

# Business, Energy and Industrial Strategy Committee:

## Post-pandemic economic growth

**The Royal Institute of British Architects champions better buildings, stronger communities and higher environmental standards through the practice of architecture and our 40,000 members. We provide the standards, training, support and recognition that put our members – in the UK and overseas – at the peak of their profession. With government and our partners, we work to improve the design quality of public buildings, new homes and new communities.**

The Royal Institute of British Architects (RIBA) welcomes the opportunity to respond to this inquiry. The built environment is responsible for around 40% of global carbon emissions and architects have a significant role to play in reducing UK greenhouse gas emissions. The RIBA joined the global declaration calling an environment and climate emergency on 29 June 2019; just two days after the UK government passed a law stipulating the UK end its contribution to global warming by 2050, by bringing all greenhouse gas emissions to net zero.

The RIBA welcomes the direction of travel signified by many of the measures proposed by Government in recent years to help the UK reach net zero. However, we believe that there is a need for greater ambition if we are to significantly improve the performance and reduce the environmental impact of the built environment.

Green recovery provides an opportunity to stimulate the UK economy by creating jobs, supporting economic growth and helping the UK meet its long-term climate goals.

The RIBA suggests that green recovery should include a mix of public investment and policies that stimulate private sector capital. The key areas of focus should be on improving the energy efficiency of the UK's existing homes with complementary policies on the energy efficiency of new homes and the promotion of Post Occupancy Evaluation.

## Improving the energy efficiency of existing homes

The UK has the least energy efficient housing in Europe, and it is expected that 85% of existing stock will remain in use in 2050.<sup>1</sup> In the UK 19% of carbon emissions come from heating buildings, 77% of which is attributable to heating homes.<sup>2</sup>

The Government's Clean Growth Strategy sets the target of bringing all homes to Energy Performance Certificate (EPC) band C by 2035, "where practical, cost-effective and affordable". Currently, only 29% of homes meet this standard; which leaves a remaining 71%, equating to around 19 million homes to be retrofitted.<sup>3</sup>

Improving the energy efficiency of homes must become a national infrastructure priority and Government must set more ambitious retrofit targets. To achieve this, Government must set out a National Retrofit Strategy which includes clear governance arrangements, targets, and a long-term action plan which identifies incentives and ringfences funding.

The National Retrofit Strategy must take a long-term approach to delivery in which Government, local authorities, financial institutions and individuals play a core role in tackling fuel poverty, creating demand and growing local supply chains.

Energy efficiency stimulus is an opportunity to incentivise investment, increase consumer spending, create jobs, upskill workers, and alleviate demand on the NHS whilst mitigating climate risks.

### **Stimulating investment and consumer spending**

The Conservative Party earmarked £9.2 billion in their election manifesto for three energy efficiency programmes – the Social Housing Decarbonisation Fund, Home Upgrade Grants and Public Sector Decarbonisation Scheme. These must be confirmed in full and implemented as soon as possible.

The RIBA welcomes the £2 billion announced by the Chancellor in the summer economic statement; however, this must just be the beginning. The Government must unlock private capital through further public investment.

Internationally, governments have successfully unlocked private capital through energy efficiency stimulus. For example, in Germany in 2016, their national infrastructure bank, KfW, invested €1.7 billion to incentivise energy efficient renovation through interest rate and capital subsidies. These incentives led to unlocking €8.4 billion from building owners – i.e. for every €1 invested, building owners were motivated to borrow and spend €6. The resultant VAT on these revenues alone (€1.6 billion) nearly covered KfW's own costs.<sup>4</sup>

Larger subsidy levels were dependent on achieving higher energy performance. Typically, improved performance is more expensive to achieve, requiring building owners to spend more. These measures, coupled with low-cost borrowing, incentivised building owners to spend six times more than the Government investment.<sup>5</sup>

Reducing energy bills increases a households' disposable income. Even with 'direct rebound' effects considered<sup>6</sup> improving energy efficiency, over the long-term, secures cost savings which leads to an increase in consumer spending, aiding economic recovery.<sup>7</sup>

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<sup>1</sup> UK Green Building Council, *A housing stock fit for the future: Making home energy efficiency a national infrastructure priority*, <https://www.ukgbc.org/sites/default/files/A%20housing%20stock%20fit%20for%20the%20future%20-%20Making%20home%20energy%20efficiency%20a%20national%20infrastructure%20priority.pdf>, pg. 5

<sup>2</sup> House of Commons Business, Energy and Industrial Strategy Committee, *Energy efficiency: building towards net zero*, <https://publications.parliament.uk/pa/cm201719/cmselect/cmbeis/1730/1730.pdf>, pg. 6

<sup>3</sup> House of Commons Business, Energy and Industrial Strategy Committee, *Energy efficiency: building towards net zero*, pg. 13

<sup>4</sup> EEIG, *Rebuilding for Resilience*, pg. 15

<sup>5</sup> EEIG, *Rebuilding for Resilience*, pg. 16

<sup>6</sup> Direct rebound effects could include a family choosing to keep their home warmer with reduced energy bills, for example.

<sup>7</sup> EEIG, *Rebuilding for Resilience*, pg. 15

When the Government effectively stimulates investment and unlocks private capital, the demand for low carbon and energy efficient services and products will increase. This will increase the supply of new and innovative products coming to market and create significant clean industrial growth opportunities in the UK and abroad.<sup>8</sup>

The Government must also help unlock stimulus from the financial sector. The Green Finance Institute's report: *Financing energy efficient buildings: the path to retrofit at scale* provides a series of financial innovation demonstrators designed to mobilise private capital to retrofit our housing stock.<sup>9</sup> The Government could collaborate with the financial sector on green leases and Building Renovation Passports, for example, to promote private investment in energy efficiency.

### Creating skilled employment opportunities across the country

Retrofitting homes to be more energy efficient would create skilled employment opportunities. This is particularly key for some regions, for example the North East and West Midlands, where there is both a high volume of energy inefficient homes and high levels of unemployment.<sup>10</sup> Investing in energy efficiency will create jobs nationwide, including in areas that have the greatest need – providing local jobs for local people.

Young people are likely to be disproportionately affected by the economic impact of COVID-19, however, investing in education and training for school leavers provides an opportunity for a highly skilled, well paid job for life.<sup>11</sup>

Some employees may be unable to return to sites due to pandemic health and safety. These employees should be encouraged to undertake training and education on net zero construction and retrofit coordination. This is an opportunity to drive the upskilling of the workforce and create a high quality, professional, cost competitive construction sector.

As part of the National Retrofit Strategy, the Government should support training and education through ringfenced funding. In their response to COVID-19, New Zealand allocated NZ\$1.1 billion (£0.55 billion) as part of an environmental jobs package, and a further NZ\$1.6 billion (£0.8 billion) over four years for trades and apprenticeship training.<sup>12</sup>

Investment in energy efficiency and related training and education will help “level up” opportunities across the UK.

### Health benefits

The five-year moving average of excess winter deaths in Great Britain is 35,600 per year. Of these, over 10,000 were attributable to living in a cold home and one in ten excess winter deaths are directly linked to fuel poverty.<sup>13</sup>

Residents of energy inefficient homes have increased risk of respiratory and circulatory problems. Investing in energy efficiency can minimise risks to occupant health and wellbeing, at the same time, easing the burden on the NHS. In England alone, it is estimated that the cost to the NHS of health conditions made worse by poor housing is between £1.4 and £2 billion each year.<sup>14</sup> In a time where people are spending more time in their home, it is imperative that our homes are safe, healthy and affordable to run.

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<sup>8</sup> EEIG, *Making energy efficiency a public and private infrastructure investment priority*, [https://www.theeeig.co.uk/media/1063/eeig\\_net-zero\\_1019.pdf](https://www.theeeig.co.uk/media/1063/eeig_net-zero_1019.pdf), pg. 7

<sup>9</sup> Green Finance Institute, *Financing energy efficient buildings: the path to retrofit at scale*, <https://www.greenfinanceinstitute.co.uk/wp-content/uploads/2020/05/Financing-energy-efficient-buildings-the-path-to-retrofit-at-scale.pdf>

<sup>10</sup> EEIG, *Rebuilding for Resilience*, pg. 10

<sup>11</sup> Energy and Climate Intelligence Unit, *Britain's homes hold the key to rebooting the economy*, <https://eci.net/blog/2020/britains-homes-hold-the-key-to-rebooting-the-economy>

<sup>12</sup> EEIG, *Rebuilding for Resilience*, pg. 17

<sup>13</sup> EEIG, *Rebuilding for Resilience*, pg. 13

<sup>14</sup> EEIG, *Rebuilding for Resilience*, pg. 13

### **Recommendations:**

- Improving the energy efficiency of homes must become a national infrastructure priority and Government must set more ambitious retrofit targets.
- The Government must set out clear retrofitting policies as part of a National Retrofit Strategy, including incentives to stimulate private capital and funding for training and education.
- The £9.2 billion earmarked in the Conservative Party's election manifesto must be confirmed in full and implemented as soon as possible.

### **Ensuring new homes are energy efficient**

The Government has pledged to build 200,000 homes a year; and building these homes should continue to be a priority. However, new homes must not negatively impact the environment.

In 2019, the RIBA launched the [2030 Climate Challenge](#). The Challenge asks architects meet net zero (or better) whole life carbon for new buildings by 2030 by reducing operational energy, embodied carbon and potable water usage.

### **The importance of operational energy**

The current calculations for measuring energy efficiency do not reflect the actual energy used by a building. Energy use is predicted, rather than measured at the meter, which creates vast inaccuracies when compared to actual energy usage. Measuring energy at the meter, known as operational energy, should be the principal metric for energy efficiency.

The Government must set performance-based targets for operational energy in-line with the RIBA 2030 Climate Challenge. This would encourage architects, developers and homeowners to be innovative and reward good design based on form, orientation and fabric performance.

Currently, there are loopholes in the Building Regulations which allow housing developments to be built to energy efficiency requirements that have been superseded more than twice. These loopholes must be closed, and more stringent transitional measures implemented.

Setting specific operational energy targets and closing the loopholes in the Building Regulations will help demonstrate that the UK is a leader in green building design and architecture. This can support export opportunities in these areas. Energy efficient homes save owners hundreds of pounds on energy bills annually; this increases a households' disposable income, generating consumer spending in other areas of the economy.

### **New homes must also consider whole life carbon**

Whole life carbon includes all carbon emissions that are directly related to the type and quantity of the resources used to create, maintain and use a building. A key element of this is embodied carbon.

Embodied carbon refers to the carbon emitted from the processes associated with sourcing materials, fabricating them into products and systems, transporting them to site and assembling them into a building. It also includes the emissions due to maintenance, repair and replacement, as well as final demolition and disposal.

The choice of materials used in construction can significantly impact the amount of carbon emitted during a project. Concrete, for example, is one of the most widely used building materials in the world. It is durable and strong, and when combined with suitable insulation it can make buildings incredibly energy efficient. Despite these positive qualities, concrete is also one of the biggest emitters of carbon, accounting for 8% of CO<sub>2</sub> emissions, globally.<sup>15</sup>

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<sup>15</sup> Chatham House, Making Concrete Change: Innovation in Low-carbon Cement and Concrete, <https://reader.chathamhouse.org/making-concrete-change-innovation-low-carbon-cement-and-concrete#>

To help address the levels of embodied carbon in new homes, the UK should introduce embodied targets, in line with the RIBA 2030 Climate Challenge. Setting embodied carbon targets will increase the demand for low carbon materials – stimulating growth in low-emission manufacturing of traditional materials and promote new low carbon materials. Actively considering embodied carbon will also encourage the use of local materials, driving the built environment to source products from the UK where possible.

**Recommendations:**

- The Government should use operational energy consumption as the principal metric for measuring energy efficiency of buildings.
- The Government should introduce operational energy and embodied carbon targets for buildings which are in line with the RIBA 2030 Climate Challenge.
- The Government must close loopholes in the Building Regulations which allow homes to be built to energy efficiency requirements that have been superseded more than twice.

**Verifying buildings are energy efficient through Post Occupancy Evaluation**

It is vital that building owners and users gain a better understanding of how their building performs compared to the design intention. Even when a building's design has energy efficiency at its heart, the promised energy efficiency standards are not always met.

Undertaking Post Occupancy Evaluation (POE) is key to ensuring that a building is as energy efficient as intended. POE is the process of obtaining feedback on a building's performance in use after it has been built and occupied. POE accurately measures factors such as energy consumption, water usage, maintenance costs and user satisfaction.

If POE is not carried out, the building user is unaware of the energy efficiency improvements that could be made. POE also highlights where a building can be improved, allowing for a process of continuous improvement, and lessons learnt, in the construction industry.

The Government should not only promote and endorse POE but require POE as a condition of procurement of public funding for building projects. This is essential for transparency of how public money is spent, but also provides data that can be shared and learnt from, allowing for continuous improvement on energy efficiency within the built environment.

As POE is a service, there is a cost associated. Whilst this cost is very small to the building user, research shows as a proportion of a project's cost POE costs an additional 0.1% - 0.25%<sup>16</sup>, POE requires a professional to undertake the work, providing employment opportunities. At the same time, the cost of undertaking the POE is injecting capital into the economy, whilst any issues discovered during the evaluation provide further opportunities for capital to be invested to make a building more energy efficient.

The construction industry is one of the few sectors where a large sum of money is spent, yet there is no assurance that the building is performing as intended. Measuring building performance confirms that a building is not negatively impacting the environment and providing value for money for the owner.

**Recommendations:**

- The Government must endorse and promote POE.
- The Government should require POE as a condition of procurement of public funding for building projects.

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<sup>16</sup> This figure includes the cost of post-occupancy surveys as well as the extra time required to address any identified issues in the post-handover stage ([Building, 17 June 2011](#)).