

# The Green Deal for retrofit – part 2

**It might not be the answer but it asks good questions**

In the previous part of this article, Kate de Selincourt looked at the Green Deal and concluded that while it might not 'transform the nation's building stock', it nonetheless raises important issues about the potential of retrofit. The Green Deal is accompanied by obligations on energy companies to pay directly for additional energy saving work – the so-called ECOs. In the second part of the article, the author finds that the ECOs should offer a more attractive deal for customers, and thus opportunities for contractors, but questions remain.



In the end, the total scope of any scheme paid for from energy bills will be limited – not least by its impact on the fuel poor. The article concludes by asking if more intelligent investment in energy efficiency might yield better returns all round.

The Energy Company Obligations or 'ECOs' are expected to be the backbone of the government's building retrofit programme – even the government accepts this, despite the enthusiastic description of the Green Deal itself as 'game-changing'. How much of this funding ends up being available to small firms and private customers remains to be seen – here we explore how it might be possible.

Energy companies have been given targets to deliver specific sets of energy saving measures, for particular categories of households – failure means large fines. The ECOs overcome the basic financial hurdles of the Green Deal, by offering substantial subsidies, of up to 100%. (While the funding is different, the assessment, measures and accreditation systems with the Green Deal and ECO overlap substantially, so these are generally referred to together).

The total spending on the ECOs is predicted to be quite a bit less than was spent under CERT and CESP. The energy companies are also anxious to get a good portion of their obligations 'under their belts' early on – having struggled to meet their previous targets, under CERT and CESP. Much of the early activity will therefore involve mass-scale solid wall schemes, generally involving large housing associations, where economies of scale mean that high volumes of notional savings may be possible, relatively cheaply.

Nonetheless, it should also soon be possible to see how the ECOs might work in eligible private properties, possibly starting in the eight cities that won extra funding from DECC to 'go early' and test out the programme.

The 'customer in the driving seat' approach DECC is promoting means there is, in theory, scope for more flexibility than with CERT and CESP – with the option for customers to add ECO funding to private (or Green Deal) finance, within a bespoke package of works.

Any major retrofits on solid walled properties that involve insulating at least 50% of the outside walls, for example, could be eligible for some carbon ECO funding towards this and possibly certain other measures (eg new doors and windows, roof insulation etc) – always providing that the customer is happy to use a system/product from the 'approved' list.<sup>1</sup> Similarly, households in the 'Carbon Savings Communities' areas should be eligible for a range of subsidised measures ([www.cse.org](http://www.cse.org) has published a list of the areas). There is a somewhat bewildering matrix of measures that are eligible for ECO funding, depending on which kind of ECO it is.<sup>2</sup>

Customers will only be able to access ECO funding however, if they have a Green Deal assessment done, then secure an offer from a Green Deal provider or other intermediary (or direct from an energy company) – and, crucially, if they use a contractor who is Green Deal accredited.

The Centre for Sustainable Energy in Bristol (who is co-ordinating Bristol's Green Deal Go Early programme) believes small firms should bite the bullet: "The majority of

general housing refurbishment in the UK is carried out by small builders, so we really believe that there is a place for local SMEs in the Green Deal and ECO. The householders we speak to ... tell us that they value choice, and a lot of people want to use local tradespeople and support their local economy."

Local authorities and their 'delivery partners' are expected to co-ordinate at least some Green Deal and particularly ECO activity in their areas, because they see the advantages to their residents (indeed local authorities now have a public health remit). They also have carbon targets and want to harness the opportunities for local economic activity and employment, and some are specifying that delivery partners should seek out local contractors – for example, Birmingham City Council required this when it appointed its 'go early' delivery partner, Carillion.

Local initiatives like these may well be the key to SME involvement. A local focus of activity is more likely to generate activity through word of mouth and the 'that's what people do round here' effect, and local authorities and not-for-profits have the potential advantage of being a relatively trusted source; as Oxford-based insulation installers, Hamilton Building Contractors, put it: "We hope to reach our customers by being part of a local authority scheme – having the local authority logo and approval will give customers confidence."

Getting 'into' the Green Deal system may seem off-putting. There are certainly costs; both the fees, and the need to comply with the requirements for quality management systems and so forth. While, for example, MCS registered renewable installers may find they have pretty much everything in place already, for others the process may be more onerous.

CSE's view is that: "Although the accreditation system is additional cost and admin, it does offer additional consumer protection, which is likely to be attractive to customers ... If you're not Green Deal accredited, you'll miss out on this

work." Entry costs are likely to exceed £1,000 (and there are certainly grumbles about who is benefiting from the fees) – so you'd probably need to be expecting more than just one job. Grants and/or low cost training loans are available in some areas.

SMEs have been warned not to 'bet the business' on Green Deal and ECO, because there could be sudden swings in demand, caused by 'gaming' by the big players, or sudden shifts in government policy, which would leave them exposed. There are also doubts whether many 'real', long-term jobs will be created.<sup>3</sup>

### Linking in to the ECO

Being accredited is one thing – but how can you help your customer access the energy companies' money? Some of the DECC-funded 'go early' projects already have this built in. But the advent of the Green Deal is also leading to the emergence of a range of companies, groupings and partnerships hoping to connect customers and their contractors in with Green Deal, ECO and/or other forms of finance for retrofit.

The idea is that these 'accumulator' bodies will bundle individual projects together, and secure a 'bulk buy' of the eligible energy savings from a Green Deal provider, or direct from an energy company. Some also offer services that help contractors with the accreditation process. None have yet had a chance to build up a track record, of course.

Some of these entities have clearly been set up solely in response to the Green Deal; others seem to be aiming to enable householders and contractors to work more on their own terms, rather than simply accepting a 'pre-packed' specification, eg direct from an energy company.

For example, the Energy Saving Co-op is developing what it calls a co-operative membership scheme active on an area basis, to enable local third sector organisations and local installers to work together on marketing, advising customers, and carrying out work. They also will link

Table 1. Summary of the three energy company obligations.

	Who is eligible	What measures	Householder contribution
Carbon ECO	Solid walled properties or hard-to-treat cavities. Owner occupiers and private and social tenancies.	Package must include solid wall/cavity wall insulation, some restrictions.	Expected, despite some unproven 'free offers'.
Carbon saving communities	Any home in specified low-income areas, plus some low income rural households, all occupancies.	Variety.	Depends on household 'vulnerability'.
Affordable warmth	Meet 'vulnerable' criteria. Owner occupiers and private tenancies only.	Mainly basic eg. heating systems, loft and cavity insulation (probably fairly shallow)	Zero.

customers to lenders chosen for their ethical fit, such as the Ecology Building Society, as well as to ECO funding.

Parity Projects in South London are working on what they call a 'Green Deal conduit', also aiming to link smaller firms who cannot become Green Deal providers themselves, into the Green Deal system, so they can operate to their own specifications but don't lose out to bigger firms. A similar role is being filled by Yorkshire Energy Services, a not-for-profit community interest company, who is also now a Green Deal provider.

**AECB CarbonLite retrofit programme for members**

The AECB, the sustainable building association ([www.aecb.net](http://www.aecb.net)), is also developing a retrofit programme, with the emphasis on a highly tailored and research-backed approach. It is developing an independent retrofit programme complementary to the Green Deal. It aims to support members to deliver better retrofit practice, whilst helping to minimise risks to occupants, buildings, and participating businesses. The programme plans to explain and illustrate – in plain English – applied building physics relating to heat and moisture, in a retrofit context.

Currently the AECB is undertaking a broad literature review of the building physics and real and potential risks associated with various retrofit solutions. Particular areas of risk are being identified – for example making airtight and insulating suspended timber floors; internal wall insulation; and working with non standard constructions, as well as areas where more effective approaches are possible than the standard ones, such as cavity wall and roof and attic insulation. Tackling the 'building performance gap' will be central to the programme.

Heating controls, ventilation strategies and non domestic building sector needs (eg lighting and equipment) will also be covered. The AECB's retrofit moisture monitoring project ('Hygrotrac'), as well as other UK monitored projects, will inform the programme on an ongoing basis.

The AECB is also developing an online training course and exam with WARM as part of the programme. Successful participants will be able to use the AECB self-certification system for retrofit projects. Certified projects will be able to attract ECO funding through its partner, Yorkshire Energy Services, and discounted mortgages through its other partner, the Ecology Building Society.

**How much subsidy?**

The actual money available towards any scheme is based on the predicted 'lifetime carbon savings' or 'lifetime cost savings' as calculated in the GDAR (Green Deal Assessment

Report) – which is based on SAP. The rate per lifetime tonne-or-£1 will depend on what the energy companies find they have to pay, which will depend in turn on what other customers (installers, landlords, householders) are accepting, and how desperate the companies are to meet their targets, hence the risk of sudden swings up and down, in both demand and price

It is therefore too early to know what the prices will be, and the body or bodies between the client and the energy company will all charge a slice (or 'management fee'). The bigger social landlords, with their greater economies of scale, are expecting that schemes with solid wall insulation might attract perhaps 80% energy company funding, but questions remain over many aspects of the costs.

In general the ECO contribution available for individual projects is likely be lower, because there will not be economies of scale, and small customers cannot negotiate directly so will be paying a 'top slice' to intermediaries. On top of this, the ECO funding will not be guaranteed, nor released until after the work is complete. The intermediaries (eg Green Deal providers) will effectively need to offer 'bridging finance' – but this also comes at a price, of course.

There are also some 'free solid wall insulation' adverts around – though it isn't clear what exactly is offered or how these are backed. These sorts of offers, combined with reports of the energy companies panicking and rushing to sign up big contracts, have led to fears that the lion's share of the work will be mopped up by the bigger firms who can negotiate directly, bankroll the work, and undercut smaller players. However, Green Building was able to contact more than one provider who said they had an allocation of ECO specifically for small private schemes. So for customers who want to retain autonomy, there should be some level of subsidy available, so long as they are not chasing every last £/tonne.

The householder and their advisors will be able to take this funding into account alongside their own finance, decide whether it fits into the scheme they want, and settle on the final specification. Note also that although the designer may be confident that higher savings than predicted by the GDAR will be possible, eg thanks to better detailing, only the basic amount as calculated by RdSAP (minus a discount from 'in-use factors')<sup>4</sup> will generally be ECO-fundable.<sup>5</sup> In the end, if the subsidy is going to generate new work, installers, like everyone else involved, are going to have to balance costs, quality, and attractiveness to customers to see if they can find a level that works for all. Marketing, and particularly local marketing and word-of-mouth, are also going to be crucial to uptake levels.



*This extensive retrofit included external wall insulation (EWI) but also new roof, new windows, and an extension. Solar thermal panels were also installed. The clients wanted to save energy and make their home nicer to live in. Gas bills have fallen by roughly 50%, the house is much warmer, and it no longer suffers from condensation and mould growth. Photo: Alan Clarke*

### Will the retrofits be deep enough?

On a one-off private job, an ECO-funded retrofit can be as basic or as deep as the customer wishes and can afford, so long as it is compatible with Green-Deal accredited products and contractors.

On the larger scale (carbon, and carbon-saving communities' obligations) contracts, the energy companies and large corporate installers may be making more of the running, and of course price will be a driving consideration. As energy consultant, David White, put it in a recent article, it would be reasonable to assume that the energy companies will wish to deliver their savings targets "as cheaply as possible, for example, by not insulating lintels and cills when carrying out external wall insulation."<sup>6</sup>

Some installers share these concerns – and indeed have seen quality problems with work under CERT and CESP: "Sometimes the labour force just hasn't had the training – they are getting the funding but they aren't doing the work," one insulation installer observed. The big landlords too are concerned: "We have to get this right. We don't want problems with thermal bridges, or problems with reinstatement," Paul Ciniglio of First Wessex warns. "But how much say will we get?"

Buildings will not necessarily become healthier either, until the critical issue of ventilation and air quality is dealt with properly and systematically. The housing association, Affinity Sutton, are just one of many individuals and bodies who are concerned that the 'mass specification' approach to SWI has already led to problems with moisture and condensation, which could impact on air quality and occupant health. While ventilation merits a passing mention in installer training, many fear that understanding and practice are dangerously inadequate.

Social landlords are customers too, and many also wish to set their own specification if they can. For example Affinity Sutton are resisting the offers coming from insulation installers and energy companies until they have consulted on the specification they want, with the quality they want – just as an individual client might do.

Although social landlords don't have unlimited resources of their own to invest, this does seem to be an important opportunity for designers and landlords to work together. And landlords who can do a big enough 'bulk sell' of credits direct to an energy company, may also be able to nominate their own contractors.

With the 'affordable warmth' ECO there may be less flexibility, as it only applies to private housing (including private rentals). While local authorities and health and energy charities might like to see the specification raised above the bare minimum that gets the energy companies their points, this may prove very hard to finance. Even if the installers do deliver what is specified – is this enough?

The 'alternative Green Deals' described above aspire to overcome some of the many shortcomings highlighted with the Green Deal itself. But even if they do well, they aren't mass programmes. While there hasn't been anything like enough post-occupancy research carried out, as Keith Bothwell explained in the last issue of Green Building, what has been done indicates clearly that the level of mass retrofit proposed under GD and ECO, ie improving just some building elements and only to the current new build standards, will generally make buildings somewhat more comfortable, and/or there will be modest running cost and emissions savings -- but no radical transformation.



This pre Green Deal retrofit project used local contractors for everything, including replacing the doors and windows, upgrading the roof insulation, and installing the EWI. While there is general agreement that firms like this should be central to ECO delivery, how will it work for them in practice, especially with the high cost of entry?

Photo: Alan Clarke



To deliver a radical transformation, you need radical retrofit, that is, retrofit to the depth where efficiency is so high that occupants can take what they want in comfort (even live at 24°C, if they really want to, as some do) without eating up the savings on bills and emissions. This is technically feasible, but is well beyond what the Green Deal and ECO can possibly deliver.<sup>7</sup>

The financial structures of the Green Deal and ECO, each for different reasons, put an intrinsic limit on the extent of measures installed. They will effectively be 'capped' – and this is the last thing we need.

The ECO isn't affected by the interest rates, which will so limit what the Green Deal can do, but it nonetheless has a cost ceiling. While unlike the Green Deal, participating households are unlikely to be out of pocket directly because of ECO, the total cost is eventually loaded onto energy bills.

**Is the ECO a cost-effective mechanism?**

The carbon ECO has specifically been constructed to 'stimulate' the solid wall insulation market – pricier for the same savings, than cavity and lofts. The justification is that stimulating SWI will lead to lower prices long-term, as FiTs are believed to have done for PVs. But it will mean each tonne of carbon starts out expensive.

Meanwhile, leaving it to the energy companies to seek vulnerable households in fuel poverty (or their private landlords) for the affordable warmth ECO may prove expensive, just as it was expensive for energy companies

to find enough 'super priority group' households to receive free CERT measures – with substantial 'finder fees' being paid to middlemen.

DECC are also being warned they cannot count on householders, or indeed RSLs, being willing or able to match-fund solid wall insulation to the extent anticipated, meaning that energy companies may have to offer a higher proportion of the cost, in order to get the volume of take-up they need for their targets. Good for recipients, bad for the collective purse. And the danger is that the money is spent chasing targets rather than delivering savings – not always the same thing. Putting all these additional costs together, three separate studies are warning that DECC may have seriously underestimated the cost of the ECOs, with some suggesting that if the targets are all to be met, the cost could be as high as £100 per energy bill payer per year.<sup>8</sup>

Putting up energy bills will not help people in fuel poverty. Where vulnerable households are the beneficiaries of the ECO measures, they will individually be better off. But there are many more households in fuel poverty than are scheduled to be assisted by ECO spending. For the rest, the ECO will simply make their situation worse. As energy prices rise faster than wages, proportionally more households fall into fuel poverty – and everyone is increasingly aware of their energy bills. It remains to be seen how much it will be politically possible to spend on the ECO altogether.

The more sceptical prognosis, for example from consultants Encraft, even question whether the ECO in its current form will survive past 2015 – the end of the first

'round' of ECOs, and coincidentally the expected date for the next general election.

### Energy saving can be socially cost-effective

Yet it needn't be that way. Energy efficiency spending can make the unit cost of energy lower, or lower than it would have been otherwise. It saves the nation more than it costs. When this happens, the spending should reduce, not increase, everyone's bills. This would scarcely be unpopular – so long as people could see that was what was happening.

The most striking savings are to be had with electrical efficiency, because electricity and its associated infrastructure are so expensive – and at the moment, it is high-carbon as well. Analysts suggest that for £30 spent on electricity demand reduction, we can avoid spending £100 on replacing generation and transmission infrastructure.<sup>9</sup> Allowing – or indeed requiring – energy companies to fund electrical efficiency improvement that is cheaper than new generation would benefit all bill payers – so called 'least cost planning'.<sup>10</sup> If the government intends to stick to any kind of carbon cutting ambitions, the advantages are greater still, as of course efficiency savings come with a 100% carbon reduction per kWh. This is a slightly complicated idea to sell, but to give the government credit, it has made a couple of pronouncements on this theme recently.

The prime minister told a meeting in February 2013: "Energy consumption is set to grow by a third over the next two decades alone. And in a race for limited resources it is the energy efficient that will win that race." As Green Building went to press there was a media report that the government planned to invest £1 billion to cut Britain's reliance on overseas gas, chiefly via reducing electricity demand, so at least one new gas generation plant could come off the national shopping list.<sup>11</sup>

Fabric and heating system efficiency in electrically heated buildings ought to give the funders of the ECO – energy bill customers – a good return on their investment, (as would upgrading lighting and appliances, though these are not included).

But where heat is not electric, improving the efficiency of fabric, heating and hot water systems probably has a less dramatic impact on energy unit costs, though again, it is a great help with national de-carbonisation, and cuts the need to subsidise renewables (a cost that, in part, goes

onto energy bills). Nonetheless there are huge, tangible, and cashable benefits to the nation as a whole from making people's homes warmer and cheaper to run.

The problem is, buying these other public goods via energy bills is regressive. Lower income and, by definition, fuel poor households pay a much higher proportion of their income to the energy companies, than do the better off. But the shared benefits from improving fabric efficiency (for buildings that are not electrically heated), do not directly return to ease the energy bills that are paying for them. Instead, they are felt in the budgets of quite other departments, health, education, work and benefits, even, possibly, law and order.

And this will make it hard, and probably impossible, to fully realise those benefits via the ECO. Energy bills are now politically highly sensitive – indeed, they have become something of a political cudgel.

DECC is well aware that fuel poverty costs us all money. In its own words: "Living in cold conditions is linked to a number of detrimental physical and mental health impacts (particularly the risk of excess winter deaths in the elderly; respiratory disease among children; and diseases such as pneumonia and asthma among adults). Improved thermal efficiency, leading to increased indoor temperatures, would have a positive impact on health and wellbeing ... This would lead to improved social welfare, savings in health care provision; smaller losses to businesses as a result of worker ill health; and fewer lost school days."

Yet in the same document (the Impact Assessment for the Green Deal) DECC freely admits that when devising the Green Deal and ECO it did not try to add up the potential financial return from these benefits, nor, despite numerous pronouncements about the jobs that would be created, any benefits from possible increases in employment.

*Deep retrofit by bere:architects. The elderly residents reported that the house is much more comfortable, and believe their chronic respiratory problems have improved. More information at:*

[WWW.BERE.CO.UK/PROJECTS/GROVE-ROAD-RETROFIT-FUTURE](http://WWW.BERE.CO.UK/PROJECTS/GROVE-ROAD-RETROFIT-FUTURE)



Others, however, have attempted these sums. According to Age UK: "Cold homes are costing the NHS in England £1.36 billion every year." The charity says each year there are around 27,000 excess winter deaths, most of them caused by respiratory problems, strokes and heart attacks, and people living in the coldest homes are three times as likely to die from a cold-related illness, compared to those in warmer homes. BRE has carried out similar calculations.<sup>12</sup>

Meanwhile, building retrofit is labour intensive – not at all a bad thing. A study by Renovate Europe ([www.renovate-europe.eu](http://www.renovate-europe.eu)) suggested that the German government programme of subsidised loans for energy efficiency improvements gave the German treasury a return on their investment of 5:1 in terms of extra vat, tax, and avoided benefits. In November 2012, Consumer Focus published a report suggesting that direct government investment in energy efficiency here would have benefits 'broadly consistent' with the German experience, and would deliver more jobs and growth than spending on big infrastructure or tax cuts.<sup>13</sup>

This would not be impossible to fund. Stuart Hay of Changeworks in Edinburgh is one of many to point out that "The government could borrow cheaply, but as a consequence of the crash they won't." The same point has been made in the Financial Times – which reported last year that effective interest rates for the government were actually zero.<sup>14</sup>

Could the cash savings from benefiting departments be mobilised directly for energy efficiency work, to get round the energy bill obstacle? According to Inside Housing, Gentoo Housing Association is monitoring hospital admissions linked to living in a cold home. " [If] the evidence is compelling, [Gentoo] intends to ask the NHS to fund energy efficiency measures in its tenants' homes, to reduce hospital admissions." Meanwhile in Nottingham, pioneers of the 'Homes Behaving Badly' project are exploring ways to mobilise social funding, to improve families' living circumstances by enabling them to cut their energy costs.

DECC knows this makes sense – yet they seem to be stuck at first base. Thus, last year, DECC's Charles Phillips explained the rationale for subsidising solid wall insulation thus: "Measures like solid wall insulation are not individually cost-effective, but highly socially cost-effective." But why then did he make an apparently contradictory remark a few months later at a Good Homes Alliance event, insisting that there would be no public support for routine energy upgrades under the Green Deal, because "the beneficiary must pay", as if there was only one beneficiary? Clearly there are many overlapping 'beneficiaries' when energy efficiency is improved.

The challenge is to share the cost between the beneficiaries – in other words, to make it fair. Could we balance public and private investment with the public and private benefits, such that the overall regime is felt to be more or less rational and equitable, across the range of political belief systems?

Somehow we have to get past ring-fenced budgets and political terror, and convince the public that an intelligent, strategic investment programme could pay everyone back more than it cost them. Then perhaps we'll see a credible amount of investment in energy efficiency, for everyone's benefit.

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A fully-referenced version of both parts of this article will be available at:  
[WWW.KATEDESELINCOURT.CO.UK](http://WWW.KATEDESELINCOURT.CO.UK)

1. *There have been concerns that the process of accession to this list – Appendix Q, and the warranty requirements, are too onerous for small and innovative manufacturers – it remains to be seen how much flexibility there will be in practice.*
2. *See [WWW.GOV.UK/GOVERNMENT/UPLOADS/SYSTEM/UPLOADS/ATTACHMENT\\_DATA/FILE/48406/5504-WHICH-ENERGY-EFFICIENCY-IMPROVEMENTS-QUALIFY-FOR-G.PDF](http://WWW.GOV.UK/GOVERNMENT/UPLOADS/SYSTEM/UPLOADS/ATTACHMENT_DATA/FILE/48406/5504-WHICH-ENERGY-EFFICIENCY-IMPROVEMENTS-QUALIFY-FOR-G.PDF)*
3. *[WWW.ENCRRAFT.CO.UK/WP-CONTENT/UPLOADS/2013/02/ENCRRAFT-FINDINGS-ON-LIKELY-GREEN-DEAL-TAKE-UP-NATIONALLY.PDF](http://WWW.ENCRRAFT.CO.UK/WP-CONTENT/UPLOADS/2013/02/ENCRRAFT-FINDINGS-ON-LIKELY-GREEN-DEAL-TAKE-UP-NATIONALLY.PDF)*
4. *In-use factors are included in the Green Deal in an attempt to reflect the performance gap and avoid over-optimistic savings – see previous article.*
5. *There is a possibility that an alternative system (and/or assessment method) with proven performance might be able to apply direct to the ECO administrator to enable a higher level of saving to be claimed, but this might not be worthwhile for an individual job.*
6. *[HTTP://AECB.NET/NEWS/2012/10/THE-DARKEST-HOUR-IS-JUST-BEFORE-THE-DAWN-THE-GREEN-DEAL-IS-UPON-US/](http://AECB.NET/NEWS/2012/10/THE-DARKEST-HOUR-IS-JUST-BEFORE-THE-DAWN-THE-GREEN-DEAL-IS-UPON-US/)*
7. *[HTTP://SIMMONDSMILLS.COM/PROJECTS/FILES/IPH\\_CONFERENCE\\_2012\\_HOW\\_CAN\\_ENERPHIT\\_INFORM\\_THE\\_UK\\_GREEN\\_DEAL.PDF](http://SIMMONDSMILLS.COM/PROJECTS/FILES/IPH_CONFERENCE_2012_HOW_CAN_ENERPHIT_INFORM_THE_UK_GREEN_DEAL.PDF)*
8. *[WWW.IPPR.ORG/IMAGES/MEDIA/FILES/PUBLICATION/2012/12/ENERGY-EFFICIENCY-WHOPAYS-WHOBENEFITS\\_Dec2012\\_10051.PDF](http://WWW.IPPR.ORG/IMAGES/MEDIA/FILES/PUBLICATION/2012/12/ENERGY-EFFICIENCY-WHOPAYS-WHOBENEFITS_Dec2012_10051.PDF), and [HTTP://WWW.ENERGY-UK.ORG.UK/PUBLICATION/FINISH/5/752.HTML](http://WWW.ENERGY-UK.ORG.UK/PUBLICATION/FINISH/5/752.HTML), and Encraft, as above.*
9. *'Creating a Market for Electricity Savings' Green Alliance: [HTTP://TINYURL.COM/B6AC53K](http://TINYURL.COM/B6AC53K)*
10. *Less is More, [WWW.AECB.NET](http://WWW.AECB.NET)*
11. *[WWW.INDEPENDENT.CO.UK/NEWS/UK/POLITICS/GOVERNMENT-ATTEMPTS-TO-RECLAIM-THE-GREEN-AGENDA-BY-PLOUGHING-1-BILLION-INTO-EFFORT-TO-CUT-BRITAINS-OVERSEAS-GAS-RELIANCE-8486030.HTML](http://WWW.INDEPENDENT.CO.UK/NEWS/UK/POLITICS/GOVERNMENT-ATTEMPTS-TO-RECLAIM-THE-GREEN-AGENDA-BY-PLOUGHING-1-BILLION-INTO-EFFORT-TO-CUT-BRITAINS-OVERSEAS-GAS-RELIANCE-8486030.HTML)*
12. *[HTTP://WWW.EPHA.ORG/SPIP.PHP?ARTICLE4661](http://WWW.EPHA.ORG/SPIP.PHP?ARTICLE4661)*
13. *[WWW.CONSUMERFOCUS.ORG.UK/NEWS/ENERGY-EFFICIENCY-INVESTMENT-IS-ONE-OF-BEST-WAYS-TO-BOOST-THE-ECONOMY-NEW-RESEARCH-REVEALS](http://WWW.CONSUMERFOCUS.ORG.UK/NEWS/ENERGY-EFFICIENCY-INVESTMENT-IS-ONE-OF-BEST-WAYS-TO-BOOST-THE-ECONOMY-NEW-RESEARCH-REVEALS)*
14. *[HTTP://NOTHETREASURYVIEW.BLOGSPOT.CO.UK/2012/05/FOUR-CHARTS-AND-WHY-HISTORY-WILL-JUDGE.HTML](http://NOTHETREASURYVIEW.BLOGSPOT.CO.UK/2012/05/FOUR-CHARTS-AND-WHY-HISTORY-WILL-JUDGE.HTML) and [HTTP://WWW.FT.COM/cms/s/0/5853d1c0-9ea9-11e1-9cc8-00144feabd0c.html](http://WWW.FT.COM/cms/s/0/5853d1c0-9ea9-11e1-9cc8-00144feabd0c.html)*

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