

# Consultation response: 'Building a market for energy efficiency'

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On 12 October 2017 the UK's Department for Business, Energy & Industrial Strategy launched a call for evidence on 'Building a market for energy efficiency'. This submission, by the ESRC Centre for Climate Change Economics and Policy and the Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Political Science, provides responses to selected questions in the call for evidence.

## Section 2: State of the market

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

While trigger points may be important, they require careful consideration and more research, as government schemes incentivising household energy efficiency can lead to infra-marginal participation (or free-riding). If government funding were to end up being mostly taken up by those households who would have renovated regardless (who also tend to be wealthier and more engaged in energy efficiency behaviours), this would result in deadweight loss. See Nauleau (2014), Allcott et al. (2015) and Boomhower and Davis (2014) for additional insights.

### **4. Do you agree that it makes sense to prioritise those groups most likely to be open to investing in energy efficiency? And do you agree with our assessment of who those groups are most likely to be?**

The mentioned groups sound reasonable and the VERD project is a very useful study, but more research would be helpful, particularly on how government funding might affect the extensive and intensive margins of energy efficiency investments, i.e. both the decision to invest in upgrade measures and the number of measures/total amount invested once this decision has been made. For an example of research investigating this issue, see Daussin-Benichou and Mauroux (2014). Issues of free-riding and deadweight losses require careful consideration; see answer to question 3 above.

## Section 3: Barriers to market growth

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

Yes. The description appears quite comprehensive.

### **6. Are there other barriers that you think we should be addressing?**

Another barrier could be related to the complexity and number of interacting agents within the Energy Company Obligation (ECO) framework. Due to the way this market works, incentives are not always properly aligned with households' needs. For example, a household may require certain measures at a particular point in time, but may not be offered these by an energy company as they may not be cost effective to provide. Direct subsidies, if properly targeted, may be more efficient.

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

Some important lessons can be learnt from the Green Deal. Our insights on this policy and references to relevant studies are outlined in our response to the Green Deal consultation (McCoy and Neuweg, 2017).

## **8. Are there other international examples we could learn from?**

Many examples of energy efficiency policies exist. For instance, insights on the French tax credit scheme can be found in Nauleau (2014) and Daussin-Benichou and Mauroux (2014); relevant research on German policies includes Dieckhöner (2012). It is also worth noting that KfW, a German government-owned development bank, offers loans for domestic energy efficiency upgrades at an interest rate of 0.75%. This is significantly lower than the 7% loans offered by the Green Deal.

A key weakness characterising most of the evaluation of these policies is the use of modelled estimates and the lack of metered energy consumption when calculating the resulting energy savings. This point was recently highlighted in a Wall Street Journal opinion piece by Sam Ori, executive director of the Energy Policy Institute at the University of Chicago (Ori, 2017). To make an adequate assessment of effectiveness, policies should be evaluated using ex-post data.

## **Section 4: Proposed approach**

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

The proposed principles seem reasonable. Other approaches, such as legislation, should be considered in parallel.

Minimum energy standards could be applied to the sale of homes. Similar to the requirement for landlords to ensure their properties are a minimum of Grade 'E' before letting, a legal minimum EPC level could be required before any sale is allowed to close. This minimum threshold could then increase over time. If this were clearly outlined in advance, it would provide consistent, long-term signals to the market of the need to improve the energy efficiency of dwellings.

### **11. Do you agree that the policy areas we have set out are the correct ones to focus on?**

Yes, the policy areas appear to be the correct ones.

## **Section 5: Demand side measures**

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

Tax breaks may also drive demand; see the aforementioned research on the French tax credit scheme (Nauleau, 2014; Daussin-Benichou and Mauroux, 2014).

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

For any trial to deliver results that are generalisable and have external validity and relevance, it needs to be conducted robustly. The evaluation of such trials should therefore rely on objectively measured and observed outcomes (for instance, using actual energy data rather than self-reported or modelled ones), control groups and the random assignment of interventions. The latter is important as the choice to avail of a subsidy/upgrade is likely correlated with the outcome to be assessed, leading to biased results.

By embedding robust randomised-controlled trials into a pilot phase of policy implementation it should be possible to better calibrate policies towards their objectives.

## Price signals

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

We would advise caution in this respect. Demand elasticities with respect to energy prices are relatively low and policy costs are already thought to be regressive. See Chawla and Pollitt (2013) for additional insights on the distributional impacts of energy bills.

### 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?

We believe smaller scale trials would be an extremely welcome addition, provided they are conducted in a robust fashion that delivers generalisable results. In this regard, see the answer to question 18 above on the features of robust policy evaluation.

## Improving awareness of energy efficiency

### 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?

There is international evidence to suggest that energy performance certificate (EPC) rating is positively correlated with property prices. See, for example, Brounen and Kok (2014), Hyland et al. (2013), Fuerst et al. (2015). Other work, however, has found that this effect reduces once dwelling characteristics are controlled for. This is discussed in Wahlström (2016).

## Section 6: Supply side measures

### 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?

As stated in our answers to questions 8 and 18 above, the effectiveness of policies can be undermined when they are designed and assessed using modelled rather than actual data. This applies equally to assessments of 'green mortgages'. While green mortgages might have lower lending risk, robust empirical analysis of the relationship between energy efficiency and mortgage default is limited. One study from the United States in particular is often cited as evidence that green homes pose a lower risk of credit default, namely Kaza et al. (2014). However, it is difficult to draw conclusions for the UK from this study. In particular, it is not clear whether or not the study presents a sufficiently convincing case for causality instead of correlation – that is, if higher energy efficiency is indeed the explanation for better repayment behaviour. There is evidence that indicates energy efficiency measures tend to be adopted by those with higher incomes as well as those with greater concern for the environment, as discussed in Alcott et al. (2015). Higher income is also associated with better repayment behaviour. While Kaza et al. (2014) tried in part to control for income, limitations on data availability and geography call into question whether the results are generalisable for the UK.

It is important to understand how the correlation between the EPC of a dwelling and default risk varies by borrowers' characteristics, and if any causal relationship exists. This in turn can affect lenders' appetite for green mortgages. More research is needed on this topic.

## Improving data to open the market for energy efficiency

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

The National Energy Efficiency Data-Framework (NEED) database available to researchers is a very useful resource. However, it currently has a number of weaknesses:

- It does not currently contain information post 2012
- It only contains a subset of energy efficiency measures installed
- It does not break down measures by scheme
- It has extremely limited socioeconomic information on households
- It has extremely limited geographic information on households

For academic research to be able to fully understand the energy efficiency landscape it would be necessary to address all of the above deficiencies. One option would be to merge NEED with the Homes Energy Efficiency Database (HEED) – as has been done previously – and allow researchers' access. We feel that the data released could be significantly improved without compromising any confidentiality requirements.

The English Housing Survey is another useful resource. However, it does not consistently include questions related to energy efficiency and policy support. This makes longitudinal analysis of energy efficiency trends difficult. The absence of metered energy data is also a problem. A more consistent approach to this survey along with inclusion of metered consumption data would be extremely useful for researchers.

### **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?**

Better data on the returns to energy efficiency would provide households and investors with greater certainty regarding the returns to their investments. It would also provide greater information on the variation in returns, i.e. by socioeconomic group, dwelling type, or efficiency measure. This is essential to further stimulate investment and for better understanding of where policy intervention is required.

## **References**

- Allcott H, Knittel C, Taubinsky D (2015) Tagging and Targeting of Energy Efficiency Subsidies. *American Economic Review* 105, 187–191. Available at: <http://pubs.aeaweb.org/doi/pdf/10.1257/aer.p20151008>
- Boomhower J, Davis LW (2014) A credible approach for measuring inframarginal participation in energy efficiency programs. *Journal of Public Economics* 113: 67–79
- Brounen D, Kok N (2014) On the economics of energy labels in the housing market. *Journal of Environmental Economics and Management* 62.2: 166-179
- Chawla M, Pollitt MG (2013) Energy-efficiency and environmental policies and income supplements in the UK: evolution and distributional impacts on domestic energy bills. *Economics of Energy & Environmental Policy* 2, 1. Available at: <https://www.repository.cam.ac.uk/handle/1810/244743>
- Daussin-Benichou J-M, Mauroux A (2014) *Turning the heat up. How sensitive are households to fiscal incentives on energy efficiency investments?* No. g2014-06. Bordeaux (FR): Institut National de la Statistique et des Etudes Economiques, DESE. Available at: <https://www.insee.fr/en/statistiques/fichier/1381112/G2014-06bis.pdf>
- Dieckhöner C (2012) *Does subsidizing investments in energy efficiency reduce energy consumption? Evidence from Germany.* Berlin: DIW. Available here: [https://www.diw.de/documents/publikationen/73/diw\\_01.c.414088.de/diw\\_sp0527.pdf](https://www.diw.de/documents/publikationen/73/diw_01.c.414088.de/diw_sp0527.pdf)
- Fuerst F, McAllister P, Nanda A, Wyatt P (2015) Does energy efficiency matter to home-buyers? An investigation of EPC ratings and transaction prices in England. *Energy Economics* 48: 145-156
- Hyland M, Lyons RC, Lyons S (2013) The value of domestic building energy efficiency – evidence from Ireland. *Energy Economics* 40: 943-952

- Kaza N, Quercia R, Tian CY (2014) *Home Energy Efficiency and Mortgage Risks* (SSRN Scholarly Paper No. ID 2416949). Rochester, NY: Social Science Research Network. Available at: <https://papers.ssrn.com/abstract=2416949>
- McCoy D, Neuweg I (2017) *Consultation response: 'Call for evidence on the reform of the Green Deal Framework'*. London: Grantham Research Institute on Climate Change and the Environment and Centre for Climate Change Economics and Policy. Available at: <http://www.lse.ac.uk/GranthamInstitute/publication/consultation-response-call-for-evidence-on-the-reform-of-the-green-deal-framework/>
- Nauleau M-L (2014) Free-riding on tax credits for home insulation in France: An econometric assessment using panel data. *Energy Economics* 46: 78-92
- Ori S (2017) Why Government Energy-Efficiency Programs Sound Great–But Often Don't Work, *Wall Street Journal*, 13 November. Available at: <https://blogs.wsj.com/experts/2017/11/13/why-government-energy-efficiency-programs-sound-great-but-often-dont-work/>
- Wahlström, M H (2016) Doing good but not that well? A dilemma for energy conserving homeowners. *Energy Economics* 60: 197-205