

## Energy efficiency in the UK's buildings: key priorities for the new government

July 2017

### THE CASE FOR ENERGY EFFICIENCY

The Conservative manifesto (2017) promised to deliver “Competitive and affordable energy”, but there is little detail on how this will be achieved. This briefing will discuss how energy efficiency is the most cost effective way of meeting the Manifesto promise – the cheapest energy is the energy that is not used in the first place.

#### **Government's first question must be: what are the opportunities for the UK to be more efficient with the energy that we use?**

Reducing energy demand through greater efficiency can help the UK meet its legally binding climate targets,<sup>1</sup> limit increases in energy bills, tackle fuel poverty, and drive economic growth, job creation and business investment in skills.<sup>2,3</sup> It can tackle the health costs to the NHS and winter deaths associated with cold homes, while better quality commercial spaces can support greater productivity for those who work within them.<sup>4</sup> Developing policies to support better efficiency for businesses and the public sector would save £570m per year.<sup>5</sup>

However, the Committee on Climate Change reports a lack of progress in reducing emissions across the UK's building stock, insufficient uptake of low carbon heat and insulation and a failure to make any meaningful reduction in non-residential buildings' emissions.<sup>6</sup> This is despite a potential saving of 23.6MtCO<sub>2</sub> per year by 2030 through energy efficiency, which is roughly equivalent to cutting the CO<sub>2</sub> emissions of the UK transport fleet by one third.<sup>7</sup>

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<sup>1</sup> The UK's building stock is responsible for 19% of total UK domestic greenhouse gas emissions. To meet the UK's legally binding climate commitments cost effectively, these emissions must be reduced by 20% from 2016 levels, by 2030. Committee on Climate Change, June 2017, *Meeting Carbon Budgets: Closing the Policy Gap*

<sup>2</sup> UKGBC (June 2014) *A Housing Stock Fit for the Future: Making home energy efficiency a national infrastructure priority*

<sup>3</sup> Imperial College London (April 2016) *Managing Heat System Decarbonisation*

<sup>4</sup> UKGBC (February 2017) *Building Places That Work For Everyone*

<sup>5</sup> The Association for Decentralised Energy (September 2015) *Less Waste, More Growth*

<sup>6</sup> Committee on Climate Change (June 2016) *Meeting Carbon Budgets: Progress Report to Parliament*

<sup>7</sup> Cambridge Econometrics and Verco (2014) *Building the Future: The economic and fiscal impacts of making homes energy efficient*

## POLICY RECOMMENDATIONS FOR GOVERNMENT ACTION

### New build domestic property

1. Mandate the Net Zero Carbon Buildings standard<sup>8</sup> for all new homes by 2030, with a managed transition from 2020 using metered energy use for compliance with building regulations.
2. Support and promote the development of a “green mortgage” market that could help create a “virtuous circle”, whereby mortgage lenders provide preferential finance for energy efficient homes with lower running costs, thereby increasing demand for homes built to higher standards and encouraging supply.

### New build commercial property

3. As with the domestic sector, mandate the Net Zero Carbon Buildings standard for all new non-domestic buildings by 2030, with a managed transition from 2020 using metered energy use for compliance with building regulations.

### Retrofit: domestic and commercial

4. Set a public target for the number of homes that will be retrofitted every year, which provides a roadmap that will bring all homes up to EPC Band C by 2035.
5. Ensure that sufficient funding is made available for the Government to meet its fuel poverty targets of EPC Band E in 2020, Band D in 2025 and Band C by 2030.
6. Amend the Minimum Energy Efficiency Standards (MEES) regulations for domestic private rented properties to require landlords to improve their properties to EPC Band E, subject to a cost cap and set out a roadmap for tightening MEES for privately rented homes and commercial buildings to provide a roadmap for landlords to invest in more efficient buildings.

7. Introduce mandatory operational energy ratings (e.g. Display Energy Certificates) for all commercial buildings to enable transparency of performance to drive investment and innovation. Mandatory operational ratings could be used as the measurement of compliance for MEES at a later date.
8. Create financial incentives for energy efficiency improvements at trigger points in a building’s life, such as maintaining lower VAT for energy efficiency measures, extending a lower rate to all energy efficiency renovation work and adjusting stamp duty according to the energy performance of homes.
9. Adopt the recommendations of the Bonfield Review, developing a single quality mark for all energy efficiency and renewable energy measures for domestic properties.
10. Create financial incentives for the commercial sector, such as through a Climate Change Agreement for non-energy intensives or flexibility on business rates, to help energy efficiency improvements compete with investments in business growth.
11. Strengthen the Energy Savings Opportunity Scheme (ESOS) to mandate improvements identified through the scheme, providing they pay back their investment within a reasonable timeframe.

### All built environment

12. Ensure the government’s forthcoming Industrial Strategy white paper supports low carbon construction and retrofit skills, using existing funding (such as the Industrial Strategy Challenge Fund) and setting standards (i.e. Net Zero Carbon Buildings) to encourage businesses to invest in their workforces.

<sup>8</sup> See World Green Building Council (May2017) *From Thousands to Billions - Coordinated Action towards 100% Net Zero Carbon Buildings By 2050*

13. Provide a stable policy landscape that will allow businesses, homeowners and tenants to plan ahead with confidence. This includes linking existing government policies such as the Clean Growth Plan, Industrial Strategy, 25 Year Environment Plan and the Housing white paper.
14. Use government procurement to drive the market for energy efficient products, properties and services.

## BACKGROUND

**“There is no realistic, or affordable, energy development strategy that is not led by energy efficiency.”<sup>9</sup>**

**The UK’s building stock is responsible for 19% of annual emissions.** While there has been some progress on improving the quality of the UK’s homes, action to tackle emissions from public and commercial buildings has barely started.<sup>10</sup> Improving the UK’s building stock is essential to meet the UK’s carbon budgets, but also offers a host of co-benefits by improving the environment within which people spend over 90% of their time.<sup>11</sup>

**The UK’s 28m homes<sup>12</sup> are not future ready;** they are not compatible with a climate-changed future and will substantially

undermine the UK’s ability to reduce its carbon emissions.

**England’s housing stock has an average EPC rating of D<sup>13</sup> meaning homes leak energy, incurring higher energy bills for inhabitants and a host of associated detrimental impacts.**<sup>14</sup> The publicly funded NHS currently shoulders an annual cost of nearly £850m due to cold homes.<sup>15</sup> Better building stock can reduce winter deaths, GP visits<sup>16</sup> and cold-related NHS referrals.<sup>17</sup> Homes that are designed for a warmer world can also help to avoid overheating, which can cause heat stress and serious illness among the elderly and those with existing health conditions<sup>18</sup>.

**Improving the quality of the commercial building stock saves money and positively impacts the health and productivity of those who work within them.** Office workers in high performing, green certified buildings have a 61% better cognitive function<sup>19</sup> and some businesses report having saved over \$6 per square foot in staffing costs.<sup>20</sup> However, not enough businesses are aware of the advantages of working in better buildings and there are a series of barriers to better energy efficiency.

<sup>9</sup> IEA (2016) *Energy Efficiency Market Report 2016*

<sup>10</sup> Committee on Climate Change (June 2017) *Meeting the Carbon Budgets: Closing the policy gap*

<sup>11</sup> BRE website: <https://www.bre.co.uk/page.jsp?id=720>

<sup>12</sup> DCLG (April 2017) Statistical data set: Live tables on dwelling stock

<sup>13</sup> DCLG (March 2017) *English Housing Survey Headline Report, 2015-16*

<sup>14</sup> Association for the Conservation of Energy (April 2015) *Chilled to Death: The human cost of cold homes*

<sup>15</sup> BRE briefing paper (2014) “The cost of poor housing to the NHS”

<sup>16</sup> Welsh Government (4<sup>th</sup> April 2017) “Findings Report No.1: initial findings on the impact on Health of the Warm Homes Nest Scheme”.

<sup>17</sup> Energy Bill Revolution (October 2014) *Building the Future: The economic and fiscal impacts of making homes energy efficient*

<sup>18</sup> Zero Carbon Hub (2015) *Overheating in Homes: The big picture*

<sup>19</sup> UKGBC (February 2017) *Building Places That Work For Everyone*

<sup>20</sup> GreenBiz (26<sup>th</sup> August 2016) “How to find energy-efficient commercial space”

### CASE STUDY: CUNDALL

Engineering consultancy, Cundall, recently invested in new office space near St Paul's in central London, spending an additional £30k on improvements to raise the quality. Since then they have saved £200k in reduced sick leave and staff turnover.

**There is an economic, social and environmental imperative to improve the energy efficiency of the UK's domestic and commercial buildings.**

Energy efficiency measures have already saved households around £290 per year since 2008 as demand for electricity and gas has reduced, more than offsetting the price of low carbon policies and network costs.<sup>21</sup> Across the economy as a whole, there have been £1.7bn more goods per unit of energy made in 2015 compared to 2010, a productivity gain attributed to energy savings in industrial, service and domestic sectors.<sup>22</sup>

Despite this, implementation of energy efficiency measures has been hampered by market failures and short-notice policy changes.<sup>23</sup> Existing energy efficiency policy is widely considered ineffective by industry and the finance community.<sup>24</sup>

**“Domestic energy efficiency investments can free up energy sector capacity just as effectively as delivering new generation plant, networks or storage would.”<sup>25</sup>**

### DOMESTIC: TAKING ACTION TO DELIVER COMFORTABLE, EFFICIENT NEW HOMES

New homes must be future-ready, designed to support achievement of the UK's carbon budgets and able to cope with the risks of flooding and overheating that are already factors for many households today and expected to increase as the climate warms.<sup>26</sup> **Given the challenges of decarbonising other sectors of the economy such as agriculture, the built environment will have to achieve near complete decarbonisation by 2050.<sup>27</sup>**

Since the cancellation of the proposed Zero Carbon Homes 2016 target, the domestic market has lacked policy drivers to improve the quality of homes. Meanwhile, the government has committed to building one million new homes by the end of 2020. **Failure to achieve high quality build risks imposing costly and intrusive retrofit work on the inhabitants of those homes in the future.** The Net Zero Carbon Buildings standard (see below) goes further than the proposed Zero Carbon Homes target by applying to all buildings, covering all energy use and being based upon metered energy (rather than projections). This standard should be introduced from 2030, with a trajectory of tightening building regulations set out from 2020 to allow industry time to innovate and bring down the cost of meeting higher standards.

<sup>21</sup> Committee on Climate Change (March 2017) *Energy Prices and Bills – impacts of meeting carbon budgets.*

<sup>22</sup> The Association for Decentralised Energy (November 2016) *The 2016 UK Energy Productivity Audit*

<sup>23</sup> BusinessGreen (25<sup>th</sup> November 2015) “Energy efficiency scheme cut as Osborne announces next phase of green policy shake-up”

<sup>24</sup> EEVS & Bloomberg New Energy Finance (March 2017) *Energy Efficiency Trends Vol 18*

<sup>25</sup> Frontier Economics (September 2015) *Energy Efficiency: an infrastructure priority*

<sup>26</sup> BRE (June 2017) *Resilience of new developments to high temperatures and flooding*

<sup>27</sup> Energy Saving Trust (May 2017) “The Clean Growth Plan: A “2050-ready” new-build homes policy”

Mandation of the Net Zero Carbon Buildings standard should be part of a wider, managed transition from 2020 towards using metered energy use (kWh/m<sup>2</sup>) as the measurement for compliance with energy performance in building regulations. This would shift the focus away from Energy Performance Certificates (EPCs), which are generated at design stage and frequently differ considerably from the energy performance of a building when complete. This transition should reduce the compliance burden on developers by removing the requirement for modelling and submission for an EPC at the design stage and ensure that buildings perform as intended once built.

A net zero carbon building is:

**“A highly energy-efficient building with all remaining operational energy use from renewable energy, preferably on-site but also off-site production, to achieve net zero emissions annually in operation.”<sup>28</sup>**

There are economic, social and environmental benefits to applying the Net Zero Carbon Buildings standard to UK house building:

### 1. Lower energy bills

Energy efficient homes incur a small premium in construction costs, which can be offset by lower running costs. It was calculated that homes built to the proposed 2016 Zero Carbon Standard, would have added 2.5% to the purchase price of a detached home and 1.5% to the price of a low rise flat (or £2,300).<sup>29</sup> The price premium

is therefore lower for the less expensive unit and payback periods should be reasonable, given constructed zero carbon homes have seen electricity bills of just £200 annually.<sup>30</sup> Homes that are cheaper to light and heat over their entire lifespan can offer considerable savings to their occupants.

### 2. Tackling the Performance Gap

Revising building standards offers the opportunity to tackle the “**Performance Gap**”, which applies to all buildings and is the difference between a building’s theoretical energy performance and metered energy consumption. The gap is exacerbated by a tendency within the construction industry to see regulations as the ceiling rather than the floor of what must be achieved<sup>31</sup> and little evidence of prosecutions for non-compliance with building regulations. A managed transition of the regulatory landscape away from EPC-based compliance and towards metered energy use (kWh/m<sup>2</sup>) measurements would ensure buyers and renters get the homes they pay for.

### 3. Marketing opportunities

There is growing awareness within the construction industry of the reputational risk posed by homeowners who may see themselves as being short-changed by inefficient buildings, caused by the Performance Gap.<sup>32</sup> Conversely, it is likely that demonstrable lower running costs would increase the attractiveness of low carbon homes, making them more marketable for developers.

<sup>28</sup> WorldGBC (2017) *From Thousands to Billions – Coordinated Action towards 100% Net Zero Carbon Buildings by 2050*

<sup>29</sup> Energy Saving Trust (May 2017) “The Clean Growth Plan: A ‘2050-ready’ new-build homes policy”

<sup>30</sup> Dr. Jo Patterson (2017) “Zero-carbon homes: saving money as well as energy”

<http://www.cardiff.ac.uk/architecture/files/2017/02/zero-carbon-homes.pdf>

<sup>31</sup> Quote from Land Securities, repeated in UKGBC (May 2016) *Delivering Building Performance*

<sup>32</sup> Telegraph (2<sup>nd</sup> May 2017) “Energy scandal: misleading efficiency claims leading to huge bills for homeowners”

#### 4. Green mortgages

Lower running costs could allow those purchasing efficient homes to be able to borrow more. The LENDERS project<sup>33</sup> has found that information about the energy performance of a property, including the EPC, could be incorporated into mortgage affordability calculations. Specialised lenders are already offering mortgages with discounts linked to energy efficiency improvements.<sup>34</sup> If scaled up, this could help provide additional lending for energy efficient properties based on lower expected household bills, which would support the government's priority of helping more people on to the housing ladder. It could also increase the popularity of energy efficient new-build properties, encouraging developers to compete to provide higher standards with lower running costs, thus creating a virtuous circle.

#### 5. Swifter planning approval

Because zero carbon homes are more efficient, they have a lighter environmental footprint meaning they are less of a draw on existing resources. This means they could be built in areas already experiencing water stress,<sup>35</sup> for example. The UK Green Building Council reports:

**“We are seeing evidence that well designed developments, built to be future-proofed and to enhance the local environment, are less likely to suffer planning objections and therefore support speed of delivery.”<sup>36</sup>**

#### COMMERCIAL: TAKING ACTION TO DELIVER HIGHLY EFFICIENT NEW BUILDINGS

**Commercial buildings are responsible for 3% of the UK's greenhouse gas emissions.**<sup>37</sup> Poor quality, leaky commercial space means the companies responsible for those energy bills pay more, diverting money from core business priorities.

The commercial building sector suffers from a clear market failure. Highly efficient commercial buildings struggle to attract a rental premium, which negatively impacts landlords' motivation to improve their building stock. Existing regulations such as MEES (see below), are adequate but enforcement is weak. As per the domestic sector, the government should mandate a Net Zero Carbon Buildings standard by 2030 with a managed transition towards kWh/m<sup>2</sup> as the measurement for compliance. Metered energy use should be integrated into new building regulations, starting in 2020. Policy pilots such as Design for Performance and VolDECs (see below) offer mechanisms by which this market failure could be tackled.

#### Undermining design: the Performance Gap

The Performance Gap is an issue that applies to all buildings and is the difference between the energy performance of a building as modelled at design stage (shown in the EPC) and the actual energy performance of that building when in use. Actual energy use can be double what was modelled if not more.<sup>38</sup>

<sup>33</sup> <http://www.epcmortgage.org.uk/>

<sup>34</sup> Ecology Building Society, renovation mortgages <https://www.ecology.co.uk/mortgages/residential-mortgages/renovation/>

<sup>35</sup> Energy Saving Trust (May 2017) “The Clean Growth Plan: A ‘2050-ready’ new-build homes policy”

<sup>36</sup> UKGBC (February 2017) *Building Places that Work for Everyone. Industry insights into key government priorities.*

<sup>37</sup> Committee on Climate Change (June 2017) *Meeting Carbon Budgets: Closing the policy gap*

<sup>38</sup> World Green Building Council (2013) *The Business Case for Green Building*

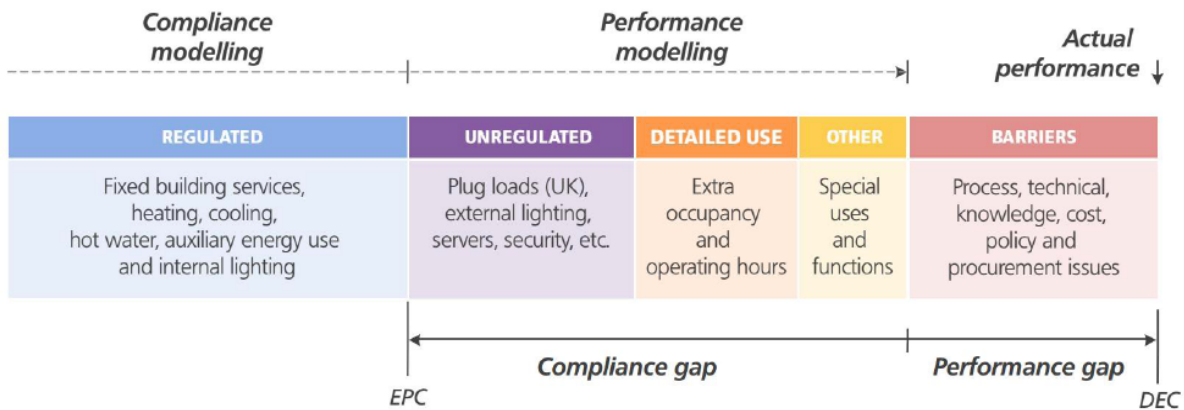
The Performance Gap is created by:

- design-stage modelling that fails to estimate in-use energy consumption within a building and the embodied energy inherent in constructing it;
- skills gaps which contribute to poor construction;

- insufficient post-build and occupancy evaluation.

**Failure to tackle the Performance Gap is a considerable missed opportunity in economic, social and environmental terms.**

## UNDERSTANDING THE PERFORMANCE GAP



Source: UKGBC (May 2016) *Delivering Building Performance*

Current initiatives provide useful learnings in this area and it is notable that both examples listed below are based upon a kWh/m<sup>2</sup> metric, which is proposed above as a better measurement of compliance with building regulations:

### 1. NABERS scheme (for new build and retrofit markets)<sup>39</sup>

The Australian NABERS scheme creates a market demand for a level of performance that the designers and construction contractors must deliver. It

measures energy efficiency, water usage, waste management and indoor environment quality, translating the results into a six-star rating. The Australian Government kick-started the market by requiring a minimum NABERS rating for any property leased by the public sector and then mandating it for any commercial space over 2,000m<sup>2</sup>.

The scheme has been credited with increasing investment in high-rated buildings and has triggered a broad shift

<sup>39</sup> <https://nabers.gov.au>

in the quality of commercial property.

Australia now has buildings that operate at 25 kWh/m<sup>2</sup>/annum,<sup>40</sup> while UK buildings following good practice can only achieve 88 kWh/m<sup>2</sup>/annum<sup>41</sup> if naturally ventilated – and substantially more if air-conditioned. The NABERS scheme is being trialled in the UK as ‘Design for Performance’ for the new build market.<sup>42</sup>

## 2. VolDECs (Voluntary DEC – for new build and retrofit markets)

The creation of a DEC-equivalent for privately owned premises would increase transparency around the operational performance of a building and generate market incentives for improvements.<sup>43</sup> This initiative is supported by investors such as Legal & General Property.<sup>44</sup>

### The need to improve construction skills and expertise

The Performance Gap is amplified by a lack of skills and expertise. Systems and insulation are sometimes installed badly and new technology such as intelligent building management systems is complex.<sup>45</sup> Plans may not be sufficiently detailed, builders may fail to work to plan and operational skills may be lacking, while ‘value engineering’ by which design characteristics are compromised to reduce costs, may reduce the efficacy of a design.<sup>46</sup>

The government’s commitment to “ensuring everyone has the basic skills needed in a modern economy”,<sup>47</sup> and determination to work with employers to help shape qualifications is welcome, but disappointingly the Industrial Strategy green paper fails to recognise how the low carbon sector and the energy efficiency sector in particular, can answer these priorities. Funding should be better targeted to embed low carbon expertise across different disciplines while government mandate for better energy efficiency standards can support investment in innovation and skills within companies – which in turn can improve business competitiveness.<sup>48</sup>

### The need for better regulation

Existing regulations play a useful role in this market, but their impact must be scaled up.

### Operational ratings

Currently, operational ratings, which record actual metered energy consumption, are only required for public buildings in the form of Display Energy Certificates (DECs). **We recommend that operational ratings be mandated for all commercial buildings**, with ratings made public to provide a reputational driver for businesses to make improvements. Current initiatives such as Design for Performance and VolDECs (see above) should be built upon to develop mandatory ratings which are appropriate for the commercial buildings sector.

<sup>40</sup> Green Building Council of Australia (May 2013) *The Value of Green Star – A Decade of Environmental Benefits*

<sup>41</sup> JLL benchmarks: <http://www.jll.co.uk/united-kingdom/en-gb/services/developers-and-investors/sustainability/real-estate-environmental-benchmark/the-benchmarks>

<sup>42</sup> Better Buildings Partnership <http://www.betterbuildingspartnership.co.uk/our-priorities/measuring-reporting/design-performance>

<sup>43</sup> UKGBC (May 2016) *Delivering Building Performance*

<sup>44</sup> <https://voldec.com/>

<sup>45</sup> Building.co.uk (21 June 2013) “CPD 13: Intelligent Building Management Systems”

<sup>46</sup> UKGBC (May 2016) *Delivering Building Performance*

<sup>47</sup> HM Gov (January 2017) *Building our Industrial Strategy green paper*

<sup>48</sup> See discussion on the Porter Hypothesis <http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-11-01.pdf>



From April 2018, **Minimum Energy Efficiency Standards (MEES)** will prohibit the new letting of domestic and commercial properties with EPC ratings F and G. This will capture 20% of non-domestic properties<sup>49</sup> and some landlords are engaging with the regulations, yet in Q1 2017 there were 18,000 non-domestic properties logged with an EPC of F or lower.<sup>50</sup> This is significant considering that within a year, no buildings of that standard may be let on a new tenancy. **This suggests landlords are either unaware<sup>51</sup>, or seeking to ignore, the MEES regulations.** The industry expects these regulations to be tightened into the 2020s, possibly preceded by a review of the regulation in 2020, but a clear roadmap is now needed from government to drive engagement. The introduction of mandatory operational ratings for commercial buildings would also allow these to be used as the mechanism of compliance for MEES as long as this is signalled to landlords well in advance.

### RETROFITTING DOMESTIC AND COMMERCIAL BUILDINGS: AN URGENT PRIORITY

By 2050, the UK's carbon emissions must be 80% lower than 1990 levels, but 85% of existing homes are due still to be in use by that date.<sup>52</sup> Urgent action is needed to retrofit these buildings to higher energy efficiency standards if we are to meet our climate targets, whilst securing the

economic, social and environmental benefits discussed above. Analysis has found that **an energy efficiency programme bringing all low income homes to an EPC Band C by 2025 and all other homes to the same standard by 2035 would deliver £3.20 in increased GDP per £1 of public investment.** It would **create 108,000 net new jobs across the country between 2020 and 2030** and deliver net annual benefit of £4.95bn from the total energy bill savings across the building stock.<sup>53</sup>

We recommend that the government set a public target for the number of homes that will be retrofitted every year in order to bring all homes up to EPC Band C by 2035. The introduction of Home Retrofit Roadmaps to supplement EPC measure recommendations would encourage a whole house approach being taken from the outset. Roadmaps would set out what improvements a home needs to reach EPC Band C and describe a sensible sequence in which individual home improvements can be made without locking the home into inadequate performance or unnecessarily increasing the cost of later improvements.

**“An energy efficient home is a more affordable and healthy home. We will improve the energy efficiency of existing homes, especially for the least well off, by committing to upgrading all fuel poor homes to EPC Band C by 2030.”<sup>54</sup>**

<sup>49</sup> UKGBC (May 2016) *Delivering Building Performance*

<sup>50</sup> DCLG (28<sup>th</sup> April 2017) “Energy Performance of Buildings Certificates Statistical Release: Q1 2017: England and Wales”

<sup>51</sup> BusinessGreen (6<sup>th</sup> April 2017) “Two-third of landlords unaware of new efficiency rules that will make renting coldest houses illegal”

<sup>52</sup> UKGBC (June 2014) *A housing stock fit for the future: Making home energy efficiency a national infrastructure priority*

<sup>53</sup> Cambridge Econometrics and Verco (2014) *Building the Future: The economic and fiscal impacts of making homes energy efficient*

<sup>54</sup> Conservative and Unionist Party Manifesto (May 2017) *Forward Together: Our Plan for a Stronger Britain and a Prosperous Future*

The government's prioritisation of fuel poor households (above) is welcome, but even this relatively small scale of ambition<sup>55</sup> will require significant additional funding of nearly £20bn up to 2030 to meet the Band C target in England.<sup>56</sup> The only Government programme that assists households to upgrade their energy efficiency levels is the Energy Company Obligation, for which there is a commitment to provide funds up to 2021/22. Beyond that there are no identified programmes for meeting the 2030 fuel poverty target, leaving a funding shortfall of £12.3bn.

**The able-to-pay retrofit market is also in urgent need of leadership from government.** This should include financial triggers for those who are able to pay for upgrades and steps to ensure the skills and mandatory high quality standards are in place to give businesses and households confidence in the measures they implement. The government must engage to overcome the financial barriers to energy efficiency retrofit by supporting the innovative financing models that are already being trialled, alongside support for valuable tools such as procurement platforms to help businesses that are considering an energy service contract.

MEES regulations in the domestic sector may be ineffective due to the 'no upfront cost' provision (predicated on the Green Deal and ECO) which is confusing for landlords and will make enforcement difficult. The regulations should be amended as soon as possible to replace this provision with a

cost-cap for landlords making improvements. A timetable should also be set out for tightening the minimum standard in the future to provide certainty to landlords and encourage early compliance.

### **The financing challenge**

The domestic 'able to pay' market typically needs a nudge to implement energy efficiency measures. Many have made energy savings through earlier schemes and further improvements carry only marginal benefits, increasing the 'hassle factor' that has always been a major barrier, yet these incremental improvements are "highly cost effective for the UK as a whole in reducing our overall energy demand."<sup>57</sup> The government must intervene with financial incentives at trigger points in a domestic building's life, such as maintaining lower VAT for energy efficiency measures, extending a lower rate to all energy efficiency renovation work<sup>58</sup> and adjusting stamp duty according to the efficiency of homes.<sup>59</sup>

Domestic and commercial space has struggled to attract third party finance at sufficient scale. This is partly because as a fairly new market, **most financiers do not recognise the investment case for energy efficiency and do not see energy savings as a reliable income stream.**<sup>60</sup> This is compounded by the small scale and disaggregated nature of the industry, where a risk assessment on each individual project goes beyond the scope and resources of most large commercial banks. The work of the Investor Confidence Project is seeking to

<sup>55</sup> Affecting an estimated 4.7m households. BEIS (January 2017) Energy Company Obligation: Help to Heat April 2017 to September 2018. *The government response to the ECO: Help to Heat Consultation*

<sup>56</sup> Committee on Fuel Poverty report: September 2016

<sup>57</sup> Energy Saving Trust (May 2017) "The Clean Growth Plan: An offer to all householders"

<sup>58</sup> See the Federation of Master Builders' "Cut the VAT" campaign

<sup>59</sup> Further grant / loan mechanisms are set out in Energy Saving Trust (May 2017) "The Clean Growth Plan: An offer to all householders"

<sup>60</sup> Intelligent Energy Europe (February 2011) *Boosting the Energy Services Market in Europe*

tackle this issue by standardising how energy efficiency projects are developed, documented and developed, using international certification.<sup>61</sup>

In the non-domestic market a few smaller investors, such as SDCL and the Green Investment Bank, are starting to address this financing gap through energy service contracts.<sup>62</sup> Typically these “spend to save” models allow businesses to make energy efficiency improvements without incurring up-front costs, by repaying the investment in energy efficiency through savings in energy bills, which also provides a steady stream of income for investors.

#### Case study: RE:FIT

The Greater London Authority has set up a RE:FIT procurement framework to help clients to benchmark their energy consumption, identify investment options, estimate potential energy and carbon savings, develop project briefs and conduct competitions to select their preferred contractor. RE:FIT significantly lowers transaction costs for the client by providing expert assistance along with templates for each project stage and encouraging learning through case studies and access to previous RE:FIT participants to share knowledge.

**Within businesses, funding energy efficiency measures is often less attractive when the payback time exceeds that of business growth projects.** The growing market for energy service contracts may help ease this by removing upfront costs, but procurement of an energy service contract still requires significant time, resources, know-how and expertise on the part of the client.<sup>63</sup> Procurement platforms such as RE:FIT in London (see below) have proved popular in reducing the hassle-factor and wider roll-out should be encouraged.

As with the domestic market, commercial property would benefit from fiscal ‘nudge’ mechanisms. This could include a Climate Change Agreement for non-energy intensives, or some flexibility on business rates. This could help level the playing field for energy efficiency improvements which must frequently compete for finite internal funding against businesses’ growth investments.

Equally the regulatory ‘nudge’ factor offered by the **Energy Savings Opportunities Scheme (ESOS)** could be given greater

power. The ESOS is a requirement upon large organisations to carry out energy efficiency assessments once every four years. Part of the process requires Board level sign off, which has been welcomed by industry for raising awareness of energy efficiency within the corporate hierarchy. Drawn up to implement the EU Energy Efficiency Directive, the ESOS will be an important regulation to maintain or improve after the UK has left the EU and a natural scope for improvement would be to mandate the improvements that are identified by the audit, providing they pay for themselves within a time frame, such as seven years.

<sup>61</sup> Investor Confidence Project website: <http://europe.eepformance.org>

<sup>62</sup> SDCL website, “SDCL’s energy efficiency project investment funds”

<sup>63</sup> Energy Efficiency (December 2016) “The UK market for energy service contracts in 2014-2015”.  
<https://link.springer.com/article/10.1007/s12053-016-9430-2>

### **The retrofit skills gap**

A lack of skills available to deliver energy efficiency measures competently has resulted in an erosion of consumer confidence in the domestic and commercial markets.<sup>64</sup> Households and businesses struggle with the plethora of schemes, brands, certification bodies and organisations operating in energy efficiency.

**A quality mark for all energy efficiency and renewable energy measures is needed to drive customer confidence and allow suppliers to know which skills and technologies they should invest in.**

This must be accompanied by strong standards and enforcement.

### **The potential of connected government**

Connected government is essential for delivery of effective energy efficiency policy. The year ahead is due to see the Industrial Strategy white paper, Clean Growth Plan, 25 Year Environment Plan and developments from the Housing white paper. **The overlap between all four areas of policy development is considerable and the impact transformational, if all were to be aligned.**

For example, the government has committed to building one million new homes by the end of 2020.<sup>65</sup> These homes could be used to drive development of low carbon technology, materials, construction processes and services in order to meet the UK's carbon targets, whilst skilling up the workforce with the knowledge of how to build net zero carbon homes and install low carbon technology within them.

These homes would therefore support the delivery of the Clean Growth Plan, ensure construction is undertaken in a way that improves the natural environment and builds a long-term pipeline of work for further development and retrofit of housing that would support ongoing demand for high quality skills, whilst delivering homes that offer lower energy bills to their occupants. In keeping with the priorities of this Industrial Strategy, these benefits could apply to every constituency in the country.

### **The government should support energy efficiency through its own procurement policies.**

The government owns nearly 14 million square meters of property in the UK<sup>66</sup> and procurement by local authorities accounts for £62 billion each year, equivalent to 4% of UK GDP.<sup>67</sup> A comprehensive public building energy efficiency programme could generate a meaningful pipeline of projects, helping to boost the energy service market and address the skills gap. The government should:

- Renew the Greening Government commitments for 2020 and then every five years, setting targets for emissions reductions from public buildings.
- Require national and local governments only to procure buildings that meet a certain level of energy, using the example of the NABERS scheme (above).
- Roll out the Government Soft Landings initiative more widely.<sup>68</sup>

<sup>64</sup> Bonfield Review (December 2016) *Each Home Counts*

<sup>65</sup> Independent (19<sup>th</sup> January 2017) "The Government has dropped its one million new homes target, report claims"

<sup>66</sup> Central Government Property and Land, 24/6/2016 Building Data, available from [data.gov.uk/dataset/epims](http://data.gov.uk/dataset/epims)

<sup>67</sup> Centre for Cities (August 2014) *Delivering Change: How cities go low carbon while supporting economic growth*

<sup>68</sup> Cabinet Office (April 2013) *Government Soft Landings*