

Consultation response: 'Call for evidence on the reform of the Green Deal Framework'

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Introduction: What is the Green Deal and what is this call for evidence about?

The Green Deal was the UK's flagship programme to improve energy efficiency of the building stock. It was introduced in 2013. The Department for Business, Energy & Industrial Strategy launched its call for evidence on the reform of the Green Deal Framework in October 2017, to improve its knowledge of stakeholders' views on the current framework, and to elicit views as to whether there is scope for improving the framework.

Uptake of the Green Deal was below expectations and in July 2015 the Government announced there would be no further public investment in the scheme. However, the framework to support the programme remained in place to service existing Green Deal plans and for any private finance providers wishing to enter the market.

This is a 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. The response to the consultation was first submitted via the CitizenSpace online platform.

Our recommendations in response to selected consultation questions are set out below.

Recommendations

Q 3.3: Is it necessary for all types of assessment to be carried out by professionals (i.e. authorised Green Deal Advisors, or a future equivalent)? Would some form of self-assessment (e.g. by consumers) be possible and sufficient? If so, what might need to be in place to enable this?

Response: Some form of preliminary self-assessment, or other assessment using existing administrative data, could be a helpful first step to streamline the process and remove some of the administrative burden for households. As discussed in the recent energy efficient market consultation,¹ a virtual Energy Performance Certificate (EPC) can be created based on smart-metering or other billing data and information on occupants and dwelling characteristics. This would be a way to simplify and improve current consumer assessments.

The UK government holds relevant information on the dwelling stock through the Home Energy Efficiency Database (HEED), the National Energy Efficiency Framework (NEED) and the English Housing Survey (EHS), along with increasing amounts of data from smart-meters and various other sources. This data could be linked with population-level datasets and predictive modelling applied to derive estimates for each dwelling at address level.²

¹ Available at <https://www.gov.uk/government/consultations/building-a-market-for-energy-efficiency-call-for-evidence>, accessed 14 November 2017.

² See for example: Curtis, J., Devitt, N. and Whelan, A., 2015. Using census and administrative records to identify the location and occupancy type of energy inefficient residential properties. *Sustainable Cities and Society*, 18, pp.56-65.

In the Netherlands, for example, all dwellings are given a preliminary EPC. This is based on modelling of existing administrative datasets. Residents then update the online database with any relevant information before receiving their definitive EPC.³

Q4.6: How might the process for incorporating new measures be made more efficient, and help enable the deployment of innovations and new technologies?

Response: The process for incorporating new measures could be made more efficient by launching an annual review of evidence for the energy-saving potentials of new technologies. This should be aimed at research institutes that are already working in this area and could be assessed with the help of the End Use Energy Demand Centres. The International Energy Agency's annual *Tracking Clean Energy Progress (TCEP)* report and its *Energy Technology Perspectives* could feed into this because they assess the overall status and recent progress in developing and deploying key clean-energy technologies.

The Government could also set up a Green Deal testing centre. One could envisage that new technologies could be tested and monitored in field trials as part of the Green Deal Framework, possibly in collaboration with universities or research partnerships such as the End Use Energy Demand Centres. These could take the shape of the heat pump field trial conducted by the Energy Saving Trust in the UK between 2008 and 2013 or the data collected between 2013 and 2015 as part of the monitoring campaign of heat pumps installed as part of the Renewable Heat Premium Payment Scheme funded by the then Department of Energy and Climate Change.

Q 4.7: Is it better to have a list of qualifying energy efficiency improvements in secondary legislation or should the legislation just set out high-level principles (with the Standard Assessment Procedure – SAP – helping to determine whether an improvement falls within the principles)?

Response: High-level principles seem more appropriate than a legislated list of eligible measures. This would allow for technical change and innovation. Given that new software and innovative energy controls are going to rapidly change the home energy landscape,⁴ the list of eligible Green Deal measures needs to be sufficiently flexible to take this into account. Time-consuming, potentially repeatedly occurring procedures might hinder such newcomers to be qualified as eligible Green Deal measures. A principles-based approach would need to be sufficiently transparent as well as predictable in order to ensure confidence of consumers and lenders.

Q 4.9: What do you see as the merits of including the above measures (battery storage, linked to microgeneration; connections to existing heat networks; replacement of condemned boilers) in the Green Deal? Do you have any comments on whether they meet the criteria for measures?

Response: There are merits of including the above measures in the Green Deal. We deal with two of the proposed measures below.

³ See for example: <https://www.government.nl/topics/energy-performance-certificates-for-homes-and-buildings/epcs-for-homeowners> and <http://www.energysavingtrust.org.uk/blog/energy-performance-certificates-dutch-model>

⁴ See for example Zhou, K., Fu, C. and Yang, S., 2016. Big data driven smart energy management: From big data to big insights. *Renewable and Sustainable Energy Reviews*, 56, pp.215-225.

Battery storage

Research indicates that battery storage can be operated profitably in residential microgeneration systems, under certain conditions.⁵ However, this is highly dependent on the economic conditions and the regulatory framework, and varies depending on the household consumption patterns and dwelling characteristics under consideration.⁶

Therefore, merits do exist to their inclusion, but consideration should be paid to the relevant factors that will influence their cost-effectiveness.

Connections to existing heat networks

Connections to existing heat networks can reduce gas consumption and save costs. A well designed and operated heat network can be both cheaper and more efficient than traditional buildings-level heating solutions. In order to be economic, district heating schemes require a certain density of heat demand, which means that they are suited to urban areas, new build developments and some rural areas.⁷ In most of these cases, this has the potential to provide cheaper heating with higher levels of comfort than the alternatives.⁶ In addition, heating costs for flats can be more than 30% lower on a gas-supplied heat network than using individual gas boilers.⁸ It is also a safer approach than individual gas boilers for high-rise developments.⁶ In addition, an expansion of heat networks and therefore connected households is likely to take place given that heat networks form an important part of the Government's plan to reduce carbon and cut heating bills for customers. Including connections to existing heat networks as part of the measures eligible for the Green Deal therefore fulfils the criterion of improving efficiency and thus reducing consumption.

Q 5.14 Are there changes that could be made to the Framework to make it more accessible or attractive to landlords and tenants in both the private rented and social housing sectors?

Response: Significant heterogeneity exists in the returns to energy efficiency. Households in lower income groups observe lower energy savings after installing measures.^{9,10} This will lower the rate of return for these households and this variation should be factored into the rate of interest charged.

Q 8.18 Are there factors that we have not identified that you believe will, or should, influence the future of the Framework? How might they influence it?

Response: Concerns were raised prior to the Green Deal policy that it would not have sufficient appeal for householders. These relate to a range of factors, including uncertainty regarding energy savings, limited financial appeal, and limited awareness of the scheme.¹¹ Others argued that given

⁵ Hoppmann, J., Volland, J., Schmidt, T.S. and Hoffmann, V.H., 2014. The economic viability of battery storage for residential solar photovoltaic systems – A review and a simulation model. *Renewable and Sustainable Energy Reviews*, 39, pp.1101-1118.

⁶ Linsen, J., Stenzel, P. and Fleer, J., 2017. Techno-economic analysis of photovoltaic battery systems and the influence of different consumer load profiles. *Applied Energy*, 185, pp.2019-2025

⁷ Committee on Climate Change, 2015 cited in Committee on Climate Change, 2016. *Next steps for UK heat policy*. Report. Committee on Climate Change October 2016. Available at: <https://www.theccc.org.uk/wp-content/uploads/2016/10/Next-steps-for-UK-heat-policy-Committee-on-Climate-Change-October-2016.pdf>

⁸ AECOM, 2015. *Assessment of the Costs, Performance, and Characteristics of UK Heat Networks*. Final Report. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/424254/heat_networks.pdf

⁹ Hamilton, I.G., Summerfield, A.J., Shipworth, D., Steadman, J.P., Oreszczyk, T. and Lowe, R.J., 2016. Energy efficiency uptake and energy savings in English houses: A cohort study. *Energy and Buildings*, 118, pp.259-276.

¹⁰ Aydin, E., Kok, N. and Brounen, D., 2017. Energy efficiency and household behavior: The rebound effect in the residential sector. *The RAND Journal of Economics*, 48(3), pp.749-782.

¹¹ Dowson, M., Poole, A., Harrison, D. and Susman, G., 2012. Domestic UK retrofit challenge: Barriers, incentives and current performance leading into the Green Deal. *Energy Policy*, 50, pp.294-305.

its limited appeal, subsidies were likely to be required in addition to Green Deal financing.¹² Evidence also exists to suggest that the Green Deal should have been targeted more broadly at energy efficiency upgrades being conducted as part of wider home renovations, rather than those pertaining to energy efficiency exclusively.¹³

Following the Green Deal termination, other work again highlighted the fact that the interest rates on Green Deal loans were not significantly lower than market rates, and its narrow appeal to households.^{14,15}

Other work indicates that home energy upgrades can yield significantly different returns depending on household and dwelling characteristics. Importantly, as discussed above, households in lower income areas observe lower energy savings after installing measures.

Therefore we suggest that interest rates should be lower than market rates and potentially be linked to the expected energy savings based on socioeconomic and dwelling characteristics. Focus should also be directed towards increasing awareness and outlining factors other than the financial appeal such as danger of respiratory diseases caused by damp and mould in dwellings and benefits to health of more energy-efficient homes, for example.

¹² Booth, A.T. and Choudhary, R., 2013. Decision making under uncertainty in the retrofit analysis of the UK housing stock: Implications for the Green Deal. *Energy and Buildings*, 64, pp.292-308.

¹³ Pettifor, H., Wilson, C. and Chryssochoidis, G., 2015. The appeal of the green deal: Empirical evidence for the influence of energy efficiency policy on renovating homeowners. *Energy Policy*, 79, pp.161-176.

¹⁴ Rosenow, J. and Eyre, N., 2016. A post mortem of the Green Deal: Austerity, energy efficiency, and failure in British energy policy. *Energy Research & Social Science*, 21, pp.141-144.

¹⁵ Marchand, R.D., Koh, S.L. and Morris, J.C., 2015. Delivering energy efficiency and carbon reduction schemes in England: Lessons from Green Deal Pioneer Places. *Energy Policy*, 84, pp.96-106.