth is undoubtedly somewhere in between, but what the statistics do conclusively show is that the industry's views expressed in the Survey are backed by evidence and that there exists **a significant enforcement gap that is hindering the effectiveness of energy efficiency regulation**. In light of this, the government must look seriously at the enforcement of regulation **as an urgent priority**, as the enforcement, or at the least the credible threat of enforcement, is vital to the success of a regulation's implementation.

This becomes particularly pressing with the introduction of the MEES, which we have supported in this report, but is heavily reliant on proper enforcement both directly and of the EPC regulation it relies upon.

### **The opportunity**

Part of the solution to improving enforcement is simply to make sure that those subject to the regulations are aware of their obligations, how they can meet them, and most importantly, the consequences of failing to do so.

Small changes to the system are unlikely to have the desired impact. **The whole process of enforcement needs major reform**. As shown from our FOI evidence, trading standards are not properly enforcing energy efficiency policies. In the first instance, this shows that the decision to severely cut funding for local government in the name of reducing the national budget deficit has impeded the functioning of government policy. But it also suggests that Trading Standards are unsuitable for this role.

EIC suggests two alternative options. One is to instead move the enforcement of building energy efficiency to the Land Registry, meaning that in order for property to be registered, it must prove compliance with relevant regulations such as producing an EPC or a DEC, or meeting the MEES. This in effect makes these policies self-policing, as the owner of the property is pressured to comply not only by the compliance body, but through the legal process required in purchasing the property. The Land Registry database could also then display EPC ratings to create a historic record of past improvements, and increase the visibility of energy efficiency as an important aspect to be considered in the purchase of a property. Additional administration costs involved could then be added to land registry charges.

There is currently the possibility for local authorities to keep revenues from energy efficiency policy enforcement, but for the most part this right is not being exercised. Local authorities starved of funding firstly lack the knowledge and expertise to recognise the importance and potential of properly enforcing these policies, and secondly lack the resources to properly enforce and collect monies owed.

The money allocated to Trading Standards could instead be funnelled into a separate, specialised body that hires experienced staff with relevant experience and interest in the field. This body could either work separate to local authorities, operating either at a national or regional level, or as a dedicated department within local authorities. It could be funded partly through more stringent fines – which provides an incentive to better enforce regulations.

With the MEES regulations now in force, there is an area of potential conflict with the EPC that may reduce compliance levels further as the respective fines for non-compliance are imbalanced. The success of the minimum standard, which should be seen as the foundation of the energy efficiency policy framework, inherently relies on the proper enforcement of the EPC. But the MEES fines can be as much as £150,000 while for the EPC, the maximum fine is just £5000. With our FOI research showing the Trading Standards do not issue fines for failure to produce an EPC, landlords could attempt to circumvent the MEES regulation by avoiding producing an EPC in the first place.

Therefore, fines for failing to producing an EPC must increase significantly to remove this potential conflict, which could then be utilised by the enforcing body to increase its resources. For commercial properties in particular, a fine of a maximum of £5000 is small enough that the risk of non-compliance far outweighs the ramifications of complying with the MEES. The government should review the fines to create a two-tiered system of fines that better incentivises compliance in larger commercial buildings.



# Recommendations:

1. Set a target for UK building stock to be as close to carbon-neutral as possible by 2050 at the latest.
2. Improve the Energy Performance Certificate (EPC) as a source of information and reduce its period of validity to 5 years
3. Set a long-term trajectory for the Minimum Energy Efficiency Standard (MEES), including bringing a minimum standard of C for non-domestic buildings by 2030 and the introduction of MEES at the point of sale.
4. Make the Energy Savings Opportunity Scheme (ESOS) force action on projects with less than 4 years payback and should be made part of a company's main reporting.
5. Create a centralised database of energy data to be utilised for research, to improve future policymaking and in some cases, for publication.
6. Improve the market for commercial energy services by providing better support.
7. Introduce a zero-carbon build policy for non-domestic buildings and commit the EU's nearly zero energy building principle
8. Set out a long-term trajectory for the Display Energy Certificate (DEC) with the aim to extend it to all commercial properties with a total floor area of over 250m<sup>2</sup>.
9. Provide financial incentives to improve energy efficiency by considering the following new policy options:
  - i. Setting business rates to be relative to EPC certificate.
  - ii. Providing a temporary corporation tax rebate for businesses undertaking energy efficiency improvements in order to reduce the concern of lost revenue while performing renovations.
  - iii. Using the pay-as-you-save mechanism, with interest rates subsidised by government, to incentivise uptake of energy efficiency for small businesses with low levels of available capital.
10. Extend Salix payback to eight years for all public sector buildings.
11. Improve enforcement by considering the following options:
  - i. Link energy efficiency policy compliance to the Land Registry to improve compliance rates.
  - ii. Creating a specialised, centralised body to better enforce energy efficiency regulations.

# Glossary of Acronyms

**BEIS** The Department for Business, Energy and Industrial Strategy. Since the Department of Energy and Climate Change was dismantled, this department has the responsibility for setting energy and energy efficiency policy.

**CCC** Committee on Climate Change. Set up in 2008 to provide annual reports to parliament on the progress of the government in meeting its legal obligations, as proscribed in the Climate Change Act, to reduce carbon emissions by 80% by 2050 in 1990 levels.

**DEC** Display Energy Certificate. Required by the EU Energy Performance of Buildings Directive for all public buildings 'frequently visited by the public', this certificate rates a building on its energy efficiency based on operational energy performance.

**DECC** Department for Energy and Climate Change. This Department was set up in 2008 by the Gordon Brown administration and dissolved in 2016 by Theresa May. During its existence much of the existing energy efficiency policy framework was created.

**EIC** Environmental Industries Commission. The trade body for companies working for environmental best practice and authors of this report.

**EPC** Energy Performance Certificate. Also required by the EU Performance of Buildings Directive, this mandates that upon the sale or lease of a property, a certificate must be produced rating the energy performance of that building, based on modelled performance.

**ESOS** Energy Savings Opportunity Scheme. A mandatory energy assessment scheme for organisations in the UK meet its qualification criteria. Qualifying organisations must carry out ESOS assessments every 4 years, which look at energy use in their buildings, industrial processes, and transport to identify cost-effective energy saving measures.

**MEES** Minimum Energy Efficiency Standards. Also known as Private Rented Sector (PRS) standards, this legislation sets a minimum legal standard of energy efficiency for a building, based on its EPC rating and activated during a lease or sale process. The current minimum standard is set at the EPC rating of E.

**NABERS** National Australian Built Environment Rating System. An national rating system that measures the environmental performance of buildings, tenancies and homes.

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The Environmental Industries Commission (EIC), founded in 1995, represents the businesses which provide the technologies and services that delivery environmental performance across the economy. In short, we are the voice of the green economy. Our members are innovative and the leading players in their field, and include technology manufacturers, developers, consultancies, universities, and consulting engineers.