



# Cutting Britain's energy bill

making the most of product  
efficiency standards

## Executive summary

Energy bills continue to rise, driven by a near doubling of the wholesale price of gas between 2009 and 2011. The government's plan to restrain price rises by diversifying energy supply is beginning to work, but won't bring bills down before 2020.

Energy efficiency can bring bills down quickly, but the main tool to deliver efficiency, product policy, must live up to high expectations: by 2020, 42 per cent of energy bill cost reductions are expected to come from product policy, saving £158 off the average energy bill.<sup>1</sup>


However, low uptake of efficient products, delays in implementation of regulations, and inadequate measurement risk undermining these projected savings.

The most recent survey of household energy use<sup>2</sup>, examining appliance specific data for 241 typical households over the course of one year, shows that UK households are using ten per cent more energy than previous estimates had suggested.<sup>3</sup> This, alongside incomplete but indicative data about efficient appliance purchasing, suggests there is a major gap between policy assumptions and reality regarding the take up and use of efficient products.

This gap is so serious that the Committee on Climate Change recently warned that it may compromise the assumptions made about emissions reductions brought about through product policy.<sup>4</sup> That the survey exposed the growing gap between assumptions and reality reflects a basic failure to accurately measure energy use. The greater than expected energy use, in turn, reflects the very slow pace of ecodesign implementation and flawed assumptions about consumer uptake of efficient products.

The following six policy recommendations are designed to close this gap, overcoming the three major barriers to energy saving through product standards:

### Recommendations to address insufficient take-up of energy efficient products:

 introduce an efficiency feed-in tariff to increase uptake of efficient appliances in the domestic, commercial and industrial sectors


 communicate the benefits of efficient products to consumers

### Recommendations to avoid ecodesign implementation delays:

 address administrative delays in the European Commission

 push for a top runner approach to regulation

### Recommendations to overcome inadequate measurement of energy savings:

 benchmark progress to expected energy savings against market data

 expand support for energy labelling based on absolute energy use

## The implementation challenge

“Defra’s Market Transformation Programme has estimated that ecodesign could deliver net benefits of £26 billion over the period 2009-30.”

Product policy is being delivered across Europe via the EU ecodesign (2009/125/EG) and energy labelling directives (2010/30/EU), and in the UK via Defra’s Market Transformation Programme (MTP). To be effective, product policy must rapidly remove inefficient products from the market, and ensure that consumers purchase efficient products based on their long term running cost.

The ecodesign programme, which began in 2005, attempts to do this by setting minimum efficiency standards for individual product groups, including boilers, light bulbs, and white goods. Products which use too much energy, like incandescent light bulbs, are effectively banned. The energy labelling directive requires energy using or energy related products to have their energy use displayed at the point of purchase, which is intended to give consumers information about energy use which would otherwise not be readily available or comparable. Similar standards exist in other countries, such as the US ENERGY STAR and EnergyGuide programmes.

Twenty years of empirical and modelled evidence has shown that various forms of smart regulation can result in benefits that exceed the cost of compliance.<sup>5,6</sup> Defra’s Market Transformation Programme has estimated that ecodesign could deliver net benefits of £26 billion (£41 billion in benefits against a cost of £15 billion) over the period 2009-30.<sup>7</sup> An effective ecodesign programme could have even larger benefits in the long run if it is extended to cover other environmental impacts like resource use, as has been suggested.

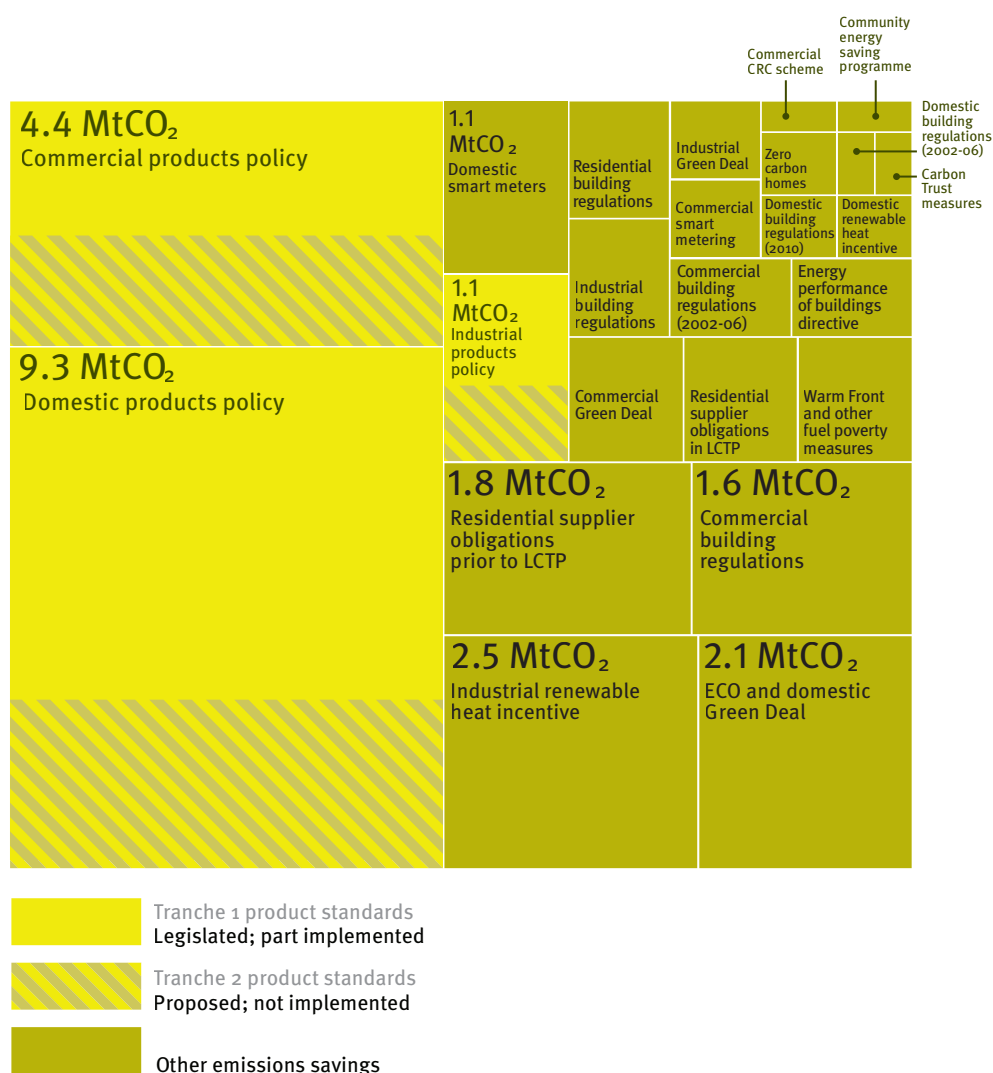
However, ecodesign is not yet delivering in practice. As *Powering the nation*, the most detailed and up-to-date survey of domestic energy use available showed, UK households are using ten per cent more energy than previous estimates had suggested.<sup>8</sup> This reflects both incorrect technological and behavioural assumptions: for example, standby modes use five per cent more energy than previously thought; we watch ten billion more hours of television than assumed; and single occupancy households use far more energy than was expected.

So why isn’t the ecodesign directive working? First, sales of energy using products are not adequately monitored, undermining the ability to assess how many efficient products are being purchased. Despite this, the most detailed data we have suggest that, domestically, we are using appliances which are 59 per cent less efficient than the best available technologies.<sup>9</sup> Although monitoring data are limited, they show that UK households are substantially less efficient than DECC’s projected savings suggested they would be by 2012.<sup>10</sup>

Second, the available evidence strongly suggests that consumers are not buying efficient appliances at the rate expected. This is not because efficient products are too expensive: they save money compared to inefficient products over the course of a product’s life. Rather, it reflects a flaw in the theory that consumers will calculate lifetime energy use and expected savings before each purchase and take an economically rational, ‘least lifetime cost’ purchasing decision. In reality, hassle, insufficient information, and a host of other factors prevent economically rational decisions being taken. As a result, we estimate that only 70 per cent of the savings from already implemented product policy will be possible by 2020.

Third, implementation of ecodesign regulation is beset by delays, so even this level of saving may not be realised. The UK is relying on product policy to deliver 51 per cent of CO<sub>2</sub> emissions savings expected from energy efficiency: 14.8 MtCO<sub>2</sub> per year by 2020. But with just eight years until 2020, only 13 out of 25 products in the first tranche of eligible products have had regulations applied to them.<sup>11</sup>

Figure 1: projected demand side carbon savings by 2020

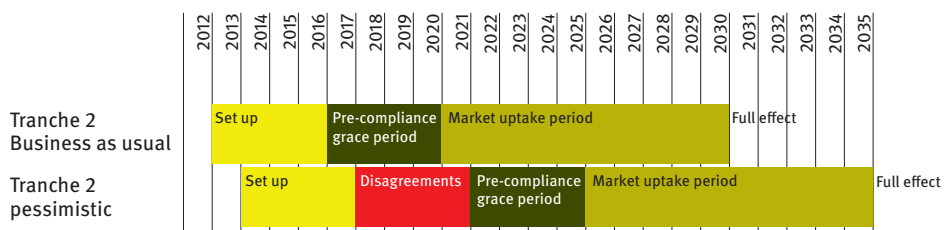


No regulations for products in the second tranche are currently in place, meaning that 5.5 MtCO<sub>2</sub> of future savings may not be delivered. These at-risk savings are 34 per cent larger than those expected to be delivered by the Green Deal (3 MtCO<sub>2</sub>), and the installation of smart meters (1.1 MtCO<sub>2</sub>) combined.<sup>12</sup>

“At-risk savings from the second tranche of product policy are 34% larger than savings from the Green Deal and smart meters combined.”

Delays occur in setting up ecodesign regulations as well, meaning that it takes around 20 years for efficient products to be fully deployed to the market.

Figure 2: sources of delay in second tranche ecodesign implementation



On average, it takes four years to set up a regulation and producers usually have three to five years before they have to fully comply with it. Overall, it takes between seven and nine years for a regulation to come into force.<sup>13</sup> On top of this, stakeholder disagreements mean that critical products may be delayed further: for example, boiler regulations are four years behind schedule<sup>14</sup>. Even when a regulation is in place, the rate at which efficient products are purchased may mean that market transformation takes between ten and fifteen years.<sup>15</sup>

Taken together, delays in regulation put 31 per cent of the domestic sector's potential product policy savings at risk (9.3 MtCO<sub>2</sub>). In the commercial and industrial sectors potential savings are lower at 15 per cent (4.4 MtCO<sub>2</sub>) and three per cent (1.1 MtCO<sub>2</sub>), but there is little available information on the extent to which uptake is occurring. These losses in expected savings are on top of those due to low uptake of efficient products identified above.

A shortfall in the delivery of efficient products has knock-on effects on a number of other interconnected demand and supply side policies.<sup>16</sup> For example, DECC's calculation for product policy savings is contingent on eight per cent of energy in 2020 coming from renewables.<sup>17</sup> Public support to continue to build renewables is partly contingent on product policy's impact on reducing household energy bills.<sup>18</sup> On the demand side, behaviour change promoted by smart metering will be complemented by more efficient products.<sup>19</sup> And reducing demand also indirectly reduces energy prices: every pound of energy saving may save a further pound by reducing prices.<sup>20</sup> Thus, a shortfall in efficiency savings expected from product policy is likely to affect other emissions and cost savings across the energy system more than our estimate suggests.

## Realising the directive's ambition

2012 marks the beginning of a review and potential revision of the ecodesign directive, during which both the European Commission and the European Parliament will debate its role, and address whether the directive should be extended to other products and non-energy environmental impacts. Three of our recommendations are, therefore, EU focused and have been developed through our work with the Europe-wide Coolproducts consortium of NGOs.

Effective implementation of ecodesign will also need revisions to UK policy. The energy bill passing through parliament over the next year and the development of the Energy Efficiency Deployment Office's national energy saving strategy, expected by the end of the year, mean that there are real opportunities for reform within the UK.

Our recommendations seek to address the three barriers to a better ecodesign programme identified above: inadequate measurement of savings, insufficient take-up of efficient products, and implementation delays in ecodesign and labelling.

### Addressing inadequate measurement of energy savings



#### Benchmark progress against market data

According to the Committee on Climate Change's (CCC's) analysis of 2009 sales of efficient products, A++ rated cold appliances – mainly fridges and freezers – made up only one per cent of the total stock; A++ rated wet appliances, such as dishwashers and washing machines, made up only 8.2 per cent. To be on track to meet expected 2020 energy savings, by 2013 we need to increase these appliances' market share to 18 and 53 per cent respectively.<sup>21</sup>

Tracking of these two product categories since 2009 showed an eight per cent decline in UK sales of wet and cold appliances. By 2011, sales had fallen so far below forecasts that the CCC stated that there was a risk of "forgoing abatement opportunities" and the cost savings that these would deliver.<sup>22</sup>

Despite the growing awareness of lagging market penetration, DECC failed to monitor sales for all but two product categories and, by 2011, data were not being kept for these as well. Market data have previously been collected by Growth from Knowledge (GfK), a global market research firm who compile data on EU appliance sales. But, as the CCC has noted, this has not been done systematically or with the evaluation of product policy in mind.

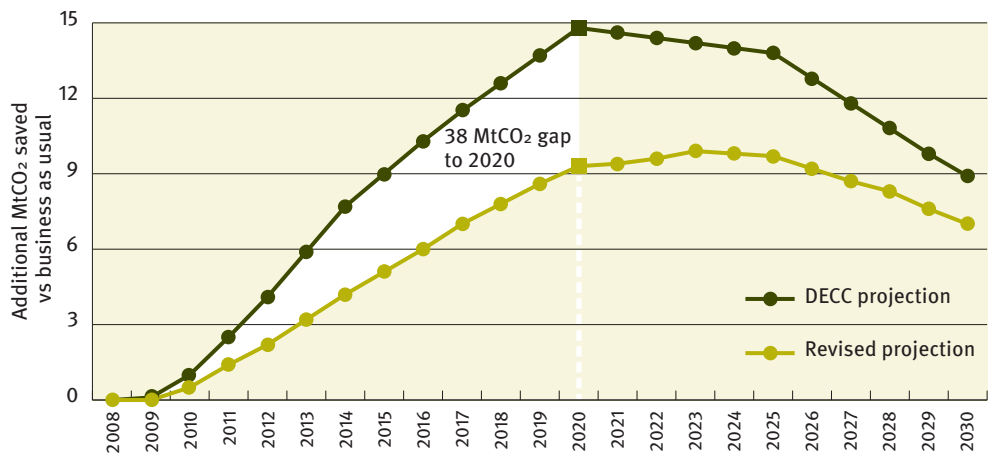
DECC's energy and emissions savings projections for product policy in 2020 are based on Defra's impact assessments. These make assumptions about the level of sales which have not been factored down as sales have fallen.<sup>23</sup>

Delays in the implementation of regulation itself also push back the availability of efficient appliances. DECC impact assessment forecasts for emissions reductions don't take account of delays at European Commission level. This is set to change when new product policy impact assessments take place, and existing products' impact assessments will be revised when EU level regulations are revised.<sup>25</sup> However, this severely undermines DECC's savings projections.

“Lower sales and delayed implementation create an emissions – and cost – savings gap. Cumulative savings could be 40 per cent lower than forecast”

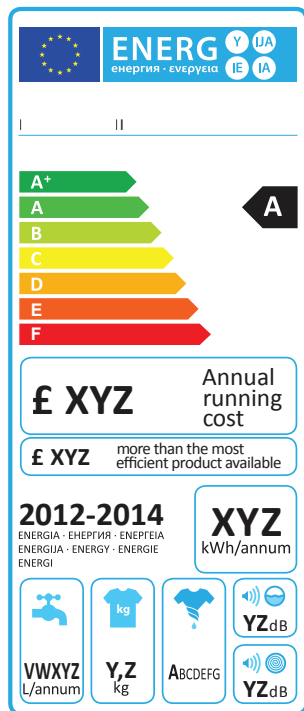
Lower sales and delayed implementation create an emissions – and cost – savings gap, as shown in Figure 3. By 2020, cumulative savings could be 40 per cent lower than forecast.

Figure 3: the emission savings gap<sup>24</sup>



**Recommendation:** The government should set up a ‘Pathway to 2020’ progress indicator for product policy, based on appliance sales, to mirror the indicators the CCC produces for a range of other policy areas. This would provide a means to understand progress, and could act as a trigger to adjust the level of an efficiency feed-in tariff which supports efficient product uptake, as outlined on page 9 and in our policy insight *Decarbonisation on the cheap: how an electricity efficiency feed-in tariff can cut energy costs* (Green Alliance, October 2011). The end result will be a more realistic prospect of achieving expected savings by 2020. This could be achieved by collecting data on a national scale, or better, as an EU-wide initiative.

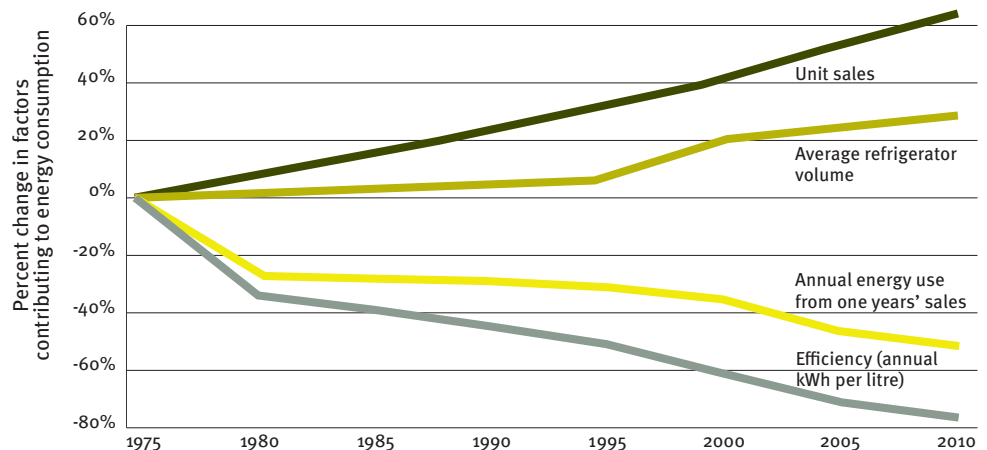
Figure 4: an example of an improved energy label



### Expand support for energy labelling based on absolute energy use

Efficiency gains have been partially offset by a trend toward consumers buying larger and more products.<sup>26</sup> For example, within the EU, it has been estimated that, since 1975, refrigerators have increased their efficiency by 25 per cent. At the same time, the total number has risen 50 per cent and they are on average 30 per cent larger.<sup>27</sup>

Figure 5: achievements in EU refrigerator efficiency



Current product labelling only provides consumers with information on relative efficiency, measured in energy use per litre or square centimetre, rather than total energy use. This means that large and higher energy consuming products that are efficient in their range, as is the case with the refrigerators in figure 5<sup>28</sup>, may appear to be better than lower energy using, but less efficient products. To reduce the risk of consumers being confused or misled by product labelling, and accidentally choosing more energy intensive products, the annual absolute energy comparison should be more prominently used to rank and compare products. The energy label in figure 4 suggests one way to do this, using expected annual cost as the most relevant comparator.

Defra has shown support for this. In June this year, as the European Commission entered into negotiations on the design and labelling of boilers and water heaters, last minute industry lobbying threatened to weaken the regulations. The UK was one of a small number of member states which reached a compromise: the current labelling system will remain up to 2017, on the condition that the label also features absolute efficiency.<sup>29</sup>

**Recommendation:** Absolute labelling works best if applied to all products and categories, as this enables direct comparison between product types. Comprehensive implementation of absolute energy labelling should be introduced. The label should also show the gap between the product in question and the most efficient comparable product available.<sup>30</sup> UK representation in the EU should continue to support absolute energy labelling for all products.



## Increasing take-up of efficient products



### Introduce an efficiency feed-in tariff for domestic, commercial and industrial sectors

#### The domestic sector

The most efficient products can often be the most expensive to purchase. However, over the course of product lifetimes, the savings that accrue from using less energy meet or exceed the initial high upfront cost.<sup>31</sup> Even so, upfront price is a real barrier preventing consumers from buying efficient products and lifetime costs are seldom presented at the point of purchase.

The CCC's progress reports have consistently noted that further policies might be necessary to ensure required levels of market penetration are achieved. In the US, the ENERGY STAR product standards scheme operates alongside rebate programmes to maximise uptake. Similarly, a tax credit instituted in Italy in 2006 encourages the take-up of efficient appliances.

#### Italian tax credit for efficient appliances<sup>32</sup>

Legislation introduced in 2006 allows consumers who purchase A+ or A++ rated cold appliances to claim a tax rebate of 20 per cent of the initial product price, to a maximum value of €200. The credit is deducted from income tax when proof of purchase is shown, alongside proof that the old appliance has been disposed of in a suitable environmentally friendly way.

“In the UK, an efficiency feed-in tariff would provide the best means of incentivising efficient products.”

A key aspect of the Italian scheme is that the fiscal incentive is dependent upon proof of disposal of the replaced model. This ensures that an indirect rebound, where consumers continue to run the old appliance as a secondary refrigerator, does not compromise energy savings.

**Recommendation:** In the context of the UK market, an efficiency feed-in tariff (FIT), modelled on US standard offer programmes, would provide the best means of incentivising efficient products, see *Decarbonisation on the cheap: how an electricity efficiency feed-in tariff can cut energy costs* (Green Alliance, October 2011). The government should introduce an efficiency FIT open to appliance replacement programmes for domestic consumers via the energy bill. In doing so, it should apply the lessons of the Italian tax credit scheme to minimise indirect rebound.

#### The industrial and commercial sectors

Though the majority of product policy savings are expected to come from the domestic sector, 18 per cent are expected to come from the commercial and industrial sector. These sectors together use 30 per cent of final energy demand, compared to the domestic sectors' 32 per cent.<sup>33</sup>

Since 2001 the commercial and industrial sector's move toward more efficient technologies has been supported via the enhanced capital allowance (ECA) scheme which offers a corporation tax break to offset the cost of purchasing more efficient products. However, awareness of the ECA is not high: only 50 per cent of businesses surveyed in 2008 knew it existed.<sup>34</sup> Indeed, SME take up of ECAs is as low as five per cent, and only two per cent of SMEs used ECAs for energy efficiency measures.<sup>35</sup>

This reflects two problems. First, ECAs fail to adequately support the purchasing patterns of SMEs, which are often based on hire purchase or leasing of plant equipment. Currently ECAs offer lessors only 25 per cent of the cost of the investment back.<sup>36</sup>

“More than ten per cent of potential energy savings that could come from more efficient products are currently being lost.”

Second, it appears that companies not aware of the scheme made similar purchasing decisions to companies which are. This suggests that ECAs are not providing an incentive to increase uptake of efficient technology. This reflects the low visibility of efficiency to ordinary businesses; the problem of financing, as opposed to cost-effectiveness; and other barriers to efficiency as we have outlined in *Decarbonisation on the cheap*.

**Recommendation:** Given the limited impact of the ECA, an efficiency FIT for relevant products should be extended to commercial and industrial electricity consumers. By rewarding specialist efficiency companies, which focus specifically on promoting energy efficiency, this scheme would encourage innovation to address the financing, awareness, and behavioural barriers which prevent greater uptake of efficient products.



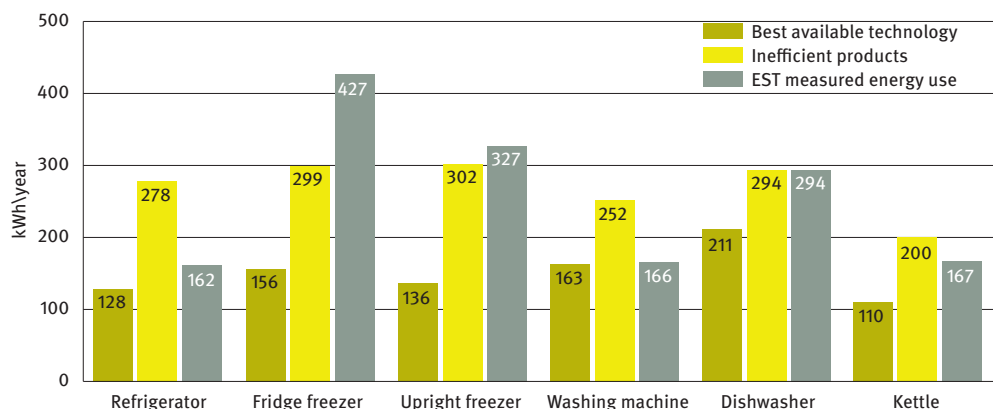
### Communicate the benefits of efficient products

Ecodesign has a poor image in the UK. Since the directive came into force in 2005, it has predominantly been portrayed as another unwelcome EU imposition.<sup>37</sup> Negative headlines such as ‘How many Eurocrats does it take to change a lightbulb?’ haven’t helped.<sup>38</sup>

Despite this, recent Consumer Focus research on public understanding of the Green Deal shows that there is considerable public interest in energy efficiency measures, mainly led by the prospect of cost savings.<sup>39</sup> However, even amongst energy aware consumers, this interest has not translated into purchasing efficient appliances.

The Energy Saving Trust’s *Powering the nation* report provides a partial insight into the degree to which efficient products have been taken up by consumers. The authors carried out a ‘what if’ scenario, in which they recalculate recorded energy use as if householders were using the most efficient appliances currently available. Per household it was estimated that annual energy use could be reduced by 491-677 kWh per year. At current energy prices this would result in an £67- £93 decrease in domestic energy bills.<sup>40</sup>

Figure 6: theoretical and measured energy use of different products



Efficient products only save energy if they are also used in an efficient manner. The Energy Saving Trust also measured actual energy use, displayed in grey on the chart above.<sup>41</sup> It reveals that washing machines’ measured energy use is close to the performance of the most efficient products, which may reflect consistent and clear consumer advice to wash clothes at 30°C rather than exclusive use of the most efficient washing machines. However, fridge freezers’ energy use actually exceeds that of the least efficient products, which may have a number of explanations, such as usage habits.

“If householders were using the most efficient appliances available this would result in a £67-£93 decrease in energy bills.”

**Recommendation:** The government should capitalise on public interest by engaging a consumer rights organisation in a nationwide communications campaign to highlight the cost savings that the most efficient products offer and the relationship between efficient behaviour and energy use. This was proposed in Green Alliance's report, *Neither sermons nor silence: the case for national communications on energy use* (Green Alliance, May 2012)<sup>42</sup>, which showed that civil society organisations are the most trusted authorities to communicate messages impartially.

A public information campaign would be much more effective if it were connected to an incentive. The government has recently recognised this and announced that it will accompany the launch of the Green Deal with a communications campaign. A similar approach to publicising the value of efficiency and the availability of an efficiency FIT would maximise the uptake of efficient products.

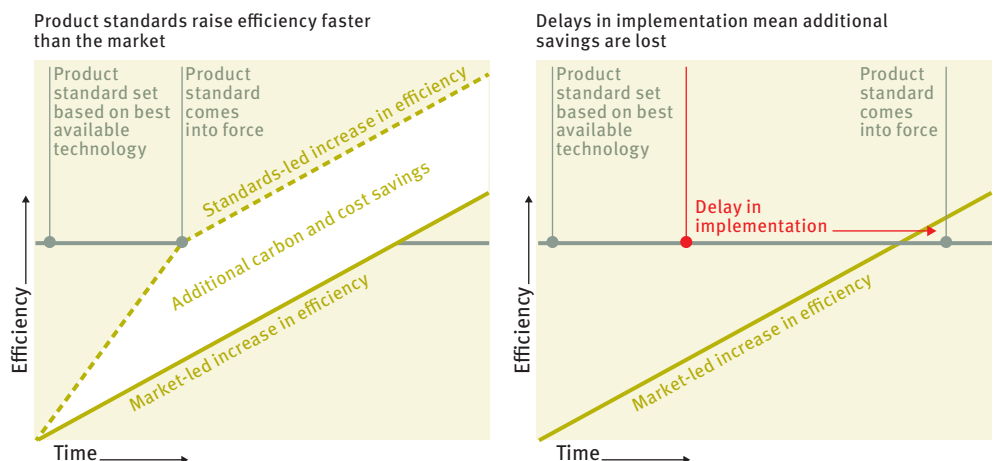
## Avoiding delays in ecodesign implementation



### Address administrative delays in the European Commission

Product policy is driven by the EU but it has been very slow in getting agreement to bring regulations into force. Delays between setting standards and implementation can result in a vicious circle in which product data become obsolete, with the result that the requirements set in the regulation are superseded by industry improvements. As shown in the graphs below, this means that standards no longer force manufacturers to become more efficient faster than they otherwise would have done. Defra has admitted that these administrative delays compromise the success of its Market Transformation Programme.<sup>43</sup>

Figure 7: how delays to product standards undermine their value





The UK has a track record of tackling implementation problems, best exemplified by its role in the EU-wide Ecopliant programme. This programme seeks to address problems in implementing testing of energy saving products: because of limited resources for testing at EU level, only 800–1,400 of the billions of product shipments across the EU are tested. This means that sub-standard products are simply not discovered. It is estimated that more than ten per cent of potential energy savings that could come from more efficient products are currently being lost.<sup>44</sup>

The Ecopliant scheme, led by Defra, will centralise testing to increase its cost-effectiveness and raise compliance levels with ecodesign regulations.

**Recommendation:** The UK should build on the leadership it has demonstrated through the Ecopliant scheme to address implementation delays. Clear deadlines should be a first step. This would provide stakeholders with a signal as to when negotiations will take place, allowing organisations to align their resources accordingly.<sup>45</sup> The Commission's future timetable is vague, meaning that affected stakeholders have to react to, rather than anticipate, negotiations. With a clear timetable, preliminary negotiations between key stakeholders could take place, helping to make positions clear prior to Commission level discussion at the ecodesign Consultation Forum.<sup>46</sup>



### Push for a top runner approach to regulation

Even if administrative burdens are reduced, it is likely that the current process will continue to be slow, meaning that final regulations will fail to set standards consistent with the best available technology. For example, there are already washing machines that exceed the A+++ rating by 20 per cent.<sup>47</sup>

A smarter approach would be to automatically set the best available technology as the minimum standard for the future, as is done in Japan's 'top runner' programme. Such a dynamic standard directly reflects technological progress to ensure that the regulation remains up to date. The top runner approach also reduces the administrative burden of consultation and negotiation, increases the predictability of new standards, and rewards competitive innovation.

Japan has had a top runner programme since 1998 and has implemented standards for 21 product categories. Once implemented, standards are updated at a considerably faster rate than in the EU: in fact, standards for most Japanese products have been updated twice.<sup>48</sup> This accelerates technological innovation and reduces bureaucratic burden.

**Recommendation:** There is already interest in a best available technology, or top runner, approach.<sup>49</sup> To capitalise on this, Defra should undertake research into the potential costs and benefits of an EC top runner approach to product policy, and compare this with the feasibility of the regular updating which the current approach would require.

## Making the most of product policy

“Without action, at least 40 per cent of projected electricity savings risk not being achieved.”

Product policy is a politically proven means of achieving dramatic cost and carbon savings: UK condensing boiler standards currently save consumers £800 million per year.<sup>50</sup> Unfortunately, the profile and the resources devoted to the EU ecodesign programme do not match its potential to reduce consumer bills. Without action, at least 40 per cent of the projected electricity savings risk not being achieved. This shortfall could dramatically compromise other demand and supply side policies in the UK.

To capitalise on what ecodesign can offer in the short term, the UK needs to exploit its leadership position to speed up the implementation of standards and address administrative delays in the European Commission. In the UK, we need to introduce an efficiency FIT and an associated public communications programme to increase uptake of efficient products so that consumers can reap the benefits of reduced energy bills.

In the medium term, much more needs to be done to ensure that ecodesign continues to deliver in a less bureaucratic and more understandable manner. This can be achieved by introducing a top runner approach to regulation, and by introducing absolute energy labelling.

In the longer term, a cost effective and robust ecodesign directive should be extended to a much wider range of products and environmental impacts like water use, resource use, and hazardous materials. Doing so would maximise the value of a proven policy tool, and enable the UK and EU to reduce their environmental impact while increasing resilience to high and volatile resource prices.

## Endnotes

- <sup>1</sup> DECC, 2011, 'Estimated impact of energy and climate change policies on average household energy bills in year 2020'
- <sup>2</sup> Energy Saving Trust, 2012, *Powering the nation: household electricity-using habits revealed*
- <sup>3</sup> Typical households are assumed to use 3,300 kWh of electricity per year, based on Ofgem analysis of median electricity use. However, *Powering the nation* households used 3,638 kWh per year on average, suggesting that assumptions about 'typical' use may be unduly low. Although the *Powering the nation* figures are for owner occupied homes, which tend to be wealthier and therefore may have higher energy use than median households, they self-reported as being 'energy aware.' They may therefore use lower amounts of energy than normal, unaware households. In addition, owner-occupied households do not face the split incentive problem: they fully benefit from efficient appliances, unlike homes in which the landlord bears the upfront cost of appliances, while the tenant pays the running cost
- <sup>4</sup> Committee on Climate Change, 2012, *Meeting carbon budgets – 2012 progress report to parliament*
- <sup>5</sup> M Porter & P Van der Linde, 1995, 'Toward a new conception of the environment competitiveness relationship', *Journal of economic perspective*, Vol 9, Iss 4
- <sup>6</sup> S Ambec, M Cohen, S Elgle, P Lanole et al, 2011, 'The Porter Hypothesis at 20', *Resources for the future*. Paper presented at the Eighth Annual Hans Landsberg Memorial Lecture
- <sup>7</sup> Defra, 2009, *Saving energy through better appliances*
- <sup>8</sup> See endnote 3 for details about this calculation
- <sup>9</sup> Calculated by comparing best available technology for energy saving products from 'Top 10' data compared to Energy Saving Trust average annual consumption data
- <sup>10</sup> Committee on Climate Change, 2012, *Meeting carbon budgets – 2012 progress report to parliament*
- <sup>11</sup> DECC's savings projections are not based on the assumption that all 24 product categories have been put into force. Projections for the first tranche of products are calculated using the original impact assessments carried out by the Market Transformation Programme. Tranche two's savings are calculated using modelling, and can be found in: Defra, 2009, *Saving energy through better products and appliances*
- <sup>12</sup> DECC, 2011, Annex G of DECC's updated energy and emissions projections
- <sup>13</sup> ECOS, EEB, FOEE, WWF, Inforse, CAN Europe, 2011, *The EU ecodesign directive: how to better fulfil its potential?*
- <sup>14</sup> Coolproducts, 2010, *Ecodesign in practice: potential and delivery of EU ecodesign measures*
- <sup>15</sup> Based on estimates of the life cycle of products
- <sup>16</sup> P Ekins, F Kesicki, 2012, 'Marginal abatement cost curves: a call for caution', *Climate policy*, Vol 12, Iss 2
- <sup>17</sup> DECC, 2011, Annex C of DECC's updated energy and emissions projections
- <sup>18</sup> DECC, 2011, 'Estimated impact of energy and climate change policies on average household energy bills in 2020'
- <sup>19</sup> Smart meter and Green Deal impact assessments are based on the following assumption: "The business as usual energy consumption accounts already for the reduced energy consumption levels as a result of the impact of the following policies: EEC1, EEC2, CERT, Product Regulations, Building Regulations and Warm Front and fuel poverty policies"
- <sup>20</sup> For every euro of energy savings, an additional euro could be saved due to lower energy prices. Ecofys, 2012, *Saving energy: bringing down Europe's energy prices*
- <sup>21</sup> Committee on Climate Change, 2012, *Meeting carbon budgets – 2012 progress report to parliament*
- <sup>22</sup> Committee on Climate Change, 2009-12, *annual carbon budget progress reports*
- <sup>23</sup> BIS, 2012, *Impact assessment library*, various product impact assessments

- <sup>24</sup> This was calculated by reducing savings by 30 per cent to represent reduced domestic and commercial uptake, below the levels recorded by the CCC for wet and cold appliances, and 20 per cent to represent reduced industrial uptake; and by delaying the start of tranche two savings to 2013. Original data from: DECC, 2011, Annex G of DECC's updated energy and emissions projections
- <sup>25</sup> Defra, Sustainable Energy Using Products team, private correspondence
- <sup>26</sup> European Council for an energy efficient economy, 2012, *Workshop summary: is efficient sufficient?*
- <sup>27</sup> P Bertoldi, B Atanasiu, 2007, *Electricity consumption and efficiency trends in the enlarged European Union – status report 2006*
- <sup>28</sup> Ibid
- <sup>29</sup> Coolproducts, 2012, 'Last minute industry lobbying takes the steam out of boilers regulation', blog entry
- <sup>30</sup> D Jepsen, L Sprengler, N Reintjes, F Rubik, T Schomerus, 2011, *Product-related top runner approach at EU level – concept paper*, Federal Ministry of the Environment, Nature Conservation and Nuclear Safety
- <sup>31</sup> Coolproducts, 2010, *Ecodesign in practice: potential and delivery of EU ecodesign measures*
- <sup>32</sup> BioIntelligence Service on behalf of the European Commission, 2008, *A study on the cost and benefits associated with the use of tax incentives to promote the manufacturing of more and better energy-efficient appliances and equipment and the consumer purchasing of these products*
- <sup>33</sup> Including transport, see: EEDO, 2012, *Evidence brief*
- <sup>34</sup> HMRC, HMT, DEFRA, 2008, *Evaluation of enhanced capital allowance (ECA) for energy saving technologies*
- <sup>35</sup> Centre for Business Research, 2007, *Financing UK small and medium sized enterprises*, University of Cambridge
- <sup>36</sup> Is4Profit, 2008, 'A third of SMEs unaware of ECAs'
- <sup>37</sup> LexisNexis media database, 65 per cent of stories appeared negative. Search parameters: since 2005, search term "ecodesign\*" or "eco-design\*"
- <sup>38</sup> J Ingham, 22 February 2012, *The Daily Express*, p 4
- <sup>39</sup> Consumer Focus, 2012, *Using the benefits of energy efficiency to overcome the barriers*
- <sup>40</sup> Based on average electricity bills from: DECC, 2012, *Quarterly energy prices*
- <sup>41</sup> Chart data from product data figures from [www.topten.ch](http://www.topten.ch) and Energy Saving Trust, 2012, *Powering the nation: household electricity-using habits revealed*
- <sup>42</sup> R Phillips, F Scott, May 2012, *Neither sermons nor silence: the case for national communications on energy use*, Green Alliance
- <sup>43</sup> Databuild Ltd on behalf of Defra, 2012, *Evaluation of the Market Transformation Programme*
- <sup>44</sup> Centre for Strategy & Evaluation Services, 2012, *Evaluation of the ecodesign directive*
- <sup>45</sup> European Environmental Bureau, 2012, *Priorities for the improvement of the EU ecodesign and energy labelling policies*, position paper
- <sup>46</sup> Ibid
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#### **Green Alliance**

Green Alliance is a charity and independent think tank focused on effective leadership for the environment. We have a track record of over 30 years working with the most influential leaders from the political, NGO and business communities. Our work generates new thinking and dialogue, and has increased political support and action for ambitious environmental solutions in the UK.

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