

# Time to reconsider UK energy and fuel poverty policies?

**Viewpoint**  
Informing debate

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The Climate Change Act 2008 committed the UK to ambitious and legally binding greenhouse gas emissions reduction targets over the next 40 years. While moving to a low carbon society will have obvious environmental benefits, concerns remain over whether it can co-exist with a socially just approach that seeks to protect low-income consumers from higher energy bills. More consideration of the possible consequences of unbalanced social and environmental objectives is now required.

## Key points

- Energy price rises since 2003 have increased fuel poverty levels to over 5 million households in the UK.
- Ending funding for Government programmes (e.g. Warm Front) means all future energy efficiency programmes will be paid for by regressive levies on domestic energy bills which penalise financially disadvantaged households.
- The forthcoming Energy Company Obligation (ECO) is one of several policy areas where tensions between environmental and social objectives exist. The current intention appears to be that it will fund both fuel poverty programmes and improvements to hard-to-treat dwellings. However, targeting hard-to-treat properties occupied by the most financially disadvantaged would be the most equitable use of resources allocated through ECO.
- Future energy policy can only contribute to a socially just transition to a low carbon society if households experiencing fuel poverty are given the resources to reduce their energy demand and can heat their homes to a satisfactory standard at an affordable cost at the same time.
- Mitigating the impact on financially disadvantaged households while ensuring equal access to the benefits of energy-efficient policies should be a key element of the transition to a low carbon economy and society.

## Authors

Helen Stockton and Ron Campbell,  
National Energy Action.

This paper aims to inform the energy and social justice debate by exploring how UK energy and fuel poverty policy can contribute towards a socially just transition to a low carbon society. Before beginning to consider how this could be achieved it is necessary to examine why this question is important.

Fuel poverty has long been recognised as a social ill amongst anti-poverty campaigners and academics and there were tentative policy initiatives to assist financially disadvantaged households through programmes such as the Home Energy Efficiency Scheme (subsequently Warm Front) in 1991. But the issue did not achieve full recognition until the introduction of the Warm Homes and Energy Conservation Act in 2000, followed by the UK Fuel Poverty Strategy in 2001, which officially defined fuel poverty and confirmed it as a distinct social problem rather than as a sub-set of general income poverty. The Warm Homes and Energy Conservation Act required the Government to prepare a strategy for the eradication of fuel poverty in the UK. Legally binding targets were set to ensure that 'as far as is practicable no persons should live in fuel poverty' within a fifteen-year period of the legislation being enacted. The subsequent UK Fuel Poverty Strategy emphasised how energy efficiency would be the primary means to address fuel poverty.

Significant progress was made after publication of the UK Fuel Poverty Strategy. Between 1996 and 2004, the scale of fuel poverty in England fell from 5.1 million households to 1.2 million households. However, since 2004 the rising cost of domestic energy has seen fuel poverty in England increase dramatically to affect more than 5 million households. We are told that the era of 'cheap energy' is over, and all projections suggest continuing upward trends in energy costs. In this context the Government has commissioned a review of fuel poverty targets and definitions. The Hills Fuel Poverty Review published interim findings in October 2011, prior to reporting final conclusions to Government in early 2012.

In addition to the commitment to eradicate fuel poverty, the Government has set itself a number of climate change and carbon emissions reductions challenges. These commitments are set out in the Climate Change Act 2008 which imposes a legally binding obligation on the UK Government to reduce greenhouse gas (GHG) emissions by 34 per cent by 2020 and by 80 per cent by 2050, taking 1990 emission levels as the base. In addition, the UK's Fourth Carbon Budget published in April 2011 states that during the period 2023–27 the UK must achieve a 50 per cent reduction in carbon emissions on 1990 levels.

Policies to reduce emissions are primarily focused on the three areas responsible for approximately 80 per cent of emissions: electricity generation; heating for homes and business; and transport fuels. Whilst policies developed in all of these areas will impact on all sectors of society, this paper will focus on how developments in the way we generate electricity and heat and power our homes will affect financially disadvantaged households experiencing fuel poverty.

In order to achieve the UK's ambitious carbon reduction targets, a wide range of energy policies have been developed or are currently in development. The most relevant to this paper is the proposed introduction of the Green Deal which is intended to radically overhaul energy efficiency standards across the British housing stock. The Green Deal is the centrepiece of the current Energy Bill and will introduce a finance mechanism allowing households to benefit from energy efficiency measures at no upfront cost. The Green Deal finance arrangement differs from that of a conventional loan repaid by the borrower in that the charge will be attached to the property and repayments made through the electricity bill. Green Deal finance arrangements are to be underpinned by operation of a 'Golden Rule', the principle that the cost of repayment of any charge should be lower than the financial savings resulting from the energy efficiency improvements. Responsibility for repayment of the charge will pass to future occupants of the property whether tenants or owner occupiers.

The Green Deal mechanism will be supplemented by a new ECO which will represent the only measures-based fuel poverty programme in England when the Exchequer-funded Warm Front scheme terminates in March 2013. As with predecessor programmes such as the current Carbon Emissions Reduction Target (CERT) and the Community Energy Saving Programme (CESP) the ECO will be funded through levies on domestic energy bills. Two other programmes should be considered briefly at this point: Feed-in Tariffs (FiTs) introduced to stimulate the market in renewable electricity generation, and the Renewable Heat Incentive (RHI) intended to promote increased use of sustainable heating. The FiT and the RHI will reward small-scale generation of renewable electricity and heat, including that generated in the domestic sector. However, while the FiT will be funded through an additional levy on consumer bills, the Renewable Heat Incentive is to be funded through HM Treasury.

Whilst there are unquestionably compelling arguments for carbon emission reduction programmes there is also disquiet over the potential detriment to low-income and vulnerable consumers as a result of how these initiatives are generally funded. Concerns do not simply focus on the regressive impact of uniform levies on consumer bills but also on the lack of parity between social and environmental objectives. The innate injustice of a regressive funding mechanism is compounded by lack of equal access to the potential benefits. The Government asserts that the impact of climate change policies on low-income households will be outweighed by the introduction of energy efficiency programmes targeted, at least in part, on low-income households. However, it is unclear what mechanism could help ensure that financially disadvantaged households in hard-to-treat housing, off the mains gas network and/or occupying properties with solid walls also benefit from existing and proposed programmes.

The Committee on Climate Change's advice to Government on the Fourth Carbon Budget acknowledged that energy price rises post-2008 had increased fuel poverty levels and that significantly more households would be in fuel poverty by 2020 than was previously envisaged. The Committee on Climate Change emphasises that rising fuel poverty will not be a consequence of meeting carbon budgets; nevertheless some difficult questions remain unanswered; the most important concern the extent to which carbon abatement policies contribute to increased fuel poverty and, crucially, what can be done to mitigate these negative impacts.

The Department of Energy and Climate Change (DECC) estimates that existing levies supporting a range of Government policies to address climate change, enhance energy security, secure investment in new infrastructure, and tackle fuel-poverty through targeted energy efficiency measures currently add £88 to the average domestic energy bill. Forecasts estimate these charges will increase to £160 by 2020.

A crucial social justice issue is access to measures that require capital investment. Clearly households experiencing fuel poverty require financial support if they are to achieve affordable warmth. Therefore, the focus of this paper is on energy and fuel poverty policies which deliver energy savings, rather than income supplements such as the new Warm Home Discount Scheme, Winter Fuel Payments and the Cold Weather Payment. This paper will consider social justice issues in the context of current and future energy policy, primarily through discussion of the ability of financially disadvantaged households to derive equal benefit from carbon reduction programmes and, crucially, the need to avoid perpetuating or exacerbating their disadvantage. There will be an assessment of historic, current and future energy and fuel poverty policy in relation to their outcomes for social justice. In conclusion, a series of recommendations will be made on how the design and implementation of programmes can ensure that equity is a fundamental prerequisite of future energy policy decisions.

## Fuel poverty and climate change

Fuel poverty occurs where households are required to spend in excess of 10 per cent of their household income on heating and powering their home to a satisfactory standard. The heating standard adopted is defined as one that is sufficient to maintain the health and well-being of household occupants [1].

There are three key determining factors associated with fuel poverty:

- low household income;
- poor heating and insulation standards;
- high energy prices.

Whilst there appears to be limited scope for intervention on high fuel prices resulting from global market activity, action can be taken to address both low income and the poor energy efficiency standards of the housing stock. NEA has consistently maintained that, in the context of economic hardship, high fuel prices and static or potentially falling incomes, investment to improve energy efficiency standards in properties occupied by low-income households represents both the most equitable means of achieving a reduction in energy use and of protecting households from increasing energy costs. There are clear synergies between the objectives of those seeking to address fuel poverty and those concerned with climate change; indeed their objectives are often identical.

Meeting energy costs is already a considerable burden for millions of households in England. Rising fuel prices since 2003 have doubled domestic energy costs and have negated all of the gains achieved through energy efficiency programmes targeted at low-income households. With consistent year-on-year increases since 2004, fuel poverty now stands at its highest level for a decade. The number of fuel-poor households in the UK has risen from 2 million in 2004 to almost 6 million today [2]. The health and wider societal impacts of fuel poverty are well documented and too lengthy for in-depth consideration here, but it is of particular concern that at a time when fuel poverty is growing rapidly the emerging policy response is not only inadequate but, in fact, may risk adding to the scale of the problem.

By definition those most susceptible to fuel poverty are least well placed to respond and adapt to rising fuel prices through reduced consumption. It is known that fuel-poor households or low-income households generally consume less energy than more affluent households. Indeed, the poorest 10 per cent of households produce only 45 per cent of the CO<sub>2</sub> levels produced by the most affluent 10 per cent of households (Roberts, 2008). Consequently, and inevitably, policies designed to reduce carbon emissions that result in higher energy prices have a disproportionate impact on the poorest households who are also constrained by their limited access to the competitive energy market, e.g. unable to benefit from cheaper tariffs such as online Direct Debit, and their inability to reduce energy consumption.

As shown in Table 1, households experiencing fuel poverty are more likely to occupy energy inefficient homes across all tenures. The average dwelling in England has a SAP [3] rating of 53.2; however properties occupied by fuel-poor households have an average SAP rating of 43.9. On average, the most energy inefficient homes are found in the owner-occupied sector (SAP 51.4); yet the most energy inefficient homes occupied by the fuel poor are found in the private rented sector where such dwellings have an average SAP of just 40.3 compared to 42.3 for owner occupiers in fuel poverty. Such properties are more expensive to heat to an adequate standard and, as such, are often under-heated. Social sector properties are the most energy efficient; the average SAP rating amongst local authority and housing association properties is 59.7 and 62.6 respectively. Households experiencing fuel poverty in this sector also enjoy higher than average energy efficiency standards.

As shown in Table 2, households experiencing fuel poverty have higher average required fuel costs *and* lower incomes and this remains true across all tenures. Clearly these two factors increase the likelihood of such households under-heating their homes and/or incurring fuel debt; risks that can only become greater as fuel prices continue to increase.

**Table 1**

Average SAP rating of dwellings (England) by tenure [4]; (English Housing Survey, 2009)		
<b>Owner occupied</b>	All households	51.4
	<b>Fuel poor</b>	<b>42.3</b>
<b>Private rented</b>	All households	52.2
	<b>Fuel poor</b>	<b>40.3</b>
<b>Local authority</b>	All households	59.7
	<b>Fuel poor</b>	<b>52.3</b>
<b>Housing association</b>	All households	62.6
	<b>Fuel poor</b>	<b>53.4</b>
<b>All tenures</b>	All households	53.2
	<b>Fuel poor</b>	<b>43.9</b>

**Table 2**

Average fuel poverty index, annual required fuel costs and annual household income by tenure (English Housing Survey, 2009, footnote 7)		Fuel poverty index (%)	Required fuel costs (£)[1]	Household income (£)
Owner occupied	All households	6.9%	£1,423	£31,217
	<b>Fuel poor</b>	<b>17.4%</b>	<b>£1,643</b>	<b>£11,124</b>
Private rented	All households	8.4%	£1,296	£25,260
	<b>Fuel poor</b>	<b>20.9%</b>	<b>£1,659</b>	<b>£10,748</b>
Local authority	All households	8.2%	£1,085	£16,484
	<b>Fuel poor</b>	<b>14.5%</b>	<b>£1,211</b>	<b>£9,453</b>
Housing association	All households	7.3%	£1,040	£17,201
	<b>Fuel poor</b>	<b>14%</b>	<b>£1,266</b>	<b>£9,783</b>
All tenures	All households	7.3%	£1,342	£27,852
	<b>Fuel poor</b>	<b>17%</b>	<b>£1,567</b>	<b>£10,765</b>

Closer inspection reveals the interplay between the three key causes of fuel poverty. The extremes of fuel poverty are most likely to be found in the private rented sector. Households in fuel poverty in this sector, whilst they do not have the lowest average incomes, are, on average, required to spend the greatest proportion of their income (>20 per cent) to power and heat their home to a satisfactory standard. Whilst private tenants in fuel poverty have the highest required annual fuel costs, these are only slightly higher than those of owner-occupiers with the same issue. However, owner-occupiers in fuel poverty enjoy marginally higher average incomes and, on average, higher standards of energy efficiency (see Table 1).

Local authority and housing association tenants with lower average incomes than private sector households have an average FPI of 14.5 per cent and 14 per cent respectively. These results suggest social tenants occupy more energy efficient homes and that this offers some protection against the more severe degree of fuel poverty often experienced by low-income private sector households. Private sector tenants who experience lower average incomes than their owner-occupier counterparts and who, unlike social tenants, do not benefit from more energy efficient homes are at greatest risk of severe fuel poverty [5].

It should be noted that fuel poverty is currently defined as a situation where the required fuel costs of the household, rather than actual fuel spend, exceed 10 per cent of household income. This is an important feature of the current definition as it allows the ability, or indeed the inability, of the household to meet a satisfactory standard of heating to be captured. This is particularly significant since it is generally recognised that low-income or vulnerable households often under-heat their home, spending less than would be required to maintain a satisfactory heating regime. In addition, the ability of these households to respond to energy reduction advice and initiatives is as limited as their resilience to high fuel prices. In response, the energy efficiency standards of homes occupied by the fuel poor must be improved to maximise their ability to reduce energy expenditure, reduce energy and carbon consumption, and limit the impact of rising fuel prices.

As discussed, low-income households occupying the least energy efficient homes are least able to respond or adapt to rising fuel prices through reduced consumption. Understanding where these households are most likely to reside and the nature of their fuel poverty can help to ensure they have access to the benefits of improvement programmes. Understanding the multiple dimensions of fuel poverty and vulnerability, including tenure issues, will have important implications for future programmes, such as the Green Deal and ECO, helping to ensure they are appropriately designed to allow fair access across different tenure groups.

## **Equitable energy policy**

This section outlines the key energy policies aimed at carbon reduction and fuel poverty. Only policies with direct cost implications for consumers are discussed in detail – i.e. Exchequer-funded programmes such as Warm Front are not considered here. Individual policies are introduced and assessed in terms of their aims and objectives and how they relate to carbon abatement, fuel poverty reduction and principles of social justice. The paper focuses on energy policies that are intended to assist the UK in its transition to a low-carbon society through reduced domestic energy consumption and, consequently, does not discuss social programmes of assistance targeted on the fuel poor such as the new Warm Home Discount scheme, Cold Weather Payments or the Winter Fuel Payment.

## Domestic energy efficiency and carbon-saving programmes

There have been a number of incarnations of energy supplier-delivered energy efficiency programmes. Such programmes were and continue to be the main policy instruments for improving the energy efficiency of the housing stock; but they have included a social focus meaning that programmes also contributed to the Government's Fuel Poverty Strategy objectives. There has been a shift in emphasis, beginning with the Energy Efficiency Commitment (EEC) in 2002, to move from an energy-saving focus to one of carbon reduction and, as such, these programmes have become the primary tools for meeting the Government's climate change programme objectives.

The programmes featured an energy or carbon-saving target imposed on suppliers by Government alongside a social obligation requiring a defined proportion of the programmes' energy/carbon savings to be achieved by investment in the homes of 'vulnerable' households. 'Vulnerable' in this sense usually related to low-income or otherwise disadvantaged consumers in receipt of certain means-tested or disability-related benefits. The social focus was introduced to ensure that the most economically disadvantaged households would benefit from those energy efficiency programmes funded through a levy on their energy bills and was intended to offset any potentially negative impact on disadvantaged households.

### Energy Efficiency Standards of Performance 1994–2002

The first energy company obligation to impose energy-saving targets was the Energy Efficiency Standards of Performance (EESoP) which ran in three phases from 1994–2002. EESoP (Ofgem and the Energy Saving Trust, July 2003) was intended to deliver reduced electricity consumption of 6,103 GWh in its first phase, 2,713 GWh in phase two and 4,981 GWh in phase three; savings from gas of 6,144 GWh were also introduced at this third stage. All targets were exceeded.

EESoP was funded through a levy of £1 on the annual electricity bill of domestic consumers. The regulator at the time, the Office for Electricity Regulation, took the view that the levy should be set at no more than £1 since any higher rate would be more appropriately funded through general taxation. In the third phase of EESoP a charge of £2.40 was levied on a dual fuel bill (£1.20 per fuel). In its final year EESoP had a budget of £110 million.

### Energy Efficiency Commitment 2002–2008

When the Gas Act 1986 and Electricity Act 1989 were amended by the Utilities Act 2000, the power was given to the Secretary of State to set overall energy efficiency targets for suppliers. This provided the legislative basis for the introduction of the Energy Efficiency Commitment (EEC) and enabled energy-saving targets to be set by Government and enforced through the new energy regulator, Ofgem.

The EEC programme (Ofgem, August 2005) also ran in phases with EEC1 running from 2002–05 and EEC 2 from 2005–08. The success of EESoP, and the growing emphasis of energy efficiency as a means of reducing carbon emissions and assisting the fuel poor, provided the rationale for the introduction of the new programme. EEC was more ambitious than its predecessor with a phase one energy saving target of 62TWh. The scheme achieved savings of 84TWh, considerably in excess of its target and equivalent to around a 1 per cent reduction in carbon emissions from the domestic sector; savings were delivered mainly through loft and cavity wall insulation, energy efficient appliances, condensing gas boilers and low energy light bulbs. As with EESoP, a proportion (50 per cent) of savings from EEC was to be achieved through interventions targeted on vulnerable households designated the Priority Group [6]. EEC was funded by a levy on domestic annual energy bills of £3.60 per fuel per customer.

EEC2 had an energy saving target of 130TWh, more than double that of EEC1, but nevertheless a target it exceeded by 57TWh. The measures required to meet this target equate to almost 59 million tonnes carbon dioxide (lifetime). As with EEC1, at least 50 per cent of carbon savings were the result of investment in measures in the homes of Priority Group consumers. Defra, the responsible Government department at the time, predicted that between 2005–08 EEC would cost consumers no more than £9 per fuel per household for each of the three years of the programme, and that this cost would be offset if a household received and installed one low energy light bulb.

## Carbon Emissions Reduction Target 2008–12

CERT, the current supplier-delivered energy efficiency programme, signposts the move towards a greater emphasis on carbon reduction with savings from the programme now counted in terms of carbon rather than energy. CERT, at an extended level and with increased focus on insulation, will end in December 2012.

The primary aim of CERT is to make a contribution to the UK's legally binding target under the Kyoto protocol [to cut greenhouse gas emissions by 12.5 per cent below 1990 levels by 2008–2012] and the Climate Change Act 2008 requirement [to cut emissions of greenhouse gas emissions by 80 per cent below 1990 levels by 2050]. However, CERT will also help: reduce energy demand; enhance the UK's security of supply; reduce energy bills for those receiving measures; reduce fuel poverty; and, secure jobs in energy efficiency industries.[7]

(CERT, 2007)

CERT had an original target to save 154 million tonnes of carbon dioxide (lifetime). Again, as with all previous energy supplier programmes, a proportion of the carbon savings were to be achieved on behalf of low-income households although under CERT this proportion was reduced to 40 per cent. The Priority Group was also extended to include all households aged 70 or over. The Government maintained that the reduction in the proportion of savings from the Priority Group was justified by the increased overall target for CERT.

In July 2010, CERT was extended to run beyond its initial end date of March 2011 and the overall target was increased to achieve savings of 293 million tonnes of carbon dioxide (lifetime); 68 per cent of the additional savings were to be delivered through insulation measures. In addition, low energy light bulbs were removed as a permitted measure as of March 2011. The CERT extension also introduced the concept of a Super Priority Group [8], a sub-category of the Priority Group on whose behalf suppliers are obliged to achieve 15 per cent of total savings. DECC now estimates that the cost of CERT, despite the period of extension and increased targets, should cost consumers no more than the amounts set out in the original CERT Impact Assessment. It is also assumed that the cost of an extended CERT, some £1.3 billion, will affect all households, including those that do not receive a measure. According to the CERT extension impact assessment (DECC, June 2010), the average energy bill increase to consumers who do not take-up measures will be around £46 in 2011 and £61 in 2012 [9]. Across all households, the average dual fuel bill will increase by £52 in 2012 and a saving is expected from 2013 of around £24. Clearly households not benefiting from measures will experience higher fuel bills initially and see no saving in 2013, while the typical household receiving a CERT intervention [10] can expect fuel bill savings of £134 in 2013 and £141 in 2020. These charges are over and above the financial impacts resulting from an array of current and future policies including: the Community Energy Saving Programme; the Warm Home Discount scheme; smart metering; the Renewables Obligation; the EU Emissions Trading System; and Feed-in-Tariffs.

As of June 2011 (Ofgem) CERT had delivered 68 per cent (198 Mt CO<sub>2</sub>) of its emissions reductions target of which 43 per cent had been achieved in the Priority Group, exceeding their target for the Priority Group.

## Community Energy Saving Programme 2009–12

CESP, while also described as an energy/carbon saving programme, has a sharper social focus. The programme requires energy suppliers and generators to deliver programmes of energy-saving interventions to around 90,000 low-income households across the UK. As such, CESP can make a significant contribution towards addressing fuel poverty among some of the most financially disadvantaged communities in the UK. Financial deprivation was assessed using the income domain of the Index of Multiple Deprivation whereby the 10 per cent most income-deprived communities in England and the 15 per cent most income-deprived communities in Scotland and Wales would be eligible for CESP assistance. In a further departure from previous supplier programmes, CESP interventions are required to adopt a 'whole-house' approach to energy saving. Suppliers are encouraged to install multiple measures and less traditional forms of heating and insulation improvements such as solid wall insulation and micro-renewables; innovation is encouraged through the application of incentive uplifts attributed to the actual carbon savings achieved. A multiple measures approach is encouraged to ensure maximum carbon and financial savings, thereby delivering greater benefits to households experiencing fuel poverty.

As with CERT, CESP is delivered as part of suppliers' mandatory obligations, a condition of their licence agreement. As of December 2010 (Ofgem, May 2011), the scheme had delivered savings totalling 7.1 million tonnes of CO<sub>2</sub> (lifetime) out of its 19.25 million tonnes of CO<sub>2</sub> target; equating to 37 per cent of the overall CESP target.

Whilst the programme does target some of the most financially disadvantaged communities, it is less effective in identifying and assisting more discrete pockets of deprivation in other areas e.g. rural communities. Low-income rural dwellers are also more likely to live in hard-to-treat properties, the very dwellings that could benefit most from measures available through CESP such as solid wall insulation and micro-generation. If the obligated companies passed through all of their costs, estimated to be around £350 million (Energy Saving Trust, March 2009) over three years on a per capita basis, DECC estimates the increase in domestic annual dual fuel bills to be around £3 for the duration of the programme. For those households who do benefit from a CESP intervention, DECC (May 2009) estimates average annual fuel bills savings to be in the region of £328.

## Feed-in Tariffs

FiTs, introduced in 2010, involve electricity suppliers rewarding electricity generation using micro-renewable technologies such as solar photovoltaic (PV) panels; the tariff is guaranteed for 25 years and is tax free. The primary aim of FiTs is to grow small-scale generation of electricity so that by 2020 around 2 per cent of the electricity in the UK is generated from this source.

The total cost of this policy to consumers is estimated at £6.7 billion; the result will be an average increase in electricity bills of £6.50 by 2015 and £10.70 by 2020. The average cost will be £8.50 between 2011–2030 when the policy in its current form is due to end.

Whilst the cost of the FiTs is levied on all electricity bills, households' access to the payment and the supplementary benefit of free electricity is limited due to the cost associated with installing capital measures, such as solar PV. Investing in these technologies is simply not feasible for financially disadvantaged households. However, installation of solar PV units to access the FiTs is being increasingly seen across social housing. As a result, the tenants would typically benefit from free electricity; however the tariff would be enjoyed by the investor, in this case the social housing provider. Similar business models are also seen in the private sector in what have been termed 'rent-a-roof' schemes, where households agree to host generating technologies in return for free electricity but with the FIT payments going to the investor.

The Government recognises the potential implications for social justice and equity in terms of the distributional impact and access issues relating to Feed-in Tariffs. DECC states: "that this impact will depend on a number of factors such as which groups take up and hence benefit from small-scale low carbon electricity generation." (DECC, February 2010). As with the impact of many of these new or prospective policies, the effect of FiTs will also depend on electricity consumption patterns and the potential for households to take up other measures that will reduce their consumption. In theory the costs of policies are outweighed by the savings made by households as a result of energy efficiency programmes.

## Green Deal

The Green Deal is the main vehicle for the delivery of the Government's energy efficiency and domestic carbon saving objectives. The Green Deal is a fundamental element of the Energy Act [11] which has twin objectives of reducing carbon emissions and addressing fuel poverty. Fuel poverty programmes will be funded through energy suppliers in the form of a new ECO. How the Green Deal and ECO will operate in terms of practical measures, finance arrangements and co-ordination is not known and more detailed aspects will be addressed in secondary legislation following enactment of the Energy Bill and extensive consultation.

The Government's objective is to achieve significant energy efficiency improvements across the housing stock by encouraging private companies to offer energy efficiency measures to households through a pay-as-you-save (PAYS) mechanism. The concept of the Green Deal involves all households having access to financial support for investment in the energy efficiency of their home, at no up-front cost and with resulting charges repaid through the energy bill. The rationale of the Green Deal hinges on the fundamental principle of the 'Golden Rule' which specifies that only those energy efficiency measures where financial savings exceed the cost of repayment will form part of the programme.

Whilst the Green Deal may prove successful and attractive in generating take-up of measures by 'able-to-pay' households there is considerable doubt and concern about the relevance of this model to households experiencing fuel poverty. These households are less likely to feel able to commit to significant additional expenditure even where there may be long-term benefits in doing so. Furthermore, many are debt-averse and already struggling to afford essential goods and services. Data published by Ofgem suggest that at the end of 2010 1.6 million [12] energy accounts were in debt; however this relates only to circumstances where a repayment arrangement is in place and does not account for all arrears. In total, Ofgem estimates that 2.5 million households in Great Britain are in arrears with their energy bills. Such households are unlikely to be in a position to invest in the Green Deal and nor does it seem likely that finance agencies would consider them a good risk. Ofgem reports that the trend in energy debt is upward and likely to worsen in a period of recession and high energy prices (Ofgem, June 2011).

As previously discussed, financially disadvantaged households are much more likely to under-heat their homes and consume less energy. This behaviour is further exacerbated by poor thermal efficiency standards. The inability to afford the energy required and poor thermal standards combine to inhibit households' ability to respond to the price signals that will result from energy policies that increase domestic fuel bills. Furthermore, the same households' ability to reduce their energy consumption following an energy efficiency intervention is diminished by the fact that they had previously been under-heating their home. In such cases it is both rational and desirable that the benefits of efficient heating and effective insulation should be taken in the form of a warmer and healthier living environment rather than in financial savings. Ultimately these households will be unable to repay capital costs through a charge attached to their energy bill or, alternatively, there is a concern that they might revert to under-heating.

## Fuel Poverty policies

### The Energy Company Obligation

The Government has recognised that the Green Deal is not an appropriate mechanism for assisting low-income households, and this is encouraging. As a consequence of this recognition the obligation on energy suppliers will place greater emphasis on addressing fuel poverty; this approach should be central to the new ECO.

The new ECO will be the only measures-based energy-saving programme specifically targeted on fuel-poor households. However it is not yet known what proportion of the ECO £1–2 billion budget will be devoted to the fuel poor through the ‘*affordable warmth target*’ element; this issue is further complicated by the Government’s apparent intention that some ECO funding be diverted to assist ‘able-to-pay’ households requiring more expensive carbon reduction measures that cannot comply with the ‘Golden Rule’ principle of the Green Deal. This is a matter of considerable concern since the ECO will be the only mechanism available to assist households in fuel poverty, yet available resources may be depleted in providing financial assistance to comparatively affluent households. Public acceptance of levies on domestic fuel bills at a time when energy prices are rapidly increasing must be largely dependent on their being perceived to have a social value. Otherwise we face the prospect of consumer anger at ‘stealth taxes’ and disenchantment with the green agenda. The Institute of Public Policy Research in a recent article (IPPR, 11 June 2011) discusses this potential ‘green energy backlash’ where households, despite acknowledging the reality of climate change, will be unlikely to prioritise expenditure in this area. Meanwhile we face a paradox, in that the demand for greater investment in programmes targeted on vulnerable households results in a greater impact on all energy bills. An annual budget of around £1.4–£1.7 billion represents the current level of expenditure when all existing energy supplier programmes (CERT and CESP [13]) and Warm Front [14] budgets are combined. Unless expenditure levels equivalent to that of 2008–2011 are maintained for future programmes there will be an inevitable reduction in resources aimed at improving the energy efficiency of the housing stock.

DECC estimated that the impact of energy-supplier programmes would increase domestic annual fuel bills by £61 by 2012. However, maintaining resources available to domestic energy efficiency programmes at levels committed in the run-up to the introduction of the ECO (a minimum expenditure of £1.7 billion) will, it is suggested, result in a levy on the average dual fuel energy bill of around £80 (ACE, May 2011).

Working on these assumptions, and accounting for other climate change-related policies that also levy a charge on domestic energy bills, such as the Renewable Obligation and the EU Emissions Trading Scheme at 2009–10 levels, total charges levied as a result of the policies discussed here will increase from £88 to more than £120 by 2012–13 as shown in Table 3.

**Table 3**

Carbon Reduction Policies [15]	Charge to all consumers 2009–10	Charge to all consumers 2012–13
Renewables Obligation	£12*	£12*
EU Emissions Trading Scheme	£24*	£24*
CERT	£46^	–
CESP	£3^	–
ECO	–	£80
Feed-in Tariff	–	£6.50*
<b>Total</b>	<b>£85</b>	<b>£122.50</b>

Excludes network improvements electricity bill levy of £4. \*Electricity bills only, otherwise dual fuel.

^ DECC estimate that by 2012 energy supplier programmes will result in a charge of £61 per average dual fuel bill.

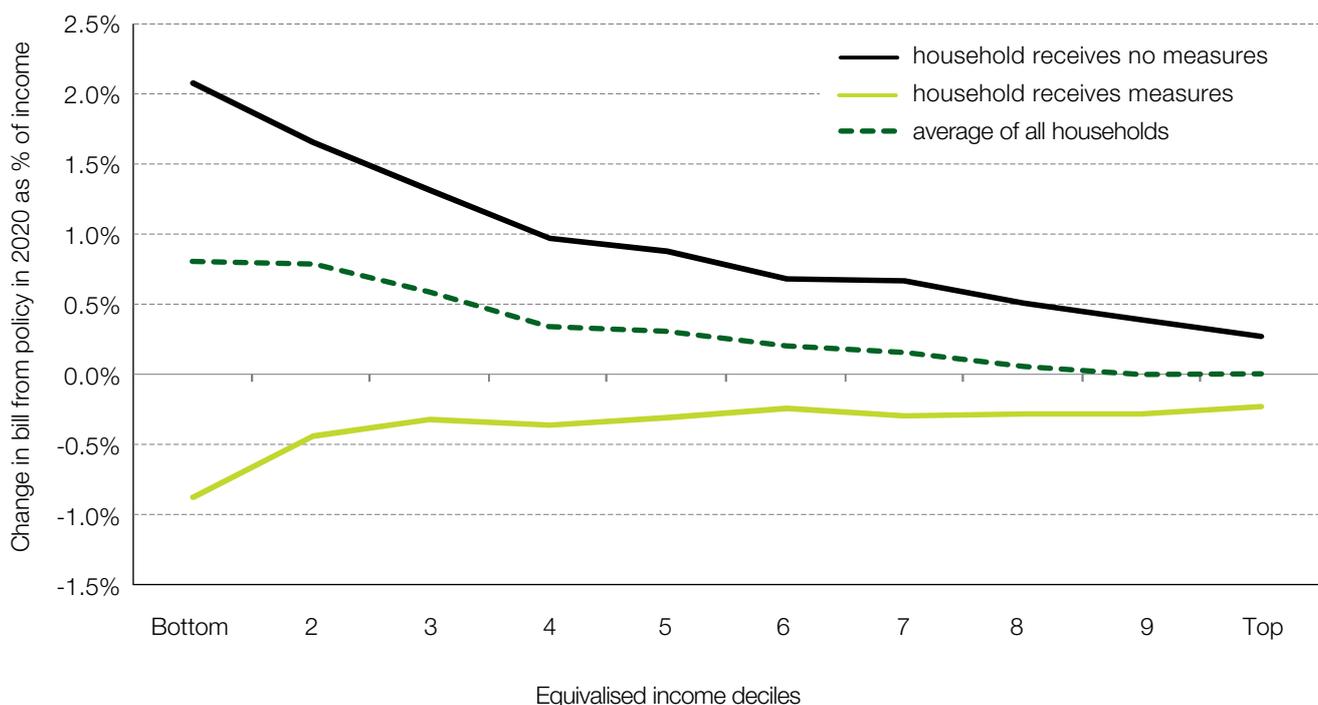
As previously discussed, many of the measures-based energy efficiency programmes actually have multiple objectives. This results from the inevitable cross-over between the aims of fuel poverty and energy and carbon saving programmes, i.e. one means of addressing fuel poverty is to increase energy efficiency and reduce energy consumption. However, reduced consumption must not be at the cost of warm and healthy homes. The primary objective remains to ensure a healthy living environment at an affordable cost in a well insulated and economically heated property; a warm and dry home is considered a fundamental necessity by the vast majority of the British population (Gordon, *et al.*, 2000).

The impact of many of the policies introduced to tackle carbon emissions and reduce energy consumption will depend on energy consumption patterns and the potential for households to implement other measures to reduce consumption and achieve a net saving on their energy bills. However, the Government's Impact Assessments appear to be based on the assumption that households have benefited from energy efficiency interventions. As this paper has attempted to demonstrate, access to programmes and subsequent benefits are not always equitable and, as such, there must be reservations about the true level of savings achieved, particularly among low-income households. This is perhaps demonstrated well by the uneven distribution of some measures which will limit households' ability to benefit and reduce their energy consumption and fuel bills. For example, dwellings that require less cost-effective measures such as solid wall insulation are unlikely to benefit due to the inability of solid wall insulation to meet the Green Deal's 'Golden Rule' and/or inability of low-income households to meet any upfront costs associated with its installation. So it is essential that the ECO includes the installation of solid wall insulation for hard-to-treat dwellings occupied by fuel-poor households, otherwise the detriment to households that do not receive measures is much greater for disadvantaged households than for their more affluent counterparts. This issue is recognised by DECC in an assessment of the impact of energy and climate change policies on domestic energy bills and is demonstrated by the following quote and illustrated in Chart 1.

“Those households in the bottom income decile are estimated to see their expenditure on electricity and gas increase by around 1 per cent of income in 2020 as a result of energy and climate change policies. By contrast, those households in the highest income deciles see a slight fall in energy bills as a proportion of income as it is assumed, under current policies, that they are more likely to take up renewable or insulation measures due to associated up front financial cost of take up.”

DECC (July 2010)

**CHART 1:** Impact of climate change policies for households that take-up insulation or renewable energy measures.



Source: DECC 2010

**Table 4**

<b>Estimated impact of energy and climate change policies on average domestic gas and electricity prices and an average domestic energy bill (inc VAT)</b>			
	<b>2010</b>	<b>2015</b>	<b>2020</b>
	<b>Price impacts (real 2009 £/MWh and % change)</b>		
Increase in gas prices due to policies	1 (4%)	4 (10%)	8 (18%)
Increase in electricity prices due to policies	15 (14%)	29 (26%)	40 (33%)
	<b>Energy bill (gas + electricity) impact (real 2009 £ and % change)</b>		
Estimated average energy bill without policies	£1,060	£1,149	£1,226
Estimated average energy bill with policies	£1,103	£1,150	£1,239
Impact of policies on bills	£42 (4%)	£1 (0%)	£13 (1%) [17]

Source: DECC, July 2010

Table 4 shows that, as a result of energy and climate change policies, average gas and electricity prices are expected to increase by 18 per cent (£8 per MWh) and 33 per cent (£40 per MWh) respectively by 2020 [16]. Based on assumptions about the number of households that will take up energy efficiency and renewable measures, the impact on the average dual fuel bill by 2020 is estimated to be £13 or 1 per cent.

Whilst a 1 per cent increase may seem modest, the perspective changes when considering the impact on low-income households. A 1 per cent increase in the average bill of a low-income or fuel-poor household will form a much higher proportion of that household's income than is the case with more affluent consumers. For fuel-poor households who have been unable to access energy efficiency improvements and who remain in poorly heated and insulated accommodation, the proportion is likely to be even greater. NEA believes that the distribution of the financial burden related to energy and climate change policies requires much more careful consideration with emphasis on how this burden can be lessened for financially disadvantaged households.

Current policy proposals will result in the situation where access to measures is limited for some low-income households and we will face the prospect of financially disadvantaged households subsidising a greener and economically beneficial future for 'fuel-rich' households. In other words, unless low-income households benefit from a well resourced and targeted energy efficiency programme they will be the financial sponsors of affluent households to their own financial detriment.

DECC's (July 2010) impact analysis predicts that by 2020 households on the lowest incomes (bottom income decile) can expect their energy bills to increase by 1 per cent by 2020 while households on the highest incomes (top income decile) can expect their energy bills to fall. Leaving aside additional payments from policies such as the FIT, households that receive both a renewable technology and an insulation measure can expect their bill to be 25 per cent less in 2020 than it would otherwise have been. Households receiving only an insulation measure can expect to see a reduction of 7 per cent. This disparity further highlights the potential injustice in proposed programmes in that more affluent households who are better able to access renewable measures will benefit to a greater extent than lower-income households who may only opt for lower-cost insulation measures or, indeed, no measures at all. This injustice resulting from the distribution of costs is particularly evident where no measures at all are installed. Low-income households again fare worst, with an expected bill increase equivalent to just over 2 per cent of their income compared with the richest 10 per cent of households whose bill increment would be less than 0.5 per cent. Conversely, and importantly in terms of the contribution energy efficiency and renewable technologies can make to addressing fuel poverty, where measures are adopted the lowest income groups receive the greatest reduction in terms of the proportion of their income required to meet a 2020 energy bill, equivalent to almost 1 per cent of their income compared to less than 0.5 per cent amongst the richest income decile. This is perhaps shown more clearly in Chart 1 above.

## **Towards a socially just energy future**

In this section we discuss how energy is framed by policy makers, energy suppliers and consumer representative groups to conceptualise social justice in relation to domestic energy and disadvantaged consumers. Two key issues of social justice are identified and reflected on in relation to the main energy and fuel poverty policies discussed above. The paper concludes with an assessment of how disadvantaged consumers could be better protected and how to ensure that social justice is implicit in future energy policy.

Energy can be considered and defined in a number of ways; a 1984 National Academy of Science panel (Stern and Aronson, 1984) concerned with the human dimension of energy use identified four perceptions:

- a commodity;
- an ecological resource;
- a social necessity; and
- a strategic material.

Each definition, it can be argued, places emphasis on different values such as trading and profit, conservation and sustainability or societal need (Higgins and Lutzenhiser, 1995). Therefore, the policy frame through which we consider or define energy is determined by those with the power to influence this paradigm. It would be accurate to say that in the 21st Century 'energy conscious' world energy is framed in each of the ways described above. However the fourth, while important in terms of energy security, is not discussed here as the primary focus is on energy as a social necessity.

Clearly those primarily concerned with access to energy as a means of maintaining physical and psychological health and well-being perceive energy as a social necessity. Priorities for advocates of energy as a social need include protection of the financially disadvantaged and promotion of social equity. The climate change lobby would perhaps define energy primarily as an ecological resource; one where the means of generation is of paramount importance with low carbon as an essential criterion. Those defining energy in ecological terms would see sustainability as their core interest. It can also be argued that, in recent years, the energy industry has been co-opted to the ecological perspective. Whilst the energy industry naturally sees energy as a commodity, and a commodity from which profit can be derived, it is inextricably linked with the climate change and carbon abatement agendas. This involvement has been further strengthened through the introduction of energy policies and regulation, meaning that carbon abatement has become an increasingly important priority. This is evident in the range of policies and mechanisms introduced to address climate change but which place a responsibility for achieving the required reductions on energy suppliers and generators. Examples of these would include the EU Emissions Trading Scheme and the supplier-led domestic energy reduction programmes, e.g. CERT.

The introduction of energy efficiency as a priority for energy suppliers has, as already discussed, meant that energy suppliers are heavily involved in programmes to improve domestic heating and insulation standards. The delivery of energy efficiency interventions by energy suppliers has two objectives: achievement of carbon reduction targets and lowering energy bills to assist in meeting fuel poverty reduction targets. This additional responsibility has further shifted how suppliers define or consider energy. It is no longer simply a 'commodity' or 'ecological resource' but also a social necessity. However, in developing energy policies that ensure an equitable transition to a low carbon society, perceptions, and the priorities attached to these perceptions by policy makers and energy suppliers, are crucial.

The energy policy landscape for the domestic sector will be dominated by measures contained in the current Energy Bill and featuring a key role for the private sector, and energy suppliers in particular, in transforming the energy efficiency of Britain's housing stock. Similarly, there has been a shift in responsibility for the funding and delivery of fuel poverty measures-based interventions with the new ECO assuming responsibility for addressing fuel poverty.

This paper identifies two potential conflicts that must be averted to ensure a socially just transition to a low-carbon society:

- Framing energy as an ecological resource: policies that have carbon reduction as their main objective are inappropriate to low-income and disadvantaged households who will bear equally the cost of policies yet may be denied access to the benefits, e.g. FITs and the Green Deal (where expensive measures are subsidised through the Energy Company Obligation).
- Framing energy as a commodity: the shift of responsibility for delivering energy efficiency and fuel poverty programmes to energy supply companies results in increased energy bills as the cost of programmes is passed through to all domestic consumers.

The conflict arising from both of these issues could be resolved or averted by ensuring that the financial burden is more equitably distributed (cost of policies) and that access to schemes that can deliver meaningful benefits is open to low-income households (the capacity to reduce energy bills).

Access to, and the costs and benefits of, energy saving and carbon abatement programmes have clear implications for social justice regarding the distribution of costs and benefits but also in terms of consistent and equitable access. At the forefront of this debate is the current Energy Bill which will see the introduction of the Green Deal and a new ECO. The fine detail surrounding these emerging initiatives will be subject to consultation in 2012 following enactment of the Energy Bill, but NEA hope and expect that the social justice issues discussed here, including the distribution of costs and benefits and equitable access to interventions, will be at the heart of the debate. The Energy Bill represents a unique opportunity to construct a coherent and co-ordinated framework that can meet both social and environmental imperatives. The goal for those concerned with social justice is that policies associated with low-carbon transition can be fully reconciled with the need to deliver on social welfare objectives.

## Protecting the fuel poor

Modelling has shown (Preston *et al.*, cited by Roberts, S., 2008) that if incomes rise more slowly than fuel prices in the short to medium term, and in the current economic climate this appears inevitable, then fuel poverty will increase. Indeed, the recent announcement by ScottishPower [18] which signalled fuel price increases of 19 per cent for gas and 10 per cent for electricity later this year, is an alarming warning of future implications for domestic energy price trends and consequently for levels of fuel poverty. Modelling also demonstrates that, even in the most optimistic scenario featuring optimum levels of energy efficiency improvements, the impact of rising fuel prices on the households in fuel poverty could only be fully alleviated through income-based interventions such as income supplements or through discounted energy tariffs.

It therefore seems perverse that, in order to address rising levels of fuel-poverty and carbon emissions, the very households struggling to achieve affordable warmth are required to make a disproportionate contribution to the solution. Indeed, the current and the future suite of energy efficiency and carbon abatement policies proposed by the Government does just this, as well as removing any progressively funded assistance post-2012 in the form of direct government support for energy efficiency programmes.

The dilemma of how to pay for emerging and new energy policies during a period of restrained public finances is not easily resolved. One method of restricting the extent to which the cost of policies is passed through to low-income consumers might be to apply the levy only to the bills of high consumers through use of a consumption threshold. However, this is itself hazardous given that some fuel-poor households are required to consume high amounts of energy as a result of occupying poorly insulated and inefficiently heated properties. In addition, many households where a family member is disabled or has a chronic illness require enhanced heating regimes over longer periods of time; clearly, a levy based on high energy consumption would further penalise such vulnerable households.

Resolving the difficulty of high non-discretionary energy use amongst low-income households requires action to remove the negative impact of any levy. This could potentially be achieved in three ways.

### Options for action

**Option 1:** The introduction of a proportional levy with some in-built protection for low-income high-users. Such a mechanism could assist in reducing profligate energy consumption amongst high energy-users who are able to reduce their discretionary energy use without compromising their health and well-being, whilst protecting low-income households who, due to their circumstances, are required to consume high amounts of energy (e.g. hard-to-treat inefficient homes).

**Option 2:** Ring-fencing of the new ECO to fund interventions only on behalf of low-income or fuel-poor households as a priority, before opening up the programme to other non-vulnerable groups.

**Option 3:** A combination of options one and two above, whereby the ECO in its first phases is targeted solely at improving the housing of fuel-poor or vulnerable households. The prioritisation of the improvement of housing occupied by low-income and fuel-poor households could subsequently allow the introduction of a fairer mechanism involving a consumption-based levy.

### Practical delivery

Option three would introduce a socially just form of the 'polluter pays' principle, one that could legitimately succeed a programme of intervention that prioritised energy reduction among disadvantaged households occupying the worst performing properties. This would remove the need for inbuilt social protection alongside a proportional levy since vulnerable households should have had any risk of detriment mitigated through energy efficiency improvements. While protecting low-income households from an unfair burden in terms of cost, it would also do much to improve their access to schemes that both reduced energy consumption and achieved affordable warmth. In addition, such a strategy could act to reduce high discretionary energy use among all households while protecting low-income households whose consumption is likely to be comparatively low.

## Identifying fuel-poor households

Recent developments in fuel poverty initiatives have seen the introduction of much narrower eligibility criteria intended to improve targeting but also, to some extent, a reflection of limited resources. Across a range of programmes, including Warm Front, the Super Priority Group of the Carbon Emissions Reduction Target and the Warm Home Discount scheme, eligibility criteria now focus on a combination of extreme low income and vulnerability. In the case of Warm Front an additional element is added in that means qualifying households must occupy properties of poor or modest energy efficiency standards.

Clearly there is a strong case for prioritising assistance to those in greatest need in terms both of financial disadvantage and poor housing conditions. This would require a synthesis of data-matching involving information held by the Department for Work and Pensions, information from the Home Energy Efficiency Database and possibly DECC's National Energy Efficiency Database [19] in future, as well as the involvement of local authorities with their extensive knowledge of the local community. Assistance could then be delivered in a co-ordinated and comprehensive manner both on a community-wide basis prioritising the most disadvantaged localities and on an individual basis ensuring that households in greatest need were not overlooked.

Clearly energy supplier programmes make a major contribution towards tackling fuel poverty through the nature of their programmes, i.e. energy saving interventions. However the cost of these interventions is met through a charge on all domestic energy bills and, given that not all households who contribute will benefit, we have to consider the fundamental inequity of low-income and vulnerable households subsidising measures installed by a national retrofit programme on behalf of comparatively affluent households.

If funding to enable delivery of a national and well targeted programme of retrofitted energy efficiency improvements to the most disadvantaged households cannot be funded by the Treasury, then it is reasonable to expect that the first phases of the new ECO be dedicated exclusively to funding improvements among the fuel poor. Once the energy efficiency standard of dwellings occupied by the most disadvantaged had been improved, it would be legitimate to move on to improvement works for less disadvantaged households.

Addressing the growing problem of fuel poverty whilst also tackling the urgent and global problem of climate change requires appropriate safeguards and programmes which target assistance to the fuel poor to avoid serious detrimental impacts on the most vulnerable in our society. The new ECO, as the primary means of ensuring the most financially disadvantaged are protected from the full effect of rising energy costs, and the Green Deal provide a great opportunity to achieve this. However, future energy policy can only be seen to be contributing to a socially just transition to a low carbon society if adequate resources are made available to provide fuel-poor households with no-cost interventions that reduce their energy demand while also ensuring they can heat their home to a satisfactory standard at an affordable cost.

As we move away from a period of considerable government investment in fuel-poverty measures-based interventions, the final detail of successor programmes remains unknown. The period of consultation following the time when the Energy Bill obtains Royal Assent will be crucial for those concerned with ensuring that the programmes that follow are underpinned by principles of social justice. Only then, as final design and delivery of programmes are complete, will it be possible to discern whether UK energy policy has moved closer to, or further away from, achieving truly equitable energy policies.

## Key conclusions and recommendations

- It should be universally recognised that action to deliver affordable warmth through major investment in heating and insulation programmes meets both social and environmental objectives.
- Where tensions between social and environmental objectives are allowed to develop there is an understandable risk that people will prioritise their immediate living environment over what may appear to be a remote and hypothetical global issue.
- Financial burdens associated with the transition to low carbon will be more widely accepted if the social implications are fully understood and it is clear that effective remedial action is being taken.
- The end of Exchequer-funded, grant-aided energy efficiency programmes implies a reduced commitment by government to the eradication of fuel poverty.
- Funding energy efficiency programmes through flat-rate levies on energy bills is regressive and unfairly penalises financially disadvantaged households. The most progressive and equitable means of funding social policy objectives, including the UK Fuel Poverty Strategy, is through general taxation.
- Where responsibility for domestic energy efficiency interventions is delegated to energy suppliers, the Government must adopt a highly prescriptive approach to ensure that resulting programmes maximise the benefits to fuel-poor households.
- All aspects of energy-related policy development should contain an assessment of the implications for fuel-poor households and proposals on how any potentially harmful consequences are to be addressed and resolved.
- The forthcoming ECO should exclusively focus on vulnerable fuel-poor households. The current intention appears to be to fund both fuel poverty programmes and improvement to hard-to-treat dwellings. However, the most equitable use of resources allocated through ECO would be to target hard-to-treat properties occupied by the most financially disadvantaged whilst meeting both social and environmental objectives.
- Future energy policy can only be seen to be contributing to a socially just transition to a low carbon society if adequate resources are made available to provide fuel-poor households with no-cost interventions that reduce their energy demand, while ensuring that they can heat their home to a satisfactory standard at an affordable cost. By ensuring that low-income and vulnerable households' risk of fuel poverty is minimised, and their access to energy efficiency interventions is maximised, it then becomes possible to contemplate the introduction of the 'polluter pays' principle in the form of a consumption-based levy. This is arguably just where such a policy succeeds a programme of interventions that had first achieved energy savings among disadvantaged households.

## Notes

1. The heating standard adopted for England is 21°C in the primary living area and 18°C in other occupied rooms.
2. Estimate based on anticipated average price rises following an announcement by Scottish Power 7 June 2011.
3. SAP is a measurement of properties' typical annual energy costs on a scale of 0-100 where 0 is the least and 100 is the most efficient. SAP is the Government-approved standardised system for undertaking and reporting on an energy survey for existing dwellings.
4. Fuel poverty full income definition counts housing subsidies as income.
5. Required to spend in excess of 20 per cent of income.
6. Households receiving certain income-related benefits or tax credits.
7. Carbon Emissions Reduction Target (CERT)  
[http://www.decc.gov.uk/en/content/cms/funding/funding\\_ops/cert/cert.aspx](http://www.decc.gov.uk/en/content/cms/funding/funding_ops/cert/cert.aspx) Accessed June 2011
8. The Super Priority Group comprises vulnerable groups within the existing priority group. The group includes households on the lowest incomes where there is a member with a disability, a member aged 60+ or a child aged under 5 years. Low-income households (<£16,190) with a dependent child and in receipt of Child Tax Credit are also included.
9. Average increase in gas bills of £24 in 2011 and £31 in 2012; average increase in electricity bills is expected to be £22 in 2011 and £30 in 2012 for the average household not receiving a measure.
10. Cavity wall insulation is the most common measure under CERT and is therefore considered a typical intervention.
11. The Energy Bill is expected to be enacted in autumn 2011.
12. 0.7 million gas customer accounts and 0.9 electricity customer accounts.
13. CERT extension expenditure totalling £1.3 billion and CESP annual expenditure of £116.6 million.
14. The average Warm Front budget between 2008–11 was £360 million. During 2011–12 the budget was reduced to £110 million and the following year will fall to £100 million after which the scheme will terminate.
15. Warm Front is not a carbon reduction programme and therefore does not appear here.
16. Impacts are based on policies that include the RHI, which we now know to be funded through Treasury. However, whilst the degree of impact will be different, what this discussion is concerned with is the distribution of the impacts of proposed or future policies when they are funded through a domestic energy levy. Revised impact distribution is expected to be revealed by CSE in their analysis of the distributional impacts of climate change policies on behalf of JRF.
17. Other models suggest the impact may be greater.
18. Scottish Power in June 2011 announced increases which will take effect from August 2011.
19. The National Energy Efficiency Data framework (NEED) is a project set up by the Department of Energy and Climate Change to develop its understanding of energy use and the impact of energy efficiency measures. It brings together energy consumption data at property level and matches this with property attribute data and records of energy efficiency measures installed taken from the Home Energy Efficiency Database (HEED). Source:  
<http://www.decc.gov.uk/assets/decc/11/stats/publications/energy-trends/articles/2084-need-trends-article.pdf>

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