For more information, please contact us on 0800 036 46 56.

Or email: enquiries@t-systems.com

Published by:
T-Systems
21st Floor, Euston Tower
286 Euston Road
London, NW1 3DP
Phone: 0800 036 46 56
www.t-systems.co.uk

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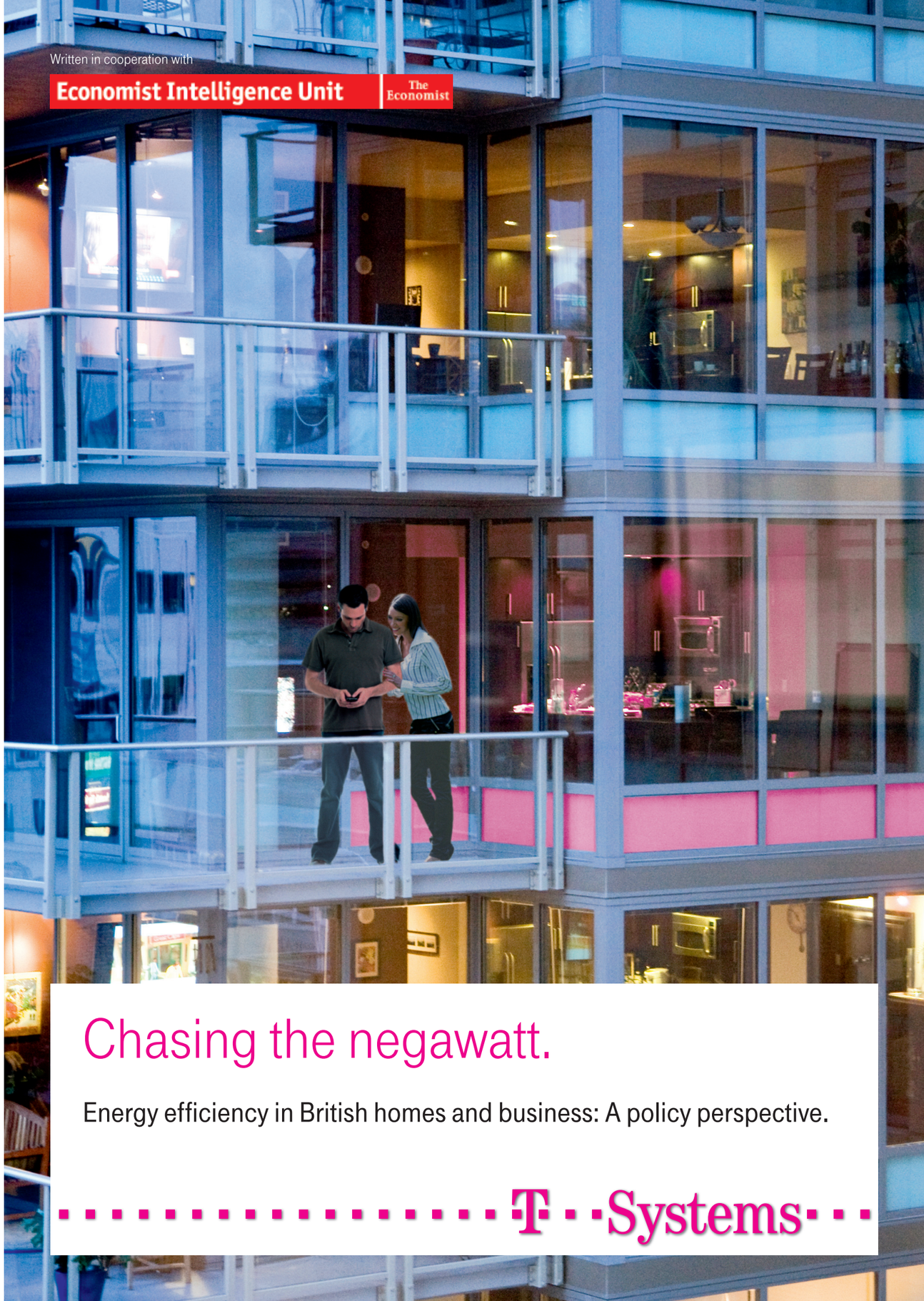

Written in cooperation with

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Chasing the negawatt.

Energy efficiency in British homes and business: A policy perspective.

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Contents.

Foreword.

Recent forecasts for energy price rises paint a gloomy picture for UK householders, with some commentators suggesting annual bills might rise by as much as £200 over the next year. Anyone looking for a new deal on a price comparison website in May 2011 would have seen a marked increase in the cost of the cheapest deals. In June, Scottish Power announced a rise of 19% in domestic gas bills and 10% in electricity bills.

As colder weather sets in, these changes will begin to bite into household budgets – especially if we have to endure another bout of freezing temperatures as we did last year. For those already struggling with mortgage repayments, energy costs could push them over the edge in the battle against financial debt. For businesses too, the climbing cost of energy will start to strain the balance sheet.

Turmoil in the Middle East is driving the change in wholesale prices that has prompted this sharp revision of UK domestic pricing. The economic consequences of our heavy dependence on fossil fuels for power generation are all too evident. Integrating renewable fuels into the grid is unquestionably a driver for long-term change, which both consumers and businesses surveyed in our report **Chasing the negawatt** regard as the government's number one priority for securing the UK's long term energy supply.

Bearing in mind that it may be 20 years before those energy sources make a significant impact on our energy supply, we need a radical strategy to manage down demand for energy rapidly. Governments have been urging self-control on energy consumers for years in light of the threat of climate change, but as our survey shows, this has triggered little or no change in actual behaviour. A much sharper focus on energy efficiency is required now in order to protect us from the likelihood of frequent outages.

Businesses and consumers alike demand a more compelling case for change. Both the speed and size of return should be addressed through new tariffs and technologies. Transparency of energy consumption is just the starting point. Energy users require the mechanisms to control their consumption intelligently and that will require collaboration and smooth data exchange throughout the energy supply chain. A faster feedback loop is critical in order to ensure that the payback for behavioural change is visible and encourages users to continue their efforts. Most of all, users need to see the price impact of their actions before these savings are eclipsed by the next round of price rises.

While the government is forecasting a national windfall of over £7bn in energy savings through the rollout of smart meters to some 30 million homes, our survey tells us that consumer expectations of the same programme are the opposite. More than half of those polled in our survey feared smart meters would lead to even higher bills. Furthermore, only 8% of consumers said they would be willing to pay a premium for products and services that helped them increase energy efficiency. Energy and technology companies will find it difficult to engage with such a pessimistic public. Mobile applications, online portals and dynamic tariffs will all be required to keep the attention of customers and create an appetite for the necessary shift in mind-set.

Relying on climate change awareness to trigger change in behaviour will not work. In the current economic environment money talks louder than ever. Government policies will have to meet that challenge head-on and lead the industry into providing energy deals that deliver benefits today, not promises for tomorrow.

Sam Kingston
Managing Director
T-Systems

Executive Summary.

As a popular aphorism has it, the cheapest watt of electricity is the one that's never created. In the late 1980s, environmentalist Amory Lovins coined the term "negawatt", a theoretical unit of power representing the amount saved through increased energy conservation or efficiency. If the UK is going to achieve its legislated targets on carbon emissions reduction, while also seeking to cope with both increased energy prices and demand, then a lot of negawatts will be required.

On the supply side, policy efforts will focus on revising the energy mix (see our 2010 report, **Putting the brakes on power consumption**[1]). By contrast, the demand side will need to be led by action in both homes and businesses to cut energy consumption and improve efficiency. Facilitating the necessary behavioural shifts will require a mix of push and pull policies that both incentivise and impose change on businesses and consumers.

Much of the debate about how these types of policies should be designed is already underway and major policy reforms – particularly in the shape of the government's Green Deal – are already being introduced. There is widespread support for these reforms, though experts are critical of some recent modifications they feel may have reduced incentives for change among businesses.

Such criticisms are a cause for concern because the evidence presented in this report shows that policymakers will need to leverage all the tools at their disposal if they are to achieve their objectives on energy efficiency. The reason is that, while people and business express a clear desire for more government action on climate change and energy efficiency, they continue to recoil from the radical options that might help speed up the process of change. Instead, their focus remains firmly on energy costs and business performance rather than efficiency for its own sake.

The clear implication is that, as well as toiling away on the policy front, government will very likely have to rely on anticipated increases in real energy prices to help it achieve the kind of change it desires. Attitudes towards energy use in the UK are deeply embedded; it will take more than government policy alone to prompt a radical rethink from either businesses or consumers.

Seven steps to encourage behaviour change.

This report also details seven attributes that should guide any policy development relating to energy efficiency, to ensure the best chance of promoting behavioural change. These include:

1. **Keep it simple.** Confusing businesses with complex regulations reduces buy-in and risks transforming compliance into a box-ticking exercise.
2. **Provide sufficient incentives for end-users, as well as other stakeholders.** Policies need to focus on reducing costs for end users and providing sufficient profit incentives for businesses involved in delivering change.
3. **Ensure that varying policies support each other.** Efficiency-related policies need to complement one another to maximise their impact.
4. **Ensure government acts as an exemplar.** By leading the way, government can help to inspire change in wider society.
5. **Promote policy consistency ahead of constant reform.** Continual change creates confusion and can reduce investment confidence.
6. **Encourage competition.** When people or businesses are publicly identified as laggards – in league tables, for example – it can help to encourage change.
7. **Improve education and raise awareness.** Many people and businesses still lack the knowledge to make informed decisions about energy efficiency.

Some of the paper's key findings include:

- **Energy efficiency battles for attention with bigger concerns and there are signs that interest is declining.** Corporate interest in efficiency has dropped from a year ago, when the CRC Energy Efficiency Scheme was introduced. Then, one-half of firms polled noted it as a high priority; today, just three in ten say the same.
- **Cost is easily the main driver of action on energy efficiency, but concern about brand and reputation is rising.** Eight out of ten consumers say cutting their bills is either the sole or major motivator. For business, the importance of cost rose to 87%, up from 71% last year. Interestingly, however, reputation is now a far more prominent concern, up from 17% to 27%, and ahead of regulatory requirements.
- **Consumers believe the UK's rollout of smart meters will end up costing them, despite government forecasts of a £7.3bn saving.** More than one-half (54%) of consumers believe that the UK's mandated rollout of smart meters into some 30m homes will result in an increase in the price of energy. Just 15% think it will reduce prices. This is despite government projections that the rollout will result in average savings of £23 per home on annual energy bills.
- **Most firms are working to cut energy use, but there has been a sharp rise in those firms shelving efficiency plans.** About one-half (49%) of firms will cut energy use by up to 10% this year, while about one in four will do something more ambitious. But there has also been a sharp jump in the proportion of firms with no plans at all, rising to 16% from 5% in 2010.
- **Future efficiency gains will need to be made without adding to consumers' current energy bills.** The government's proposed Green Deal focuses on removing financial concerns for both households and small businesses, by amortizing efficiency costs into consumers' energy bills, paid for by reduced energy use. Getting this financial mechanism right will be crucial, not least as only a handful (8%) of consumers express a willingness to pay anything extra on their energy bills in exchange for services that help to reduce energy consumption.
- **Many firms are pressing for more action on energy efficiency, while change is more limited at home.** To take one example, four in ten firms either have already installed or plan to install on-site renewable energy – such as solar power or wind generators – this year. By contrast, just 4% of homes have done so, despite a feed-in tariff to encourage take-up.

[1] Putting the brakes on power consumption, T-Systems, June 2010

Introduction: The UK's climate targets and the role of efficiency.

Momentum on the UK's efforts to tackle climate change has steadily picked up over the past few years. In 2008, the Climate Change Act was introduced, committing the country to a long-term target of cutting all six Kyoto greenhouse gasses (GHGs) by at least 80% from 1990 levels by 2050, and 34% by 2010 (see box overleaf: A busy decade). To ensure steady progress along the road, the Act also introduced a system of five-year carbon "budgets", set 12 years in advance, to prompt consistent progress.

Despite already challenging targets, the pressure to perform has been increased further. In May 2011, the UK's Energy and Climate Change Secretary, Chris Huhne, committed the government to halving GHG emissions from 1990 levels during the 2023-2027 carbon budget period. "Under this carbon budget, Britain in 2027 will be a different place and transformed for the better with warmer homes powered by green energy, many more cars powered by electricity and far less reliance on fossil fuels to drive our economy," said Mr Huhne in his announcement. While the measure includes a potential get-out clause, with the option to revise targets in 2014, the overall direction is clear[2].

Where the cuts will come from

Given the ambitiousness of these targets, the UK will have to make significant gains within all areas of the energy ecosystem – from national power stations to household central heating – even as its population rises and per capita demand for energy increases. The majority of the cuts will be generated in three target areas: the national energy mix; transport; and businesses and homes (see Fig1 below).

$MtCO_2e$	Central Greenhouse Gas emissions*					
	1990	**2008**	**2010**	**2015**	**2020**	**2025**
Net UK Carbon Account						
July 2009 projection	776	603	594	544	496	480
June 2010 projection	776	608	597	543	494	488
Change since 1990		-22%	-23%	-30%	-36%	-37%
UK Greenhouse Gases		628	584	559	502	483
EUA Purchases		20	-13	16	8	-5
Sectors:						
Energy Supply		220	194	185	153	133
Business		96	86	86	83	84
Industrial Processes		17	16	16	17	16
Transport		132	128	123	112	111
Residential		84	80	68	60	63
Public		10	9	9	8	8
Agriculture		48	49	50	47	47
Land Use Change		-2	-1	1	3	3
Waste Management		23	22	22	20	20

Fig 1. Targeted GHG emissions reduction by sector in millions of tons of carbon dioxide or equivalent (MtCO2e)
Source: Updated energy and emissions projections, Department of Energy and Climate Change, June 2010

- **National energy supply.** Much political attention will be paid to the improvements in the national energy mix, which is the single largest contributor to GHG emissions. In the medium-term, this has taken the form of the "dash to gas", as highlighted in our 2010 report. Nevertheless, between 2008 and 2025, this will be the single largest source of reduced emissions, falling by about 40%, according to the Department of Energy and Climate Change (DECC).
- **Transport** will be another key target, with efforts to improve the fuel efficiency of new cars, as well as encouraging consumers to switch to public transport. Emissions from transport sources are expected to fall some 16% by 2025, from 2008 levels.
- Beyond this, the bulk of the gains in emissions reduction will come through ongoing efforts to reduce energy use in both **businesses and homes**. Between 2008 and 2025, DECC projects that energy use from business will fall nearly 13%, while households will drop sharply by 25%. In both areas, increased energy efficiency will be the key tool employed. In particular, major efforts will be required to improve the quality of the UK's housing stock, much of which is old and hugely energy inefficient.

This report focuses on this third strand of policy attention, where individual action and behavioural change will be most needed. "The UK government is taking seriously the need to address climate change issues, and there's a number of ways to do that," says Don Leiper, director of new business at E.ON. "The most obvious and best way is through helping people use less."

Why focus on efficiency?

In achieving significant reductions in the use of energy in homes and business, the headline emphasis by all stakeholders will be on improved efficiency. Quite simply, finding innovative ways for consumers and businesses to use less energy in their daily activities is by far the most effective and cheapest means of lowering the UK's overall GHG emissions, while also curbing energy costs. "It's clear that energy efficiency has an absolutely key role to play in all our scenarios [of how the UK achieves its energy reduction targets]," says Professor Matthew Leach, an energy expert at the University of Surrey. "No scenarios reach our targets without significant energy efficiency improvements."

A significant component of this efficiency can be achieved through better technology, ranging from low-energy lighting and appliances to increased insulation, automated building control systems, condensing boilers and more. A major study from Siemens showed that existing technology alone could help cut London's emissions by 44% by 2025, without requiring citizens to make any behavioural changes with about two-thirds of these measures paying for themselves[3]. So there is no shortage of tools. However, the implementation of these technologies is down to individual decisions and actions being taken, while greater progress will also require finding effective ways of nudging people towards new behaviours on energy efficiency. This is where policy will play a crucial role.

[2] UK proposes fourth carbon budget, Department of Energy and Climate Change, 17 May 2011

[3] Sustainable Urban Infrastructure, London edition – a view to 2025, Siemens, June 2008

Attitudes towards efficiency: snapshots of business.

A busy decade

A selection of key policy milestones on energy efficiency

2000 The UK's **Climate Change Programme** commits the country to cutting emissions by 20% from 1990 levels by 2010.

2001 The **Climate Change Levy** comes into effect, to encourage energy efficiency in energy-intensive industries. A later set of **Climate Change Agreements** gives an 80% discount to energy-intensive firms who hit emissions reduction targets.

2005 The **EU Emissions Trading Scheme** (ETS) is launched, to help the EU achieve its Kyoto Protocol-required emissions reductions.

2006 The **Climate Change and Sustainable Energy Act** is introduced to promote the take-up of decentralised energy.

2006 The UK government announces a goal of ensuring all new buildings from 2016 are built to **zero carbon standards**. Subsequently watered down in the March 2011 budget, to only account for about two-thirds of household emissions.

2007 London's mayor sets out the **London Climate Change Action Plan**, with a target of 60% reduction in emissions from 1990 levels by 2025.

2007 The **UK Energy Efficiency Action Plan** sets out various measures for achieving an 18% reduction in energy use by 2016, going beyond an EU Energy End-Use Efficiency Directive requiring a 9% cut.

2008 The headline **UK Climate Change Act** sets a legally binding reduction target for the UK of 80% by 2050. Also sets a 34% cut required by 2020.

2008 The **2008 Energy Act** includes measures for feed-in tariffs for renewable energies, smart metering and renewable heat incentives, among others.

2008 The **Carbon Emissions Reduction Target (CERT)** obliges larger domestic energy suppliers to reduce household GHG emissions. Extended in 2010 to last until December 2012 when the proposed "Green Deal" is introduced.

2008 A £1bn **home energy saving programme** announced, largely funded by energy firms, as part of a broad aim of making all UK homes energy efficient by 2020.

2009 The **Community Energy Saving Programme (CESP)** is introduced, a household energy efficiency programme delivered through community-based partnerships involving Local Authorities, community groups and energy companies.

2010 The **CRC Energy Efficiency Scheme** comes into force, with a focus on reducing emissions from non-energy intensive sectors. Later in the year, it is put under review, with key elements being amended for the 2011 budget.

2010 The **2010 Energy Act** focuses largely on energy markets, but includes support for lowering the energy bills of vulnerable consumers.

2011 The **Renewable Heat Incentive** is introduced in March for businesses, with an extension for domestic homes coming in time for the Green Deal.

2011 Consultation is held on a **Carbon Floor Price**, set for April 2013, as part of a wider reform of the electricity market .

2011 A wide-ranging **Energy Bill** from the coalition government is introduced for debate. Proposals to facilitate energy efficiency measures for homes and businesses through a wide range of measures, including the headline **Green Deal**.

Widespread business interest in energy efficiency peaked last April, with the introduction of the CRC Energy Efficiency Scheme, aimed at cutting emissions in non-energy intensive sectors (see box below, The CRC scheme in 30 seconds). Our report provides a series of snapshots, one year on, on business attitudes to energy efficiency, the key drivers and main challenges.

The CRC scheme in 30 seconds

The UK's CRC Energy Efficiency Scheme is a mandatory initiative aimed at cutting energy use in large private and public sector organisations. Any business with at least one half-hourly electricity meter will need to participate by disclosing information on its energy use, although full engagement is only required for those firms that consumed at least 6,000 megawatt-hours of energy in 2008. The scheme features an annual performance league table that ranks firms on their relative efficiency performance, designed to appeal to those firms wanting to compete in order to ensure reputational benefit. The CRC scheme initially sought to recycle penalties from poor performers to strong performers, to incentivise action, but this has been transformed into a straightforward penalty on laggards.

Energy efficiency remains a priority for businesses, boosted by the CRC scheme, but less so than a year ago. The introduction of the CRC Energy Efficiency Scheme led to a spike in energy efficiency interest among business, with half of all firms polled last year noting the issue as a high priority for them. This year, that priority has waned to three in ten, although another 40% say it is a moderate priority.

In part, this may be a reflection of widespread changes to the CRC scheme, very soon after its launch, which stripped out the incentive of recycling funds to high performers. "The targets and costs have not changed, but there used to be a carrot alongside the stick and what's really stark is taking away the carrot, so it's just a tax on energy and emissions," says Professor Leach. This is reflected in our survey too: just 5% of respondents say they are putting the maximum effort possible into the CRC scheme, although another 19% say they are putting in significant effort, while the majority (38%) are simply opting for doing the basics. "[Revisions to the scheme] changed the management focus, to being less proactive and more compliance oriented," says Hugh Jones, managing director of the Carbon Trust Advisory.

Still, the scheme's introduction has clearly served as a tool for enabling a greater knowledge and awareness of efficiency. "Certainly the CRC scheme, regardless of the suddenness of the changes, did have the effect of mobilising many firms, many of whom had never considered it before," says Mr Jones. "One of the few good things to come out of the CRC legislation is the fact of having to report your energy consumption," adds David Cockshott, industry and commercial markets director at npower. "That means that customers do at least now know what they're consuming." But despite the scheme, and numerous policy initiatives under review, only about three in ten (28%) of firms believe the UK is doing enough to promote energy efficiency – more than six in ten (62%) believe more should be done.

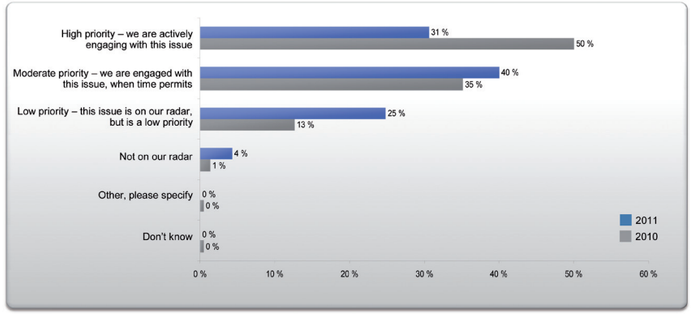

Fig 2. How much of a priority is energy efficiency for your organisation's senior management? Select One.

Cost reduction is easily the primary driver of increased efficiency among business, although brand and reputation are increasingly important. Cost is, unsurprisingly, the key driver of energy efficiency. This is now even more important than it was last year, rising from 71% to 87% in our survey. "There's a growing trend on energy management services, for various reasons, including rising energy prices, and this creates a strong incentive to lower costs," says Angus Wilby, head of energy services at EDF Energy. Significant savings are available here: the UK's Environment Agency estimates that firms could save £6bn per year through increased efficiency[4]. A key aspect here is concern about future energy price increases. "Energy costs are really sticking out now from other costs and are definitely on the radar, especially for an energy intensive business where it could make the difference on their survival," says Kanat Emiroglu, managing director for British Gas Business.

Brand and reputation is now also a far more important consideration, rising to 29% from 17% last year, ahead of regulatory requirements. This reflects rising interest among firms in wanting to ensure that they are not seen as laggards in their sector, spurred by the CRC's league table approach. "Lots of businesses now regard becoming more overtly green as an entry ticket or a baseline," says E.ON's Mr Leiper. Harry Morrison, general manager for the Carbon Trust Standard, a certification scheme for verifying firms' carbon performance, adds that for services businesses especially, where energy costs are relatively minor, reputational issues are important. "It's much more about CSR and a desire to communicate good energy performance to customers," says Mr Morrison. Indeed, hitting sustainability targets is the second highest driver selected by respondents, after cost reduction. "Three quarters of business managers agree that sustainability contributes positively to shareholder value in the long term," adds Mr Wilby.

Fig 3. What are the key drivers for energy efficiency initiatives, if any, within your organisation? Select up to three.

[4] Greener Business, Environment Agency, 2010

The majority of firms will cut energy use by up to 10% this year, but there has been a sharp rise in the number of firms that have shelved efficiency plans. Although overall energy reduction ambitions are slightly scaled back from last year, much effort remains underway. About one-half of firms will cut up to 10%, with nearly one in four aiming to cut between 10% and 30%. But since last year, there has been a jump in the proportion of firms with no plans at all, rising from 5% to 16%.

In this respect, firms appear to be dividing into groups with varying degrees of interest, much like consumers. Some are passionately engaged and pursuing ambitious targets; some are interested and working on the basics; while others are entirely disengaged. The final group does not necessarily suggest scepticism or disinterest; a return to growth as the economy picks up, for example, may well cause a firm to press pause on its energy saving efforts. "If it's a case of 'I have another 20 things to do first before I get onto energy, otherwise I won't be here, then I understand that," notes npower's Mr Cockshott. About one-half (51%) of respondents cited other pressing business needs taking priority as the number one barrier to doing more on efficiency.

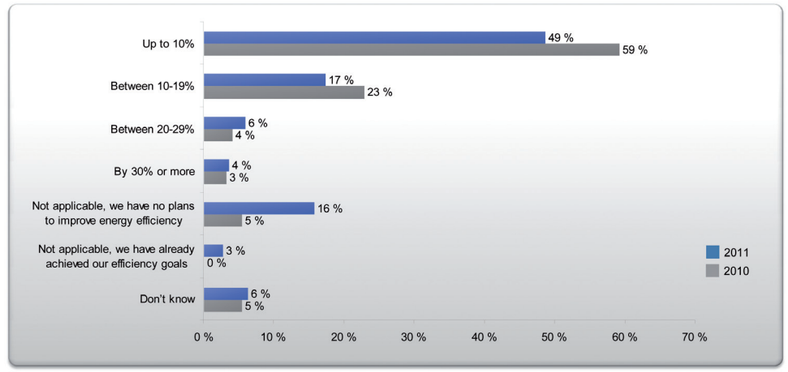

Fig 4. To what extent does your organisation plan to reduce its energy demand through greater efficiency over the coming 12 months?

Finance is a key challenge, both in terms of raising capital and also in terms of proving payback. Finance is a key barrier to greater efficiency, after other business needs. This has two components. The biggest is about quantifying the business case (see Fig. 5 overleaf), to justify necessary investments. A secondary issue is the lack of capital, or sufficiently cheap capital, in the first place. As such, investment appetites vary widely between firms polled: just over one third (35%) say they have no investment planned at all, while a committed minority of 8% are planning investments of at least £1m.

To address this, several executives cite the need for increased awareness of actual energy use and costs. "The most vital thing is having facts about energy use. Awareness has virtual instantaneous payback, by giving people the insights needed," says Mr Emiroglu. One approach is through smart meters, which can help firms gain a far more granular view of their energy use trends, from the basics of monthly usage through to daily usage profiles, peak usage times, and even usage per square metre or pound of revenue, especially helpful for comparing across multiple premises. Even simply sharing such information can help spread greater take-up of energy causes, as B&Q has found (see B&Q case study overleaf).

But it is clear that there is money on the table. “We know organisations with the Carbon Trust Standard have saved about £200m a year through energy and carbon efficiency,” says Mr Morrison. “There’s sizeable money out there. Most firms can have a 10-15% saving with zero or low cost.”

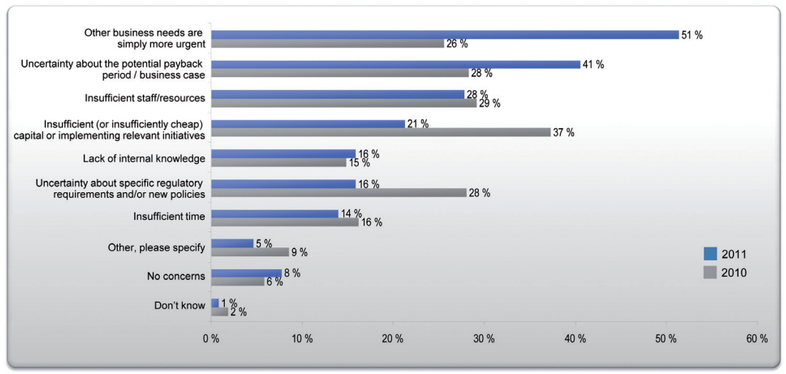

Fig 5. What are the key concerns that your business holds with regards to implementing energy efficiency programmes? Select up to three.

The basics of energy efficiency are now largely entrenched, while a growing number of firms are exploring a deeper engagement. The very basics of efficiency are fairly widely entrenched in business today: about three-quarters of firms have implemented guidelines for office equipment use, for example. Now, a growing proportion is starting to do more, on both direct efficiency and behavioural change. “In the past, we were more seeing the motherhood and apple pie kind of stuff, where you turn off the lights and close the windows while heating,” says Mr Emiroglu. “In the last three years, we’ve seen the sophistication increase for larger businesses, including operating model changes and energy efficiency related investments.”

This is reflected in our survey results. One quarter of firms have installed smart meters, with another 30% planning to do so (see Fig.6). Many encourage alternative forms of commuting, such as car sharing or by providing bike storage. Overall, just over one third (36%) have a workplace energy efficiency strategy in place, with another three in ten (28%) are planning to implement one.

Another development is the rising inclusion of energy in firms’ procurement strategies. There are two elements to this: one is about setting guidelines for goods being bought; the second is about taking a more multi-disciplinary approach to energy procurement itself. “Energy procurement is no longer only in the procurement department, where the only concern is pounds per kwh. Business realises that shopping around can save 0.1 to 0.2 per cent, but on energy efficiency they could save up to 20% of energy costs, and higher in an energy intensive business,” says Mr Emiroglu.

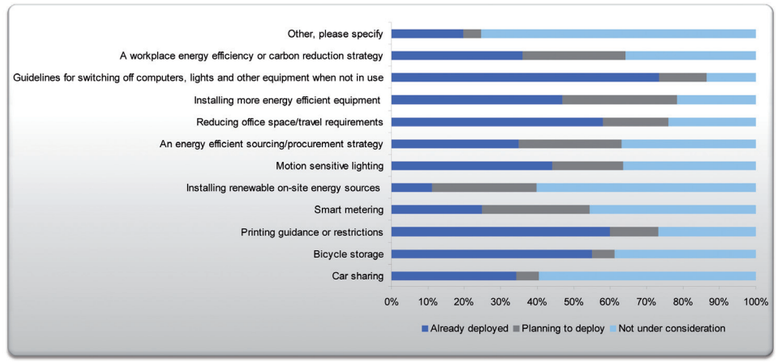

Fig 6. Which of the following strategies has your organisation deployed to reduce energy consumption in the workplace among employees? And which are you planning to deploy? Select one choice for each row

Case study: B&Q

Corporate energy managers looking for an energy efficiency exemplar could do worse than taking a visit to B&Q, the nationwide home and garden retailer. The firm has set itself a goal of cutting absolute emissions by 90% from 2006/07 levels by 2023, with an interim goal of cutting by 20% by end-2012 – despite the fact that the firm plans to continue growing. “Where are we at?” asks Matthew Sexton, the company’s head of corporate social responsibility. “We’ve hit the 20% figure already, but there’s still a massive way to go.” Nevertheless, the firm has simple, but clear drivers: reduce risk by lowering its reliance on volatile energy costs, and boost potential demand by enhancing its consumer reputation.

It has already done much of the easier stuff, including assessing its carbon footprint in order to guide three levels of activity. The first level is what Mr Sexton dubs the “green gold”, often costing nothing to implement. This has ranged from training drivers how to improve fuel efficiency to alerting store managers about their relative energy consumption. “That’s the easy bit – a few simple behavioural changes and a robust approach to cost targeting,” says Mr Sexton. This also appeals to basic competitive instincts. The relative efficiency of stores is posted on the company’s intranet, so store managers can see their performance. “It becomes a topic at monthly management meetings. There’s no penalty, but there’s a natural desire [not to be last on the list],” says Mr Sexton.

The second stage looks at which investments pay back rapidly and with absolute certainty. Changing the firm’s lighting, for example, pays back in an average of 1.8 years. Similarly, investing in double-decker trailers for trucks can double the freight carried without doubling the fuel used. “That’s the mid-zone. That will get us to about a 30% cut in energy use,” says Mr Sexton.

The final stage is the toughest, where investment returns fall outside of normal payback periods. How B&Q will achieve its remaining goal is uncertain right now, but so were its initial targets when it set out, says Mr Sexton. “We’ve cut store electricity by 24% in the last two-and-a-half to three years. I don’t think even we thought we could have done this. Lots of businesses think they’re more efficient than they actually are.”

Attitudes towards efficiency: Snapshots of consumers.

Our 2010 energy report focussed on business perceptions on energy issues, but households will be asked to make an even larger contribution to the UK's overall emissions reductions targets. So what is the mindset of British consumers today, and how engaged are they on this issue?

Climate change is a low priority amidst deeper concerns. Despite a busy legislative agenda on climate change and daunting political targets, people can be forgiven for not losing much sleep over energy. GDP growth remains fragile; the full impact of the government's spending cuts is only starting to be felt; and government is proposing wide-ranging reforms to major aspects of the state, including both the healthcare and education systems. Meanwhile, despite average salaries having fallen in real terms, a weak global economy reduced average electricity bills last year, although this trend is now reversing.

Accordingly, for seven in ten of the consumers polled for this report, economic uncertainty tops the bill as a headline concern, with climate change ranking well below it (see Fig. 7). Just 5% of consumers say that concern over carbon emissions was their sole reason for taking action on energy efficiency, and fewer than 40% say it is a strong motivator. But if climate change is a limited motivator, peer pressure is an even smaller one: most (61%) say that the example of friends or family is no motivation at all. Just one in ten say this is a strong driver for action.

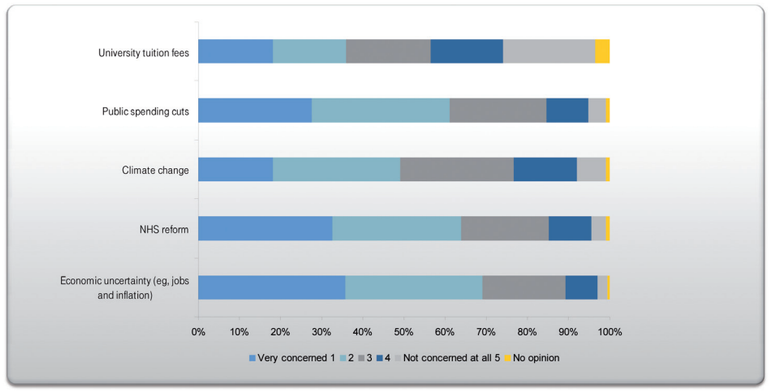

Fig. 7. How concerned are you about the following issues?

Concern about future price increases is driving effort on energy efficiency. This past decade has been characterised by rising energy bills for UK homes, barring a recessionary blip in 2010 (see Fig. 8), which is now being reversed. Five of the six major UK energy companies increased electricity prices in either the fourth quarter of 2010 or first quarter of 2011, while all of them raised gas prices. The Bank of England's latest inflation report assumes a 15% rise in gas prices and 10% rise in electricity prices by the first quarter of 2012, well above the headline inflation rate, and warns that this could easily be higher[5]. Indeed, at the time of writing Scottish Power had just announced a 19% increase in its gas tariff and a 10% increase in its electricity price. Accordingly, 80% of consumers say that reducing their bills was the sole or strong motivator for improving energy efficiency. "First and foremost, customers are interested in reducing the cost of their fuel bills," says Angus Wilby, head of energy services at EDF Energy.

[5] Inflation report, Bank of England, May 2011

In turn, this is leading to a rising appetite for increased energy efficiency among consumers, aided by a range of policies that have been introduced in recent years to support this. Eight in ten consumers say they have made some effort to cut energy use or increase efficiency over the past year, and will continue to do so. Nevertheless, it is easy to overstate the impact of costs. "Energy prices will go on rising, so therefore people will pay more attention. But it's a fairly slow process. Energy is still a small part of the bill for the majority," says Professor Leach.

	Standard rate	Economy 7
2007	£345	£506
2008	£385	£580
2009	£388	£603
2010	£366	£571

Fig 8. Average annual UK electricity bills. Standard rate and Economy 7 rate, in real terms.
Source: DECC

Consumers are keen on smart meters, but expect to pay for them. Smart metering is a central part of the government's plans, with some 30m UK homes due to receive one by 2019, replacing about 53m conventional meters at a cost of £11.3bn. DECC gives a strong business case for smart meters, projecting a net benefit of £7.3bn over the next 20 years, over and above the rollout cost – or equivalent to some £23 per home per annum[6]. This is expected to result from both industry efficiencies, as well as a fall in home energy consumption. Despite this, most consumers actually fear an increase in energy prices as a result of the rollout of smart meters: 54% expect an increase, while just 15% expect a drop. Third party experts, such as Which?, a consumer group, argue that there is not yet enough data to forecast likely savings from smart meters[7].

Nevertheless, consumers show willingness to spend a reasonable amount of time monitoring some kind of technology, whether a smart meter or otherwise, in order to cut energy bills. Nearly one in five say they would spend up to an hour per month monitoring such devices, although for about one in four even just five minutes is too much. Something involving a time investment of around 10-30 minutes appears to be the sweet spot (see Fig. 9). To tap into this sentiment, more will need to be done to help overcome any potential perception gaps among consumers.

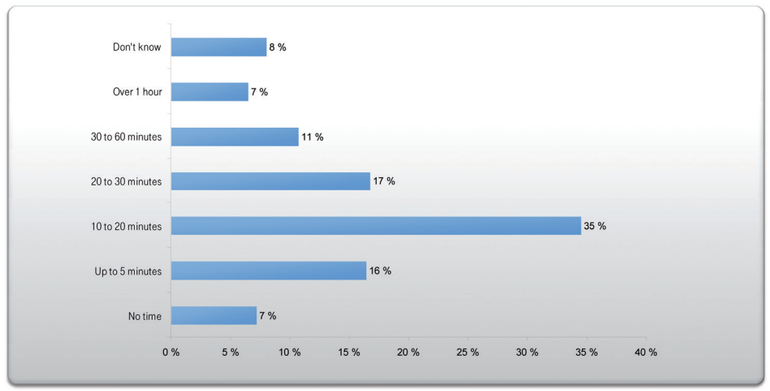

Fig 9. Realistically, what is the maximum amount of time per month you would be willing to spend managing or monitoring a piece of technology, such as a smart meter, if this could give you a reduction in your annual energy bill of up to £50?

[6] Smart Metering Implementation Programme, Department of Energy and Climate Change, July 2010

[7] Smart meters predicted to save UK households £23 a year by 2020, Guardian, 30 March 2011

Consumers have embraced the easy efficiency steps, but bigger changes are far less entrenched. Years of awareness campaigns appear to have paid off, in terms of getting the basics in place: nine in ten consumers say they turn off lights not being used, while eight in ten do the same for appliances. Far more will be needed to achieve the targets being aimed for, although this is a useful start. The Energy Saving Trust estimates that just leaving gadgets and appliances on standby in homes wastes some £900m of energy annually[8].

Inevitably, interest falls as more substantial behavioural changes or investments are required. While three-quarters say they have turned down their central heating, just four in ten say they have chosen to drive less (no doubt aided by steep prices at the pump) and only a small minority (16%) say they are taking fewer flights. All this is surely an improvement over the start of this decade, but more will be needed if the UK's overall goals are to be achieved.

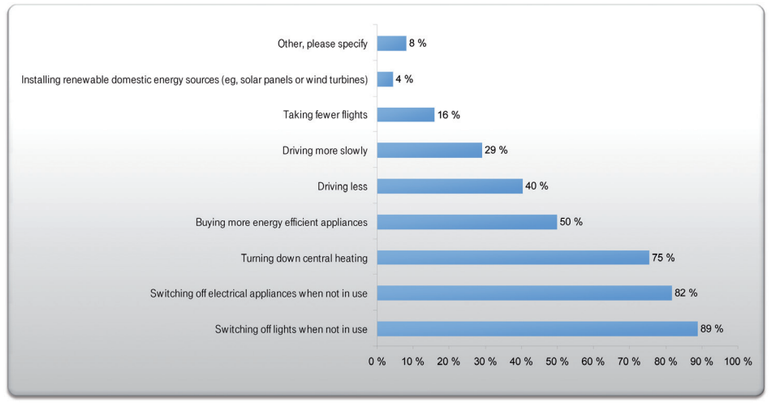

Fig 10. What steps have you or your family taken recently to improve your energy efficiency? Select all that apply.

[8] Green resolutions for 2009, Energy Saving Trust, January 2009

Consumers are not prepared to pay for services that help them reduce energy consumption unless it also cuts their energy bill. However, there is some appetite to pay more for renewable energy. Only 8% of consumers are prepared to pay a premium on top of their energy bill for services that help reduce their consumption. But, despite protests on issues such as wind turbines spoiling the view, people do express a willingness to pay something in exchange for 100% renewable energy in their homes. About one in three (35%) would be willing to pay only between 1% and 5%, with a further 17% willing to stretch up to 10%. After that, only a handful are willing to entertain higher sums, while 30% would not be willing to pay anything extra.

All this amounts to a perception challenge for the government. Overall, just 4% of consumers polled say they are installing renewable energy in their homes, despite the introduction of a feed-in tariff (FIT) to encourage take-up. Under the terms of the FIT scheme, it is actually feasible for consumers to get a third-party operator to install thousands of pounds worth of renewable energy equipment, such as solar panels, free of charge, while also retaining the energy savings achieved—in exchange for the operator keeping the FIT. Of course, as such schemes become better known, take-up will likely increase. And while the government's Renewable Heat Incentive is only making a limited impact right now, this should also increase from later in 2012.

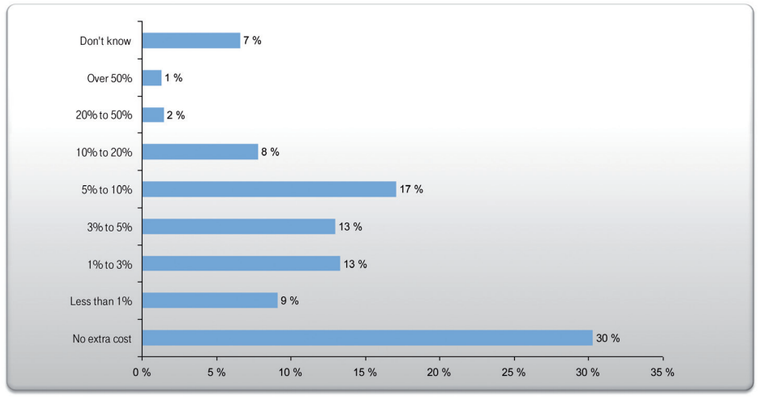

Fig 11. Eventually, it will be possible to choose the extent to which your home is powered by electricity generated from renewable versus non-renewable sources. In percentage terms, what is the maximum additional charge you would be willing to incur on your annual energy bill in order to have your home powered by 100% renewable energy?

The shape of successful policy.

Legislation is starting to increase the take-up of home insulation, but getting the proposed Green Deal right will be crucial to driving genuine change. The 2008 introduction of the Carbon Emissions Reduction Target (CERT) led to a rise in home insulation. An estimated 1.2m homes had installed cavity wall insulation by July 2010, while 2.1m had installed loft insulation[9] (see Fig. 12). However, a major proportion of the housing stock lacks proper insulation. Just 55% of applicable homes have cavity wall insulation in place, while 53% have loft insulation.

Many are pinning hopes on the Green Deal to accelerate take-up of insulation and other measures. Under the proposed scheme, consumers will be able to install a range of energy efficiency measures without any up-front payment, paying through instalments on their energy bill. Retaining this principle will be crucial, as fewer than one in ten consumers say they would be willing to pay any additional amount on top of their bill in exchange for tools or services to reduce electricity use.

There is certainly an appetite for new policy, however. More than eight in ten consumers think government should be taking more action, not less, to drive the take up of energy efficiency. Just one in ten thinks enough is being done.

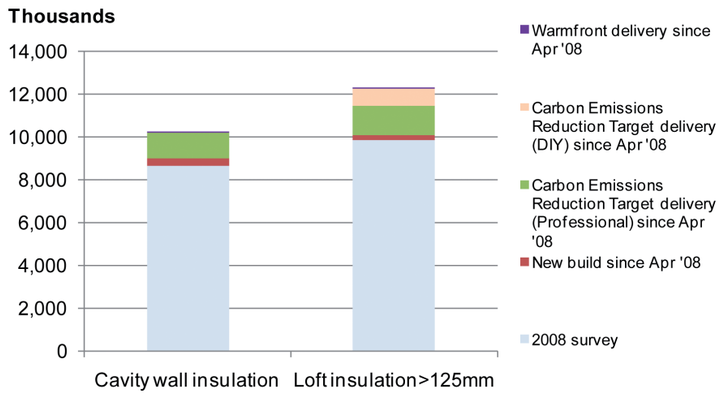

Fig 12. Take up of home insulation. Housing stock installing cavity wall or loft insulation, April 2008-July 2010.
Source: DECC. (http://www.decc.gov.uk/assets/decc/Statistics/enefficiency/946-stat-release-insulation-30112010.pdf)

Advocates of energy efficiency have a tough job on their hands. While there is always a passionate minority of supporters who are willing to do whatever it takes to improve efficiency, the vast majority are either only lightly engaged, or simply too concerned about other issues to pay much attention. By contrast, businesses are often far more rational than consumers, at least once targets have been set: they will then calculate a way forward and chase after potential savings. At home, such rationality is less obvious, with the majority of consumers limiting behavioural changes to basic steps, such as turning off unnecessary lights or appliances. Such actions are not bad, but they represent only the tip of the iceberg in terms of the potential opportunities that need to be taken advantage of if the UK is to meet its carbon reduction targets. There is cause for optimism here: just as soaring fuel costs have driven sales of more fuel-efficient vehicles over the past decade, the same is likely to become more normal within homes. But to coax more change out of people, smart legislation will be required, with both pull and push measures employed. The next chapter explores the attributes of such policies to assess what might work best.

[9] Estimates of home insulation levels in Great Britain, Department of Energy and Climate Change, July 2010

Government is currently debating a new generation of policies aimed at putting the UK on track towards achieving its carbon reduction targets. To succeed, these policies will need to encourage the necessary behavioural changes on energy efficiency among British consumers, whether household or commercial. To do so, policymakers would do well to take the following eight points into account, when asking household consumers or businesses to embrace new policy.

Keep it simple. A great deal of early interest in the CRC Energy Efficiency Scheme was lost as the complexity of the scheme increased, highlighting the importance of simplicity. When policy gets so detailed that a firm's compliance team has to manage it, aspirational goals give way to box-ticking exercises. A related concern is on the volume of legislation, especially for smaller businesses. "One of the biggest problems is that there are just so many [legislative] options out there, and some of them overlap, some of them contradict," says npower's Mr Cockshott.

Provide sufficient financial incentives for end users and other stakeholders. As our survey has shown, consumers are highly price sensitive. Any rules need to take this into account by providing appropriate incentives. Equally, the businesses that would be involved in implementing any initiative must also have strong financial incentives to act. "You want to engender support and make it attractive for business to act," says Matthew Sexton, head of CSR at B&Q, which may well seek to provide new services to consumers under the Green Deal.

Ensure that varying policies support each other. Amidst the myriad of policy on energy efficiency, it is important that differing aims support each other. For example, providing incentives for consumers to insulate their existing homes should be backed up with tighter building standards guiding new and refurbished homes.

Ensure government acts as an exemplar. The coalition government's early announcement of a 10% cut in energy use for central government was useful in sending a signal about intent. Central government alone spans some 8,000 buildings and spends £195m on energy annually. By setting specific public targets to achieve, government should act as a clear case study for businesses and consumers on how to start delivering on the issue. This should also feed into procurement policy, to enforce wider involvement of other stakeholders.

Promote policy consistency ahead of constant reform. "In terms of carbon policy, the UK has a fantastic record of innovating in real ways, but it's also a disaster, as it keeps changing all the time," says Professor Leach. The CRC is an easy candidate to identify here, given unexpected policy U-turns, as well as changes in feed-in tariffs. "CRC has been a very positive piece of legislation in terms of efficiency, but in terms of the confidence of business [in how it has changed] it's been a real step back," says Mr Emiroglu. Rapid change does not drive investment confidence.

About the research.

Encourage competition. One aspect of the CRC that helped facilitate great interest in the scheme was its league table, which ranks participants and therefore fosters competition between them. “You can almost imagine the boardroom discussion at a major retailer saying ‘I don’t care what it takes, we can’t be beaten by a rival retailer’,” notes Mr Cockshott. As the CRC scheme has become more complex, this competitive aspect has lost much of its lustre, but competitions still hold a fundamental appeal. The Carbon Trust’s Mr Jones highlights successes by firms such as the Capita Group, which ran internal league tables showing comparative performance on energy use, to foster competitive action.

Improve education and raise awareness. Although a growing number of both consumers and businesses are increasingly comfortable with energy efficiency issues, a far greater number are struggling to come to terms with what it means, what is important to focus on, and whom to believe. “Consciousness needs to be raised. We need to help wake people up and guide them,” says Mr Leiper. “People need to understand that energy is a scarce resource. For most people it’s not and there’s massive education necessary.”

Add an annual impetus, especially for business, to promote long-term efforts. Tackling climate change is a marathon, not a sprint. Achieving the UK’s goals on energy use will require ongoing, long-term change, rather than one-off efforts. Policies should require firms to reconsider the issue each year, rather than simply hitting one-off targets. “Make an annual impetus to make businesses think continuously about these things,” says Mr Emiroglu.

The Green Deal in focus

The majority of these principles play out in the case of the proposed Green Deal, which is the coalition government’s flagship policy relating to energy efficiency. There is widespread enthusiasm about the principles of the deal, which would enable consumers and small businesses to improve the energy efficiency of their homes without having to front up the money. The private sector would be expected to cover the payment, which is recouped via the home’s energy bills. Any expected savings must be equal to or greater than the costs attached to the bill, which is the Green Deal’s golden rule[10].

Much can and will change as the measure is debated and refined. Nevertheless, the Green Deal’s longer-term success will hinge on a set of crucial issues that must be got right. These include:

- The financial mechanism must be designed to be able to attract capital from the financial markets, while also ensuring sufficient incentives for firms seeking to offer relevant services. The scheme must ensure sufficient scale early on in the process.
- The offer for consumers must be sufficiently compelling to attract widespread interest, while also delivering on any promised gains.
- Consumers must have complete trust in both the advice they will be offered and the suppliers that implement any work. This makes a supplier accreditation process crucial.
- The deal should not rely solely on carrots to motivate a minority of households, but also include sticks to goad the majority into action. While so-called nudge policies can be effective for easier actions, argues the Green Alliance, penalties are needed to drive tougher changes[11].

[10] The Green Deal: A summary of the government’s proposals, Department of Energy and Climate Change, 2010

[11] Bringing it home, Green Alliance, 2010

Chasing the negawatt – Energy efficiency in British homes and business: A policy perspective is a T-Systems report, written in collaboration with the Economist Intelligence Unit. It reviews current UK business and consumer perspectives on energy efficiency in order to identify the steps that need to be taken to change their behaviour.

The report is based on the following inputs:

- A survey of 259 executives with responsibility or influence over their firm’s energy policy. A range of company sizes were included: 63% had annual revenue of £100m or less, while 16% had revenue of £5bn or more. All respondents held management positions, with 53% in C-suite positions.
- A survey of 1,000 consumers across the UK with responsibility for paying the household energy bill. The sample included all regions of the UK, all adult age groups, and an even split between males and females. Of the sample, 10% were retired, 8% unemployed or unable to work, while the balance held a range of roles.
- Extensive desk research and interviews with eight experts and executives.

Our thanks are due to the following for their time and insights:

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- Matthew Sexton, Head of Corporate Social Responsibility, B&Q
- Professor Matthew Leach, University of Surrey
- Angus Wilby, Head of Energy Services, EDF Energy

Company profiles.

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