



# Call for Evidence: Building a Market for Energy Efficiency

## CIBSE Response

### Administrative Details:

Name:	Dr Hywel Davies
Position:	Technical Director
Name of organisation (if applicable):	Chartered Institution of Building Services Engineers
Address:	222, Balham High Road, London, SW12 9BS
Email address:	hdavies@cibse.org
Telephone number:	07590 047086

**The views expressed in this response are an official response to the Consultation by the Chartered Institution of Building Services Engineers**

The Chartered Institution of Building Services Engineers is the professional body that exists to:

*'support the Science, Art and Practice of building services engineering, by providing our members and the public with first class information'*

CIBSE members are the engineers who design, install, operate, maintain and refurbish the energy using systems installed in buildings, including homes, and are specifically trained in the assessment of heat loss from building fabric and the design of energy using systems for the provision of heating and hot water, lighting, ventilation and cooling and small power distribution in homes. Many CIBSE members work in the public sector in general and in higher education in particular.

CIBSE has over 20,000 members, of whom around 75% operate in the UK and many of the remainder in the Gulf, Hong Kong and Australasia. Many are actively involved in the energy management of commercial buildings for larger businesses, and so this consultation is highly relevant to us and to our members.

CIBSE is the sixth largest professional engineering Institution, and along with the Institution of Structural Engineers is the largest dedicated to engineering in the built environment. Our members design, install, manufacture, maintain, manage, operate and replace all the energy using systems in buildings as well as public health systems.

As an Institution CIBSE publishes Guidance and Codes which provide best practice advice and are internationally recognised as authoritative. The CIBSE Knowledge Portal, makes our Guidance available online to all CIBSE members and is the leading systematic engineering resource for the building services sector. Over the last twentyone months it has been accessed over 200,000 times, and is used regularly by our members to access the latest guidance material for the profession. Currently we have users in over 170 countries, demonstrating the world leading position of UK engineering expertise in this field.

[www.cibse.org](http://www.cibse.org)

## Introductory Remarks

The Institution is pleased to respond to the Call for Evidence. Whilst we understand the objective of seeking to ensure that the market for energy efficiency is as efficient and effective as possible, there does appear to be a presumption that energy efficiency on the scale required to meet our Paris Agreement and Climate Change Act commitments in 2050 can be delivered by market mechanisms alone. The Institution believes that this is highly unlikely to be the case.

The Committee for Climate Change, in its 2017 report, noted that although good progress has been made to date, that progress is stalling and that since 2012 emissions reductions have been largely confined to the power sector, whilst emissions from transport and the building stock are rising. They are clear that effective new strategies and policies are urgently needed to ensure emissions continue to fall in line with the commitments agreed by Parliament.

Whilst the committee makes a number of recommendations relating to energy efficiency, none of them suggests that building a market for energy efficiency is going to close the policy gap ahead of the fourth and fifth carbon budgets. The principles set out for the demand side include new financial mechanisms, price signals and greater awareness of energy efficiency. None of this is really new. It has been a part of government policy since the first Oil Crisis of 1973, and there have been variants of these three strands in place ever since. The Carbon Trust was formed at the turn of the century to “make business sense of climate change”. Whilst they undoubtedly did so in many instances, in many other instances market failure and a lack of business or even common sense prevails to this day.

Whilst the list of principles are all quite reasonable, there needs to be a further principle, which is that where the market fails to deliver, government should intervene to address the failure.

The introduction of condensing boilers, the efficiency of which is (correctly) extolled as a virtue on page 18 of the Call, is an excellent case study of the need to support market mechanisms with intervention. Condensing boilers came onto the UK market in 1990. By 2005 they had achieved a market share of 15% based on higher efficiency and performance. In 2005 government announced that it would intervene to regulate for the installation of condensing boilers in most new and replacement settings. They worked with the manufacturing industry and installer base as well as distributors and merchants to train the sector to switch to the new technology. The new regulations came in in April 2006 and in October 2006 condensing boilers had achieved an 85% market share. Whilst condensing boilers do not always deliver the anticipated savings due to design issues, they have made a significant contribution to emissions reduction, which is evident in the long term emissions statistics.

Intervention reduced to six months what was going to take 70 years at the rate of progress the market was delivering.

Another highly topical issue is the action to protect the Ozone layer. This was deemed to be a serious and urgent threat to the global ecosystem, and it was met with serious and urgent international action to ban the chemicals that were responsible for the damage. There was not recourse to creating a market in less ozone depleting materials, it was a matter for regulation.

Climate Change is increasingly recognised as a serious threat to humanity. The economic impacts are now widely acknowledged, and the potential to disrupt markets is understood in

business and amongst political leaders. It is a major threat to energy security and even in the US it is acknowledged as a major strategic issue, despite the views of the current Administration.

We are not leaving the other major strategic threats of our day, such as cyber security and extremism, to market forces. If we are to achieve the targets set out in the Paris Agreement and Climate Change Act then undue reliance on market efficiency does not seem to be the way to ensure that we achieve our targets. We may largely have done so so far (albeit with interventions such as the condensing boiler regulations), and met or exceeded the first carbon budgets. But the Clean Growth Strategy itself acknowledges that things are going to get harder from now on. Whilst the creation of an efficient market is important, it is also necessary to accept that the market alone cannot deliver energy efficiency at the levels required in the medium term.

Business sense cannot overcome market failures; often these can only be resolved by firm government intervention. Two topical examples are the ongoing determination of shops to keep their doors open in cold weather, because of fears that closing them reduces footfall, or not putting doors on refrigerated food cabinets because it may reduce casual sales. It is obvious that both measures will reduce fuel or energy bills, by reducing heating demand in stores. There is a clear technical sense.

Yet nobody is willing to risk being the first to move, even though almost any observer can see that the current open or no doors policies are just plain madness, bad for the environment and bad practice. Yet there is a view that “the market” will penalise the first mover, so nobody moves. Only government intervention will resolve these issues – and if taken then the whole industry would come on board and bank the energy savings willingly! The market will not resolve these challenges, however efficient it is. In New York legislation was passed in 2008 to prohibit open doors when the air conditioning is on. Compliance is advocated on the basis of business sense, saving money on energy bills and doing the right thing for the New York environment, but at the root of this is legislative intervention, not a market mechanism.

## **State of the market**

Q1. What information do you have on current rates of delivery of measures outside of Government programmes, including through DIY etc?

A. As a professional body CIBSE does not collect this data formally. Anecdotal evidence however regularly points to missed opportunities and a lack of take-up, for example of energy efficiency measures that could be carried out as part of other building improvement works. Furthermore, the lack of a well-established market limits opportunities for the industry to mature and skills to spread, leading to concerns about the quality of the works that are carried out, and reduced energy savings.

Q2. What information do you have on the remaining potential for energy efficiency improvements and what savings could be expected from these measures?

A. CIBSE does not have this data. However, we are aware of data that has been produced at an EU and UK level in recent years. *Each Home Counts*, for example, assesses the potential for

retrofit of existing homes. The Energy Institute at University College London has produced a significant volume of research in this area, as have the BRE

Beyond energy, carbon and financial savings, this could also deliver comfort and health benefits, and reduce expenditure on healthcare interventions. It is well known that the UK has some of the coldest homes of OECD countries with comparable climates.

Q3. Do you agree with our assessment of the current market for energy efficiency amongst owner occupiers, including the trigger points and supply chain relationships?

The University of Sussex have recently analysed a range of technology options and the potential contribution to energy efficiency in the domestic market. In addition, the iSTUTE End Use Energy Demand Centre, a collaboration between Ulster, Warwick, Loughborough and London South Bank Universities, has been looking at uptake of energy efficiency measures, in particular at behavioural aspects, and has published a number of papers on the topic. If Professor David Elmes has not responded to this call then the Department might consider approaching him directly for input. The following serves as a very brief example of findings to date:

*For the type of significant investments [in energy efficiency] we consider...*

***Alignment effects***

*- Be careful that people “write across” information, and draw realistic conclusions from presentations of similar situations*

*- Priming can engage higher order thinking*

***Discounting & framing effects***

*- ‘Patient’ people are more likely to select an energy-efficient technology with temporally distant benefits*

*- Evidence for alternate financial framing techniques in guiding choice (reframing choice as investment with active ‘earning’ / ‘saving’ potential)*

***Norms & feedback effects***

*- Normative information is highly effective in guiding choice behaviour – people trust the providers of such information much more than the “trade”*

*- In absence of normative information, financial framing of benefits is more effective than environmental framing of benefits*

***Messenger effects***

*- Not significant for the decision type and process we’ve considered*

*- Further work ongoing into decisions with varying levels of initial financial outlay*

It is also worth noting that a major EPSRC funded programme called the “CALEBRE” project looked at Consumer Acceptable Low Energy Building Refurbishment, and drew a number of conclusions about consumer behaviour and also about low energy or low carbon technologies. This work was led by Prof Dennis Loveday at Loughborough University and is widely available.

Q4a. Do you agree that it makes sense to prioritise those groups most likely to be open to investing in energy efficiency?

Yes, and the research noted above helps to identify those groups and ways of engaging with them.

Q4b. And do you agree with our assessment of who those groups are most likely to be?

Up to a point. Work done by the Association for Conservation of Energy identified the prime time for energy efficiency upgrades as being when people have just moved house. The loft is not full of clutter, they have already had the upheaval of moving, and are more willing to cope with more, the home is new, they are enthused and willing to put up with some disruption.

Unfortunately, that may also be the time, especially for those in the south east and London, when finances are most stretched and good intentions cannot be financed.

And this does nothing for the rented stock, some of which is the worst in energy and condition terms and most in need of an upgrade.

### **Barriers to market growth**

5. Do you agree with our assessment of the current barriers to market growth?

See above. For many younger property owners the finances required to own property leave little or no spare money for energy efficiency improvements.

Awareness and trust are also factors identified in the research studies referred to above. Domestic EPCs are a commodity item and not seen as a source of reliable advice. Energy savings and a commitment to energy efficiency are not enough to pay an overstretching mortgage, so it is little wonder that there are limited incentives and a low awareness.

Solid wall insulation applied properly should not have an impact on aesthetics or value. The recent pilot project for Nottingham City Council is a good demonstration of what can be done. Keepmoat in the North west have also done many refurbishments of hard to treat homes and shown how this can be done well and achieve high levels of satisfaction for occupants.

Q6. Are there other barriers that you think we should be addressing?

A. The supply chain has had to endure several abortive policy drives, most notably the Green Deal and so investor confidence to invest in this sector is now limited. This is not new and CIBSE has argued previously that this is a sector that requires long term commitment by investors, which will only be matched by long term policy stability from government.

Significant investment in energy efficiency requires appropriate design and installation skills along with appropriate products. All of these require investment over a period of time, whether in product development, testing and certification or in developing individual's skills, either in design or installation. Investment requires market confidence and stability, which is currently not abundant, and has already had to work through the major reductions in grant funding for insulation and the Green Deal.

Q7. Do you think there are any other important lessons to learn from past attempts to stimulate the market?

A6 highlights the need to learn from past abrupt changes in policy.

Q8. Are there other international examples we could learn from?

A. The UCL, Loughborough and Warwick Research provides references to these and it is worth the Department engaging with these researchers directly if they have not responded already.

See also the European Green Building Council's BuildUpon initiative Renowiki, a database of measures from across Europe to tackle energy efficiency through skills, education, awareness, finance, organisational measures, and regulations: <http://buildupon.eu/initiatives/>

The International Energy Agency have also produced a considerable volume of relevant work in this area.

Q9. Are there any barriers preventing business models for energy efficiency that have developed in other countries from also developing in the UK?

A. Again, lack of confidence in the commitment to energy efficiency. People like Melius Homes, who are developing the Energiesprong concept in the UK, will have useful insights into the challenges of adopting a continental approach to energy efficient retrofitting in the UK.

### **Proposed approach**

10. Do you agree with the set of proposed principles for guiding our approach?

As noted above, CIBSE is concerned at the apparent reliance on price and market mechanism to drive energy efficiency measures. Other interventions may be needed, along with building a degree of confidence in policy stability, which will take some time to achieve.

11. Do you agree that the policy areas we have set out are the correct ones?

### **Developing new ways for financing energy efficiency**

**We anticipate that the feedback from the recent consultation on Green Deal Finance will be considered alongside this response.**

12. Which of the fiscal levers described here would drive the greatest consumer demand?

13. Is there evidence to suggest that any other fiscal levers not described here could drive consumer demand?

14. What would be the profile of homeowners likely to take up these different incentives?

A. Incentives can only be effective where there is spare capital to spend in order to qualify for the incentive. This excludes many homeowners who are relatively new to home ownership and all their income is committed to a mortgage. Incentives are more likely to appeal to those committed to combatting climate change or those who have spare capital and also the time and commitment to undertake energy efficiency work.

15. How could these incentives be designed to deliver the best value for money for Government and best savings for consumers?

16. What barriers, regulatory or otherwise, exist to financial institutions developing any of these products or incentives themselves?

A. Lack of confidence that investment in a new service line will be able to deliver a return on investment within the future policy landscape.

17. How could Government assist financial institutions with a retail presence, local authorities and other actors to run trials of these ideas?

18. How could we ensure that any trials would lead to the development a self-sustaining market for support?

### **Price signals to encourage homeowners to prioritise energy efficiency**

19. What price signals would best drive uptake of energy efficiency measures?

20. What would be the impact on the housing market of such price signals?

21. What protections would need to be in place to ensure that vulnerable or fuel poor customers are not unduly affected by these price signals?

22. Could these ideas be rolled out in a smaller scale, to a particular subset of homes or in a particular geographic area, to test feasibility before a national rollout?

### **Improving awareness of energy efficiency products and technologies, their benefits and advice to consumers**

23. What evidence do stakeholders have on the link between installing an energy efficiency measure and the value of property? What research could bolster this evidence base?

Refer to the government's own research, based on 300,000 transactions, showing a link between EPC and property value: <https://www.gov.uk/government/news/energy-saving-measures-boost-house-prices> . The analysis considered like properties where the main difference was their EPC rating. It takes into account the price effects due to location, size and age of the property.

24. How could Government effectively deliver messages to promote energy efficiency through intermediaries and which are the most important intermediaries to target?

There are good examples at the local or regional levels across the UK where energy efficiency works are promoted and carried out as part of a joined-up approach and cross-referrals including local health services as well as energy experts. See for example the Affordable Warmth network.

25. At which additional points could homeowners be required to have an EPC, and how could this improve their value and the awareness of potential energy efficiency improvements?

The Department should consult with the MHCLG who implemented the EPBD in 2006/7, when everything possible was done to minimise the burden of introducing EPCs. Trigger points for EPCs were considered in detail at that time, and little has changed to alter that analysis. It would be quite difficult to devise an effective trigger other than sale or rent for an EPC on an existing dwelling. It could be tied to receiving an incentive, but that could easily become a barrier to uptake of the incentive.



It is also not clear why extra EPCs would be beneficial. If someone wants to undertake improvements to an existing home then they can commission them effectively without an EPC, by using a competent professional advisor to design and specify the improvements.

26. How could EPCs be displayed more prominently to prospective homebuyers at different stages of the home buying process?

In France, it is mandatory for EPCs to be included prominently on ads in estate agents displays; this sends a signal of importance and allows it to be considered early on when comparing properties, rather than as a late request for information once the process of engaging in the sale is already under way.

### **Creating the conditions so that those who derive value from energy efficiency can be key players in the market**

27. Have we captured all the main sources of additional value of energy efficiency?

28. What other ways could we seek to monetise the benefits of energy efficiency?

29. How could both Distribution Network Operators (DNOs) and Gas Distribution Networks (GDNs) be incentivised or required to deliver energy efficiency savings?

30. Do current market arrangements allow for DNOs and GDNs to fully realise the potential of energy efficiency savings? If not, what needs to change?

31. What are mortgage lenders' plans for improving the way they factor energy efficiency into lending decisions?

32. What support would lenders need in order to be able to commit to a voluntary target for improving the average energy efficiency of the properties they lend to?

33. How can lenders develop a more accurate model of fuel bill savings, and would they be willing to lend 'green mortgages' on this basis?

34. What other changes would encourage lenders to offer more 'Green Mortgage' products?

### **Enabling innovative energy efficiency products and services**

35. How could thinner, less intrusive insulation products be made to be compliant with building regulations?

No specific comment on products and technical innovation .

Beyond individual products and in the first instance, we would like to highlight the significant opportunities for building regulations to be more comprehensive AND more consistently applied in the case of domestic and non-domestic refurbishments.

36. Are there any ways that current regulations are preventing innovative energy efficiency products and services coming to market?

37. What changes should be made to the Energy Company Obligation to ensure that it supports the development of innovative energy products and services?

### **Improving data to open up the market for investment**

38. Are there other ways that Government could help improve access to data on energy efficiency and performance of homes for research purposes?

39. What would be the impact on the market and investment in energy efficiency of the availability of better data on the actual performance of homes?

A. It is worth looking at the research referenced in earlier answers to see the potential role of data on consumer uptake and acceptance.

### **Improving supply chain capability**

40. Would the supply chain benefit from having a feature in the new Energy Savings Advice service for installers to share best practice and access a repository of advice?

41. Would funding for local supply chain growth and coordination lead to additional retrofit measures?

42. Is there anything else that central Government could do to support local retrofit supply chain growth and to support builders to carry out retrofit projects?