UKERC
UK Energy Research Centre

UKERC Green Deal Response

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UKERC Response

Introduction and General Approach

This document sets out the response of the UK Energy Research Centre (UKERC) to DECC's consultation document on the Green Deal and the Energy Company Obligation. It is based on the research and experience of the contributing UKERC authors. In line with UKERC's goals, the objective is to bring evidence to bear on the proposals, rather than to support or oppose any specific policy.

Our working assumption is that the proposals form a key part of the Government's plans to deliver significant carbon savings from the UK building stock, to improve affordable warmth, to promote sustainable jobs in the UK and to do so at a reasonable cost to Government and consumers. Our comments attempt to analyse the effectiveness with which the proposals might do this.

This introduction is followed by a summary of the key points, drawing together our analysis of the key strengths and weaknesses of the proposals. This followed by more detailed sections on:

- The Green Deal Approach
- Green Deal and ECO interaction
- Links to other policies
- Building Energy Assessment
- Measures, products and systems
- Green Deal Providers
- The Golden Rule
- Installation and Delivery
- Local Government and Communities
- Targets
- Administration,
- Other issues

Summary of Key Points

A number of the broad proposals set out in the consultation can make an important contribution to the Government's goals:

1. The proposals make the first major attempt in UK public policy to stimulate the use of solid wall insulation. Our analysis shows that such measures are very likely to be needed across most 'hard to treat' properties by 2050 to meet Government goals at reasonable cost.

2. The Green Deal proposals seek to introduce greater use of private (non-energy sector) finance into low carbon building refurbishment. This is consistent with the goal of limiting costs to Government and energy consumers of the very substantial investment required to bring the UK building stock to low carbon standards.

3. The changes to CERT proposed for the new ECO include explicit goals for affordable warmth. CERT and Warm Front (and related devolved country programmes) have relied on insulation and heating system investment in priority group homes to deliver affordable warmth. This approach has allowed limited effective targeting, whereas the proposed new approach is more closely related to the policy goal.

4. The proposals seek to make energy assessment of buildings using RDSAP an integral part of the home refurbishment process. Currently home energy rating occurs largely at the point of sale and renting, and energy efficiency improvement programmes have not routinely undertaken such ratings. Given the importance of understanding the impact of programmes on performance, such linkage is helpful.

5. The proposals set out plans for accreditation for skills for low carbon refurbishment. Given the importance of high quality work to deliver low carbon buildings and the current lack of trust in key trades by many consumers, this is potentially an important step forward.

6. The proposals call for stronger partnership including that between energy suppliers, building trades, the finance sector and local Government. Given the scale and complexity of the measures required, we agree that such partnerships are likely to be needed.

We welcome the very detailed consultation on many aspects of the proposals. However, we believe that the rationale for some key issues covered less well. We believe that it would be useful to consult on the key design elements of the proposals as well as the detail. In particular, we have some concerns about the following aspects of the consultation:

1. There appears to be unfounded optimism with respect to the scale of Green Deal mechanism, in particular there is no evidence to support the claim in the preface that "By 2020, we will have seen a revolution in British property". Indeed, the details of the proposals and the impact assessment of them imply a significant reduction in the rate of energy efficiency improvement from that achieved in recent years. In particular, there is projected to be a major reduction in the rate of the two key low cost insulation measures – cavity wall insulation and loft insulation – with negative implications for both carbon reduction and the insulation industry, but there is no explicit consultation on this impact.

2. It is not clear how the proposals relate to the legal obligations on Government with respect to elimination of fuel poverty by 2016 (2018 in Wales). The proposals alone are not designed to achieve this elimination, but there is no indication of what other measures will be adopted and therefore how these proposals interact with them.

3. Although the modelling work undertaken in the Impact Analysis is a very useful input to the evidence base in the field, some of the proposals seem only weakly based on existing evidence. For example:

    - There is limited analysis of how CERT or CESP has worked or justification of the very substantial changes from these approaches, particularly in areas where the existing policy is widely judged to have worked well.

    - There is almost no reference to experience in other countries, which is surprising given the extent to which a number of European countries have developed successful policy approaches using CERT and its predecessors as evidence.

    - There is very limited reference to the PAYS pilots or publication of their full results, despite these having been established specifically to test some of the proposed Green Deal mechanisms.

4. The consultation does not consider alternative financial mechanisms. In particular, the Green Investment Bank, conventional mortgage finance and DNO investment recovered through distribution price controls all might lead to significantly lower costs of capital, and therefore lower short term rises in energy bills.

5. The proposed scope of the Green Deal is the whole of the building stock, but the ECO is limited to households, like CERT. Overseas evidence is that broadening energy company obligations to sectors other than households can be successful, but this option is not explicitly considered.

6. The consultation proposals imply the ending of subsidies for all household energy efficiency measures other than solid wall insulation for the first time since 1994. There is no assessment of the impact of this or consultation upon it.

7. The proposals are not considered in the context of wider reforms that are being proposed to energy markets. In particular, the proposal to remove subsidies from the generality of energy efficiency measures is not compared with the proposals in Electricity Market Reform to introduce new subsides for all low carbon electricity supply technologies. This will create a significant market distortion between supply and demand, raising consumer bills and the cost of delivering carbon targets.

The Green Deal Approach

In our view there is a risk that the attractiveness of the Green Deal approach is being over-estimated. The approach of attaching payments to the electricity meter is new and therefore the outcomes are uncertain. However, there is evidence from which some conclusions can be drawn.

There is an extensive literature on the barriers to energy efficiency. This identifies upfront cost and decisions that place much greater emphasis on that cost than on energy savings as a barrier. However, it is not the only barrier. Other issues are, in our view, more important, notably the hassle and disruption of building work, low priority given to energy issues by many consumers, the lack of reliable advice at the point of installation and the current, poor integration of the supply chain. To this, we can add uncertainty over future energy prices, engendered in part by mixed contradictory messages from Government and others about the desirability of sustained higher energy prices to support the transformation of the energy system over the coming decades. It is therefore unlikely that the availability of Green Deal finance alone will make a major difference to the attractiveness of investments. This analysis is supported by the fact that energy suppliers have found it

necessary to offer quite significant discounts (typically 50%) under CERT to householders to incentivise purchases.

In CERT it has always been in the interest of energy suppliers to use loans rather than grants to minimise their contribution, but they have not found it an attractive offer to customers. Similarly, loans at lower rates than those proposed under Green Deal have always been available to most owner occupiers in the form of mortgages, but no major market of this type has developed. It therefore seems unlikely that loans, especially at a commercial rate, will prove more attractive to householders than significant grants, even if the former are explicitly linked to payment out of reduced bills. In this context it should be noted that most Green Deal customers will pay loan charges from a different bill (electricity) from the one in which costs will be reduced (gas), so the intuitive linkage is not so clear as the consultation implies (see comments under the Golden Rule below).

For the low cost measures on which delivery of short term targets depends, market research undertaken for the Government showed that commercial loans have very limited attractiveness for most consumers[1]. We agree that loans can be effective for some customers in some contexts. The best example of a large and successful loan scheme is the KfW scheme in Germany, which has broadly similar carbon saving outcomes to CERT[2]. But this does not operate at market interest rates. It is underpinned by 1.5 billion Euro of government money every year – similar in scale to current CERT spending.

We recognise that the Green Deal proposals in their entirety are more significant than a financing package alone. We believe that, provided their quality is adequate, independent energy ratings and supplier

[1] Cragg Ross Dawson (2005) Energy Services: qualitative research to inform the design of products designed to support home energy efficiency. Energy Services Working Group report
[2] Rosenow, J., 2011. Different paths of change: Home energy efficiency policy in Britain and Germany, Proceedings of the European Council for an Energy Efficient Economy

accreditation are significant. However, these elements of the Green Deal 'customer journey' are already available but have limited uptake.

A critical question for Green Deal success is therefore the extent to which existing and new market entrants can raise salience and commitment to energy efficiency improvements. The consultation recognises this arguing (p12) that "Many people are simply not aware of the options. Advertising campaigns have struggled to raise awareness. However the Green Deal changes the landscape. It enables consumers to choose suppliers which can be held to the standards of the authorisation schemes, and to fund work using a new source of finance". First, enabling consumers to choose accredited suppliers and finance packages does not fundamentally address the difficulties of 'raising awareness' as these choices necessarily follow on from rather than precede awareness. Second, studies show that most consumers are actually aware that insulation can save them money on heating bills[3]. But they are equally aware that the time, effort, disruption, uncertainty, etc. of efficiency improvements are good reasons not to proceed. The challenge is less one of awareness and more one of commitment, intention, or disposition. The Green Deal will affect the renovation decision process of those already interested in efficiency improvements. But the 'conversion' of non-interested to interested remains a key problem. If and how Green Deal changes the marketing of efficiency to homeowners is therefore key.

So our analysis is that non-traditional market entrants will be crucial. Green Deal's success is very likely to depend on mobilising new suppliers and market entrants who can collectively access capital markets and thence increase the scale and effectiveness of marketing, delivery channels, and services for home efficiency. In particular significant new potential is only likely if non-energy home improvements (kitchens, bathrooms, extensions etc) and perhaps boiler servicing can be used as trigger points to engage the home improvers who form a significant group of the target market. This will require effective partnerships within

[3] Public attitudes and behaviours towards the environment. A research report completed for the Department for Environment, Food and Rural Affairs, 2009.

the supply chain and allocation and management of risk between these participants will be difficult; when these counterparties include non-energy contractors, it becomes more difficult. The approach proposed is to leave this to the market, with the Green Deal provider as the backstop risk-taker. In our view this is a high risk strategy. As we argue below, the linkage to ECO potentially puts energy supply companies in a pivotal position. Yet the trust placed in them by customers is low and falling.

Green Deal and ECO interaction

The model proposed for the interaction of Green Deal and ECO is that Green Deal will fund cheaper measures financed out of new sources of capital with costs recovered from individual consumers. ECO carbon obligations, essentially funded by all electricity consumers, will be limited to the key expensive measure – solid wall insulation (SWI) – allowing this to be supported by Green Deal without breaching the Golden Rule.

It is clear from the consultation document that considerable effort has been put into thinking through how the two might work together. However, there is no justification of the basic design. Research in UKERC and elsewhere indicates that every major energy supplier obligation has been designed to promote minimum cost delivery of energy savings, i.e. to utilise cheap measures, both in the North America[4] and Europe[5]. And the best known example of a successful loan programme in energy refurbishment, the KfW scheme in Germany[6], is designed to incentivise high cost, high performance refurbishment. Neither element of the

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[4] York, D., 2008: *What's Working Well: Lessons from a National Review of Exemplary Energy Efficiency Programs.* in *Proceedings of the American Council for an Energy Efficient Economy*. Asilomar, CA, USA: ACEEE.

[5] Eyre, N., Pavan, M., Bodineau, L., 2009. Energy Company Obligations to Save Energy in Italy, the UK and France: What have we learnt? Proceedings of the European Council for an Energy Efficient Economy.

[6] Rosenow, J., 2011. Different paths of change: Home energy efficiency policy in Britain and Germany, Proceedings of the European Council for an Energy Efficient Economy. See also Schröder, M., Ekins, P., Power, A., Zulauf, M. & Lowe, R.J., 2011. *The KFW experience in the reduction of energy use in and CO_2 emissions from buildings: operation, impacts and lessons for the UK*, UCL Energy Institute, University College London, and LSE Housing and Communities, London School of Economics.

proposed Green Deal / ECO package has been tried, and therefore the proposed approach is risky

This design choice is the reason for the very negative effect of the proposed package upon cavity wall insulation and loft insulation, and therefore carbon targets, which we analyse in more detail below. Although not explicit in the consultation document, the effect is clear from the impact assessment. We share the concerns of the Committee on Climate Change[7], that a rapid reduction in activity in these two markets is not consistent with the most effective approach to delivering the Government's ambitious targets.

It is not clear from the consultation if it is envisaged that, over the long term, ECO will support all future SWI installations. If that is assumed, even with a contribution from Green Deal finance, it will be a significant call on electricity bill payers, most of whom will not benefit from SWI. Whilst that is a possible political choice, it would clearly be a controversial one and therefore susceptible to reversal, with a risk of leaving no effective policy for SWI. A safer policy strategy would be to retain a policy like CERT proven to deliver low cost measures and to seek to introduce other sources of capital for higher cost measures. A Green Deal type financing instrument could achieve this, but the Golden Rule limits this in the current proposals.

The driver for strategic design appears to be to ensure that Green Deal measures meet the Golden Rule. The effect is to place the costs of expensive measures on the generality of consumers via energy bills. Moreover it leads to an inconsistent approach to capitalising energy efficiency investment. The cost of cheap measures to individuals will be spread over the lifetime of the Green Deal finance agreement. But the consultation assumes that the socialised costs in ECO will remain paid out of supplier revenue, i.e. all costs fall in Year 1. So, ironically,

[7] Committee on Climate Change. Proposals for the Green Deal / Energy Company Obligation http://downloads.theccc.org.uk.s3.amazonaws.com/Green%20Deal/green%20deal%20letter%20-%20201211.pdf

consumers will recover the costs of cheap insulation in their own properties out of reduced bills, while paying the upfront costs of other people's expensive insulation.

The consultation does not consider alternative financial mechanisms, although it seems likely they will have been considered within Government. In particular, the Green Investment Bank is not mentioned, despite its importance in other Government policy statements for greening the economy. Neither is conventional housing finance through mortgage companies considered, although Government now has increased influence in this sector through ownership of major institutions and active proposals for reform; neither is the option of financing Green Deal via through energy sector infrastructure, i.e. via pipes and wires charges. If costs are to be recovered through energy bills, it should be possible to secure the loans again the existing energy infrastructure at the interest rates that Ofgem uses in the distribution price controls, i.e. much lower rates than expected via Green Deal and with much lower short term rises in energy bills. There may be good reasons why these options have been rejected, but this is not apparent in the consultation document.

Even with Green Deal in its proposed form, it would be possible to capitalise ECO costs and a number of approaches have been set out over the years, for achieving this[8,9]. The most straightforward way would be to change ECO to a DNO obligation, which is already possible under the relevant legislation.

The proposal to replace CERT and CESP with Green Deal and ECO also implies an end to the explicitly area based scheme approach of CESP. The recent evaluation[10] of CESP is broadly positive. And there is long

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[8] Climate Change Capital, 2007. The Supplier Obligation post-2011: potential commercial models to deliver demand reductions.

[9] ACE, 2011. Association for the Conservation of Energy. A Future Obligation on Energy Companies: Second paper in a series identifying options for the future of fuel poverty and energy efficiency policy.

[10] http://www.decc.gov.uk/en/content/cms/funding/funding_ops/cesp/cesp.aspx

standing evidence base indicating that area-based schemes have success in raising the salience of energy efficiency and increasing participation rates[11]. We recognise that the consultation is supportive of continued area-based approaches, but there is a risk that it will not happen at scale, at least in the absence of resourcing of community based partners to facilitate this process (see comments on Local Government and Communities below).

Links to other policies

There is very limited reference in the consultation document to the policy support framework for renewable energy technologies within the building stock, i.e. Feed-in Tariffs (FITs) and the Renewable Heat Incentive (RHI). In essence they are only mentioned in context of advice, rather than financing. In principle, the Green Deal financing mechanism would seem to be a good way to incentivise uptake of these types of technologies. All of the barriers that lead to high effective discount rates that are identified in the impact analysis for energy efficiency investment also apply to renewable energy technologies in buildings. We previously identified this as a weakness in the use of revenue payments in the incentive regime for FIT and RHI[12]. It could be rectified by capitalising FIT and RHI payments through a mechanism like Green Deal, thereby producing a bigger incentive to building owners (with high effective discount rates) with the same level of resource. But this does not seem to be allowed for in the specific Green Deal proposals. Although most of the relevant measures are included in Annex A of the consultation there is no mention of using FIT or RHI payments to pay for Green Deal finance.

One result of this disjuncture is increased financial complexity for whole house solutions. Renewable heat and electricity solutions are not sufficiently cost effective to meet Green Deal Golden Rule requirements

[11] Hirst, E., 1989. Reaching for 100% Participation in a Utility Conservation Programme. Energy Policy 17, 159-164.
[12] UK Energy Research Centre (2010) UKERC response to the DECC consultation on the proposed RHI financial support scheme. UKERC.

without FIT and RHI. So, whilst considerable effort has been put into designing links between ECO and Green Deal finance, a complete low carbon refurbishment might still also require separate financing of these additional measures.

The proposed focus of the ECO on insulation also implies that supplier funded subsidies will be removed for all lighting and appliance energy efficiency measures. And the focus of Green Deal on building thermal performance means that these measures are not covered there either. We recognise that there has been significant, and justifiable, criticism of the use of compact fluorescent lamps in recent CERT programmes. However, this should not obscure the bigger picture that incentives from CERT and predecessors have played a part in market transformation in both lighting and appliance markets. Our analysis is the product standards and labelling have been the most important drivers of this transformation, but incentives have played a role. This is not commented upon or justified in the consultation document. Given the rising share of demand for these end uses and their dominance of electricity end uses, this is a very significant policy change. At a technical level, the domestic sector now incorporates large numbers of tungsten halogen fittings, which have a luminous efficacy barely distinguishable from conventional incandescent. Replacing these with LEDs is now possible and to first order, would reduce energy use by a factor of ~5. The objective should be not to abandon support for efficient lighting, but to refocus it.

There is no reference in the consultation document to the consistency of the proposals with ongoing market reform proposals (either EMR or RMR). Given the importance of the success or otherwise of Green Deal and ECO for future demand trends and the need to promote cost effectiveness in policy responses, this is a serious omission. In particular, the proposal inherent in the consultation to end all subsidies for demand side measures other than solid wall insulation seems to be seriously out of line with the EMR proposal to introduce subsides for all low carbon electricity supply technologies (regardless of technical maturity). The implication is that the lack of any subsidy, even for very cost effective

measures on the demand side, coupled with the expectation of increasing electrification of heating, will raise electricity demand and therefore require much higher supply side subsidies and costs than would be needed with stronger support for energy efficiency. The UKERC response to the EMR consultation argues for equivalent treatment of demand and supply in this context. This could be done within the wholesale market. But on balance we believe would be easier to achieve through retail market support for energy efficiency.

Building Energy Assessment

Our analysis is that there will be a need for high quality building assessment as an integral part of delivering the complex set of measures that are likely to good quality, low carbon refurbishment of most buildings. The move to use of accredited assessors within improvement programmes, is therefore a major advance. The role of assessors is significantly different from their existing role of producing Energy Performance Certificates (EPC). The new role will include providing reliable customer advice, not just a rating, and therefore has significant implications for training and quality control.

The consultation suggests that the Government's own research has also shown strong consumer preference for good quality assessment, but also for this service to be independent and free. In that sense, the proposals clearly do not respond entirely to what consumers want as it is proposed that assessment will not be subsidised, and therefore, even if provided free by a Green Deal provider, will have to be paid for within some other element of the Green Deal package, thus increasing costs to Green Deal customers. We recognise the value of the Green Deal principle that customers, where possible, should pay for their own energy savings improvements out of reduced bills. But paying for other people's energy assessments is potentially damaging. We believe that a free assessment, paid for from a consumer levy or general taxation would be fairer.

Whilst the requirement for accreditation clearly provides some basis for independence, it is not clear how this will work in practice or be perceived by consumers. For example, a common case might be that all the measures proposed for a single building are either low cost or too high in cost to be acceptable to the consumer even with Green Deal finance. The result might be an attempt to recover the whole costs of energy assessment from a low cost measure. In practice, sophisticated energy assessment is not required to conclude that loft insulation or cavity wall insulation is cost effective. Negative consumer reaction to compulsory assessment for simpler Green Deal measures is a risk and therefore it might be prudent to allow the option of these measures without assessment if that is charged.

The proposed strong linkage between the Green Deal and ECO also gives energy suppliers a potentially powerful position in the assessor market. If this results in building energy assessment being done largely by, or on behalf of, energy companies, this would have negative impacts of consumer trust in the process, given their perceptions of energy companies.

UKERC research has shown that there are concerns about the suitability of RDSAP as a tool for building energy assessment in some cases[13], although we recognise that Government is aware of these and taking action to improve RDSAP.

The use of a building energy assessment tool that is essentially an asset rating is inevitable. However, it is clear that this may be seen as underplaying the role of occupancy and behaviour in actual energy use. It is not clear how this will affect consumer perceptions of the Golden Rule, and this could be monitored in the early stages of policy implementation.

[13] Banks, N., 2008. Implementation of Energy Performance Certificates in the Domestic Sector. UKERC Working Paper WP/DR/2008/001.

Measures, products and systems

The shift in policy towards supporting packages of measures to achieve high energy and carbon performance is consistent with the long term ambition that requires good energy performance throughout the building stock. In many cases this will be best delivered through a whole house approach, but we recognise that more piecemeal approaches to refurbishment are common and will continue, and therefore support the assessment that not everyone will do a whole house approach.

The strong focus of ECO on SWI does not discriminate between external and internal wall insulation. As page 130 of the consultation document makes clear, and if one ignores costs of disruption and/or decanting, internal wall insulation is likely to be the lower cost option, and therefore may be preferred by energy suppliers to minimise the costs of target delivery. Internal and external wall insulation have very similar implications for thermal performance in terms of heat loss, but very different for thermal mass, and therefore transient cooling performance. With rising summer temperatures expected on the timescales of the lifetime of measures funded under ECO, there is a potentially a risk of unintended consequences in overheating in summer in some buildings through the use of internal wall insulation. This will not be identified in the RDSAP assessment, and is not considered in the consultation document.

Green Deal Providers

We agree that the broad aim of the Green Deal to broaden the range of delivery routes available to customers will be beneficial. Indeed, for the reasons set out above, we believe that such a broadening is critical to the success of the Green Deal.

From the consumer's perspective it is essential to have not just a single point of contact in the Green Deal provider, but a single line of recourse and liability. The complexity of behind the scenes Green Deal

arrangements to allocate and manage risk between counterparties has to be invisible to consumers. The consultation suggests the Green Deal provider will be the single point of responsibility, but we think it would be wise to ensure that it is completely clear whether, and under what circumstances, they will be able to pass consumers on to installers, product suppliers and assessors.

Whilst the proposed links between Green Deal and ECO are sensible in terms of providing a joined-up policy package, they do give the Big 6 energy suppliers a continued distinctive role in household energy efficiency markets. Whilst this has been accepted as the norm in a policy framework dominated by CERT, it is potentially problematic for Green Deal if suppliers are able to use their market power in ECO to dominate the wider market. With only ECO providing any guarantee of market size, supplier dominance is a risk to the value proposition for new market entrants.

The Golden Rule

The Golden Rule raises some difficult issues. On the one hand, it is clear that many of the risky design issues are strongly linked to the Golden Rule, most notably the decision to fund low-cost and high-cost measures by mechanisms with opposite characteristics to those that have been successful elsewhere. Relaxing the Golden Rule would therefore open the way for less risky options in terms of delivery. On the other hand, it is clearly a valuable part of the potentially marketing of the Green Deal and provides some assurance against gross mis-selling,

On balance we think that the Golden Rule has more risks than benefits. We think it would be useful to consider substantially relaxing the 'rule' into a general guideline with clear arrangements for top-up (i.e. non-Golden Rule) finance. In either case there need to be strong rules about 'mis-selling'. There is risk that consumer perceptions will be inflated by Golden Rule expectations. These are already potentially problematic as it is proposed that the repayment charge is on electricity bills when savings

are likely concentrated on gas bills. Consumer perceptions of domestic energy costs are not necessarily very accurate, and are prone to known biases (availability, lapse of time, etc.). With price fluctuations, variable monthly bills, separate electricity and gas bills, pre- and post-installation energy use, and behavioural / occupancy variability, it is difficult to see how the Golden Rule can be realistically assessed by consumers ex post.

We support the principle that "preparatory and making good" works should be required. The detail will be complex, especially for those refurbishments are not primarily energy-related, so definitions will be difficult but important.

We think that a decision on the appropriateness of cashbacks and other incentives should await the outcome of Green Deal trials (with B&Q, Homebase, and Eon). To date there is limited empirical evidence directly relevant to this context on the effectiveness of such incentives. Work by Stern[14] suggests that incentives may both increase the price elasticity of demand, i.e., make consumers more responsive and interact with information provision to increase salience of measures offered, i.e., potentially help marketing. However, free-ridership on financial incentives might well be high.

Installation and Delivery

We agree that accreditation of installers is critical to ensure high quality installation and to provide customer confidence.

We also agree that the potential problem of energy supplier market dominance in assessment and installation is very real. Evidence from CERT is that the dominance of energy supplier led activity had a significant impact on market structure - concentrating in particular the cavity wall installation industry as suppliers preferred to deal with larger

[14] Stern, P.C., Aronson, E., Darley, J.M., Hill, D.H., Hirst, E., Kempton, W., Wilbanks, T.J., 1986. The Effectiveness of Incentives for Residential Energy Conservation. Evaluation Review 10, 147-176.

companies. This may have had some beneficial effects on costs in this case, but it implies that strong Green Deal / ECO linkage runs the risk of creating energy supplier market power in Green Deal delivery.

Brokerage seems unlikely to provide a complete solution. It would add to complexity and costs in a market where transaction costs are already likely to be high. Aggregation has, to date, not proved effective in creating new business models in household energy efficiency in the UK. Such a complex measure seems out of proportion to the task in hand – the efficient delivery of a relatively limited number of solid wall insulation measures. The only positive example of which we are aware of an active market in delivery of this type is Italy[15]. In this case the obligation is placed on the distribution network operators who have limited customer contact and therefore a lower tendency to deliver directly. This assists with a clear separation of delivery and obligation. We note that the primary legislation still allows obligations to be placed on distributors and suppliers, reflecting the uncertainty as to which would be the preferable option at the time of the separation of the two functions. Suppliers were preferred in CERT precisely because they have a closer contact with customers and therefore a greater ability and propensity to deliver themselves. If, under Green Deal, the intention is to create a liquid and competitive market in delivery, then the opposite logic applies.

With regard to the uptake of solid wall insulation measures, the impact assessment assumes SWI to be delivered at a rate of more than 150,000 installations per year for 10 years, i.e. more than 1,500,000 by 2022. According to the last CERT annual review during the first three years 39,672 SWIs were installed under CERT[16], i.e. on average 13,200 SWIs per year. Sources for the whole market indicate ranges for external wall insulation of 15,000 to 21,000 and for internal wall insulation of 10,000–16,000[17]. Our best guess for the SWI market size is 23,000 to 26,000

[15] Pavan, M., 2008. Tradable energy efficiency certificates: the Italian experience. Energy Efficiency 1, 257-266.

[16] http://www.ofgem.gov.uk/Sustainability/Environment/EnergyEff/Documents1/CERT%202011%20annual%20report_V1.pdf)

[17] Purple Market Research (2009) Solid Wall Insulation Supply Chain Review May 2009

SWIs. An increase to 150,000 per year is therefore very ambitious. The capacity in the supply chain may not allow for such a quick uptake, so focusing solely on solid wall properties under the carbon savings target of ECO could risk that the carbon target is not achieved. We therefore support the Government's view that greater evidence from the industry is needed on this, and caution that it would not be wise to finalise policy in advance of this.

We note that the proposed advice service is a remote web/telephone service. Inevitably this will be a reactive service unable to reach out to local communities in the same way as local energy advice centres have for the last decade, but for which funding has now been ended. The evidence tends to indicate that such a change will make the service both less effective and particularly less able to serve the needs of older and disadvantaged people.[18]

Local Government and Communities

The consultation recognises that local authorities and other local partners are likely to be 'crucial in ensuring effective and intensive delivery of the ECO and Green Deal in particular areas'. We agree that the evidence supports this conclusion: initial results from the UKERC project 'Understanding Local Energy Governance' support the idea that local involvement in community engagement will be crucial to ensuring acceptance and understanding of the Green Deal, and hence in building the market for Green Deal plans.

However, the reliance largely on 'natural incentives' to drive the formation of local partnerships risks underestimating the barriers to full engagement of local authorities and other local partners. Local authority officers interviewed for the UKERC work highlighted a range of these, including: insufficient financial resources, skills gaps, a relatively weak

[18] Eyre, N., Flanagan, B., Double, K., 2011. Engaging people in saving energy on a large scale: lessons from the programmes of the Energy Saving Trust in: Whitmarsh, L., O'Neill, S., Lorenzoni, I. (Eds.), Engaging the public with climate change: behaviour change and communication. Earthscan, London.

bargaining position with respect to private sector partners and, for some authorities, problems of poor image within the community.

The new general power of competence for local authorities is necessary to overcome these barriers, but it is not sufficient alone. The Power of Wellbeing, introduced in 2000, was intended to encourage councils to take action that would increase economic, social or environmental wellbeing in their local area. Government and other analysis of the impact of the power, in 2006, suggested that only a tiny minority of local authorities had thought to use it to support increased action on sustainable energy, with ignorance of its potential and an unwillingness to take risks being two of the main barriers[19]. Although the focus on climate change and sustainable energy at the local level has increased since then, interviewees for the UKERC work suggest that some local authorities and their politicians may still see their prime responsibility as the delivery of services. Even amongst those that do not, only a minority are likely to have sufficient in-house expertise to understand how the current energy system operates and how best a local authority can act to change this so that local wellbeing is improved. Another general power is unlikely to be more effective than the Power of Wellbeing in addressing these barriers.

Local authority focus on climate change and sustainable energy was greatly enhanced by the introduction in 2003 of National Indicators 185, 186 and 187, with 94% of English local authorities including at least one of these indicators in their Local Area Agreement. With these indicators no longer in use, there is no current mechanism to hold local authorities to account for the extent of their action on sustainable energy. Although not a complete replacement for these indicators, the proposed inclusion of relevant reporting requirements in the revised guidance on the Home Energy Conservation Act is to be welcomed as a step in the right direction. However, if it is to be effective, it is crucial that this guidance

[19] Wade J, Pearson A, Flanagan B and Knowland R, 2007, *Local Government energy action in the UK: from service delivery to community leadership*, proceedings of the European Council for an Energy Efficient Economy Summer Study

is written in such a way that the reporting requirements are clear and unambiguous, thus allowing comparison between authorities (unlike the original HECA reporting) and also that the requirements it contains are enforced (unlike those of the Energy Measures Report).

We note that the consultation document raises the possibility of Big Society organisers playing an active role in energy efficiency. It would certainly be useful to introduce additional community based resources. However, to the best of our knowledge there are no examples of Big Society organisers functioning in this way, so it remains unclear if they have skills or interests to do this.

Targets

An unsatisfactory aspect of the consultation is the difficulty in comparing the carbon targets in the consultation with those of the existing delivery mechanisms. This makes it difficult for many people to make an informed comment on the target. In Annex 1 we outline alternative approaches to the comparison. Both approaches conclude that ECO will deliver less than 15% of the current emission reductions achieved by CERT year on year. This is consistent with the observation that the proposed level of energy supplier investment is broadly similar and that the costs of delivering solid wall insulation are much higher costs for the measures that have dominated CERT.

Of course, it is expected that Green Deal finance will make a considerable contribution as well. Our analysis in Annex 1, based on the data in the consultation and its impact assessment is that Green Deal finance will contribute a little more than 50% of the projected level of ECO. In other words the total Green Deal plus ECO package will be about 22% as effective as the last round of CERT.

It is to be expected that as energy saving measures transition from the low cost measures that have predominated in CERT to higher cost measures, then cost effectiveness will fall. But the scale of change

proposed between the last round of CERT and Green Deal / ECO is very large – a factor of between 4 and 5 reduction in scale of carbon saving. The underlying reason is the projected rapid decline in cavity wall insulation and loft insulation shown in Figure 17 of the impact assessment. This will have a major impact negative on carbon savings and increase consumer costs until 2022 (as shown in Figure 26 of the impact assessment).

The carbon savings obligation of ECO will subsidise entirely solid wall insulation, and therefore the question whether to use lifetime or annual savings becomes less relevant than it was under CERT and EEC. However, in general lifetime savings seem more appropriately to reflect real carbon savings.

Incentive structures based on sales volume rather than customer numbers are more likely to act as an incentive on suppliers to reduce demand.

The consultation indicates that the fuel poverty impact of ECO will be to take 500,000 households out of fuel poverty by 2022. The number of households currently in fuel poverty is about 10 times this number. The consultation is unclear whether ECO is designed to meet the Government's statutory obligation with respect to fuel poverty, i.e. it is all that can reasonably be done, or whether other measures are planned and, if so, how the Affordable Warmth element of ECO will interact with them. This number could be raised if either the absolute size of the obligation or the share for Affordable Warmth were increased. However, the latter would further decrease carbon saving targets, indicating the tensions between trying to deliver social and environmental goals without recourse to public expenditure.

Administration

OFGEM (previously OFFER and OFGAS) have administered the Supplier Obligation since 1994, and OFGAS had experience with energy efficiency

obligations reaching back to 1992 (E factor). Over the last 18 years the regulator established a system that seems to us to work quite well. Shifting the responsibility to DECC with the option of outsourcing technical functions may pose a risk to the smooth transition between CERT and ECO and/or consistency of approach. As stated in the consulation document, 'DECC does not have the range of specialist skills to undertake all the functions of the Administrator in-house'.

As researchers we would also like to emphasise that data collected on both Green Deal and ECO installations (costs, measures, socio-demographics, housing types, etc.) should be made available for analysis by the research community, with suitable provisions for aggregation and anonymity, This could build on the existing approach with HEED and it should be built into the duties of Green Deal providers and ECO obligation holders. This is particularly important given the novelty of the Green Deal and its differences with other countries' efficiency programmes which make outcomes and effectiveness uncertain. Ongoing data collection and analysis built into the Green Deal market would support evidence-based learning and improvements in line with government objectives.

Other issues

We note that the Government announced an additional £200M spend on Green Deal the day after the launch of the consultation. However, it is not clear how it will be used. We therefore make no detailed comment upon it. However, given the analysis above, it would seem a sensible priority to use the resource to maintain reasonable levels of activity in cost effective measures.

Annex 1

ECO and Green Deal compared to CERT

The current CERT target is set at 293 Mt CO_2 to be achieved over the period April 2008 to December 2012. The metric is lifetime CO_2 savings rather than annual savings as used in the ECO target definition. In order to compare the carbon target of CERT with ECO, the CERT lifetime savings target needs to be converted to annual savings targets. Prior to the CERT extension from April 2011 to December 2012, the total annual carbon savings delivered at the end of the programme were estimated to be around 5.6 Mt CO_2 by 2012 (net of deadweight and comfort).[20] The CERT extension impact assessment projects additional annual carbon reductions of around 2.3 Mt CO_2 in 2013.[21] Based on these figures, CERT will deliver annual carbon reductions of about 7.9 Mt CO_2 by 2013. On average, each year during the CERT obligation measures equating to an annual carbon reduction of approximately 1.7 Mt CO_2 were required to be delivered. ECO is supposed to run until March 2015 setting a carbon savings target of 0.52 Mt CO_2/year by March 2015. This implies that every year measures need to be installed that achieve an annual carbon reduction of about 0.24 Mt CO_2. Compared to the current CERT target which is expected to deliver annual carbon savings of about 1.7 Mt CO_2 in each year, the ECO target is less than 15% of the current CERT target.

Another way of comparing the two carbon targets is by converting the ECO target to lifetime savings. A crude way of doing this is simply multiplying the annual savings targets with the expected average lifetime of the measures installed. The consultation document proposes that the ECO should primarily promote solid wall insulation. For both external and internal solid wall insulation a lifetime of 36 years is assumed in the impact assessment. Assuming only solid wall insulation is promoted by ECO, the implicit savings target in lifetime emissions over the period

[20] http://www.decc.gov.uk/assets/decc/Consultations/carbon%20emissions%20reduction%20target/1_20090630122512_e_@@_CERTImpactAssessment.pdf
[21] http://www.decc.gov.uk/assets/decc/consultations/certextension/121-iacertextension.pdf

January 2012 to March 2015 would be about 19 Mt CO_2. CERT currently delivers lifetime savings of about 62 Mt CO_2 per year, ECO would deliver only lifetime savings of about 9 Mt CO_2 per year i.e. 14% of the level CERT requires.

In order to make up for the lower carbon target in ECO, the Green Deal Finance mechanism is intended to deliver substantial carbon reductions. According to the impact assessment (page 81), the Green Deal Finance Mechanism alone (Option 1) would deliver savings of about 1.4 Mt CO_2 per year by 2022 in the non-traded sector. In the years prior to 2022 this figure is considerably lower and it is supposed to grow from 2013 by about 0.14 Mt CO_2 year by year. By 2015 it is projected to be lower than 0.5 Mt CO_2 per year. Together with the ECO, the expected induced carbon reduction in a given year is about 0.38 Mt CO_2 per year i.e. only 22% of the current emission reduction delivered by CERT.

The figures mentioned above are summarised in the table below:

	CERT	ECO	Green Deal Finance mechanism
Period	04/2008–12/2012	01/2013–03/2015[22]	01/2013–
Annual carbon savings in Mt CO_2 per year for whole period	7.9 (5.6+2.3) by 2013[1]	0.52 by 2015[2]	about 1.4 by 2022[3]
Average annual carbon savings in Mt CO_2 per year delivered in one year	1.7[4]	0.24[4]	0.14[4]
Lifetime carbon savings in Mt CO_2 for whole period	293[5]	19[6]	not calculated
Lifetime carbon savings in Mt CO_2 delivered in one year	62[4]	9[4]	not calculated

Sources: [1] http://www.decc.gov.uk/assets/decc/Consultations/carbon%20emissions%20reduction%20target/1_20090630122512_e_@@_CERTImpactAssessment.pdf and http://www.decc.gov.uk/ assets/decc/consultations/certextension/121-iacertextension.pdf

[2] Green Deal consultation document

[22] Although ECO formally starts in October 2012 the target has been set for the period 01/2013-03/2015.

[3] Green Deal impact assessment

[4] own calculations, simply annualised for comparison

[5] http://www.decc.gov.uk/assets/decc/consultations/certextension/121-iacertextension.pdf

[6] estimated by assuming a lifetime of 36 years and 100% solid wall insulation based on Green Deal impact assessment