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FUEL POVERTY, UK'S DILEMMA ON CLIMATE CHANGE AND SCOTLAND'S STRUGGLE FOR HOUSING ENERGY EFFICIENCY

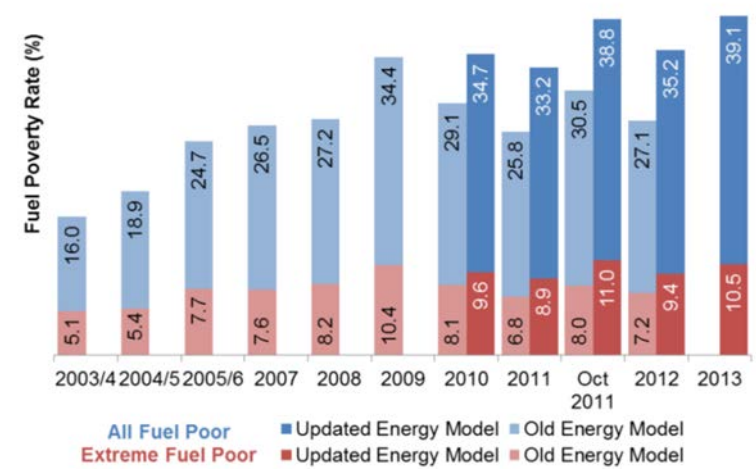


Fig 1: Fuel poverty in Scotland

Research summary

Recent growth of fuel poverty in Scotland suggests that UK and Scottish climate change strategies, energy policies and energy efficiency initiatives are not able to address fuel poverty related issues such as broader social justice, affordability of energy and equality in income distribution. The reasons behind ineffectiveness are UK's dilemma on climate change and energy policy, inconsistency of energy efficiency initiatives, highly privatised and market-based energy initiatives, problematic relationship between UK and Scottish climate change policies and obscurities on how overlapping energy efficiency initiatives work together. The high level co-operation and discussion between UK government and Scottish Government and common forum of all stakeholders including private energy providers can help clear the obscurities and to achieve goal. More public participation, community ownership of the initiatives, public awareness and focus on behavioural change of consumer can be cost-effective alternative of privatisation of energy initiatives and help control fuel poverty sustainably.

Keywords: Energy policy, climate change, fuel poverty, energy efficiency initiatives, household energy, Green Deal, Energy Company Obligation (ECO)

1. Introduction

The UK is one of the 20 countries with the highest CO₂ emission rate in the world with 7.9 metric tons per capita (World Bank, 2015). So UK is bound to its duty and commitment towards reducing the carbon emission. Household energy use accounts for 29% of total energy use in the UK according to the latest Department of Energy and Climate Change (DECC) report (Khan & Wilkes, 2014). Since the domestic sector is one of the major consumers of the energy, the UK government has brought forward different plans and legislations to reduce the energy use in the domestic sector.

The paper looks at the UK government's household energy policies and legislations of last five years and changes in legislations, new acts and inconsistency of the energy efficiency programmes. The paper also looks at the Scottish government's energy policies and initiatives of the same period to find out the relationship between the two policies. Energy Policy and Climate Change strategies comprises and affects not just greenhouse gas emission but broad range of areas from energy security to fuel poverty and energy efficiency to technology and innovation. In this paper we look if climate change strategies and initiatives are reflected on controlling fuel poverty in Scotland because UK government's White Paper on Energy has stated that one of the goals of UK government's energy strategy is 'to ensure that every home is adequately and affordably heated' (Dti, 2007). The paper investigates the relationship between UK and Scottish energy policies and how this multi-level, overlapping and conflicting energy policies might have been fuelling recent growth in fuel poverty in Scotland instead of controlling it.

2. UK Household Energy Policies, Legislations and Initiatives; last five years.

UK government's 'landmark' legislation of the 2008 Climate Change Act established statutory carbon reduction targets for GHGs of 80% by 2050 or 34% by 2020 from the 1990 level. Emissions from buildings were to be reduced down to zero by 2050 (GOV.UK, 2008). We can notice that the UK has fully acknowledged the carbon emission reduction potentials of the

building sector from this act. In 2010, Feed-in Tariff was officially launched and Energy Act 2010, which introduced Carbon Reduction Commitment (CRC), came into force.

In May 2010, the Labour government was replaced by the coalition of Conservative and Liberal Democrat. This government continued some of the major initiatives like FIT but stopped previous government's initiatives, among them were the very successful Carbon Emission Reduction Target (CERT) and Community Energy Saving Programme (CESP). The government introduced its flagship programme Green Deal via Energy Act 2011, which they said, would 'revolutionise' the energy efficiency of British Properties (DECC, 2015a), and Energy Company Obligation (ECO), another programme to work with the Green Deal.

(Lockwood, 2013) states that the 'landmark' Energy Act 2008 might appear to lock in a commitment to reducing emissions through legal means, this does not guarantee political lock-in and the Act itself is in risk. This argument seems very realistic when we look at the timeline showing the series of Acts, legislations and political announcements.

2010	<p>April -Energy Act 2010 comes into force, mandatory social price support to reduce energy bills for the most vulnerable -Feed in Tariff (FIT) launched which was introduced in Energy Act 2008</p>
2011	<p>April -Warm Home Discount Scheme introduced October -Energy Act 2011 came into force, introduced Green Deal policy</p>
2012	<p>April -DECC announced a list of pioneer Green Deal providers June -Green Deal Oversight and Registration Body (GDORB) launched July -Electricity and Gas (Energy Company Obligation) Order 2012 introduced ECO September -Eligibility criteria for Warm Front changed October</p>

	<ul style="list-style-type: none"> -All the schemes set up by the previous government to fund home energy saving measures stopped -Soft launch of the Green Deal
2013	<p>January</p> <ul style="list-style-type: none"> -Green Deal officially launched -Introduced Energy Company Obligation (ECO) which replaced two previous schemes; Carbon Emission Reduction Target (CERT) and Community Energy Saving Programme (CESP) <p>February</p> <ul style="list-style-type: none"> -Green Deal and ECO Launched in Scotland <p>May</p> <ul style="list-style-type: none"> -Green Deal Finance Company (GDFC) operational <p>September</p> <ul style="list-style-type: none"> -The Smart Meters Communications License granted to the DCC <p>December</p> <ul style="list-style-type: none"> -Announced "Government action to help hardworking people with energy bills" -£450 million allocated to household energy efficiency for three years -The Warm Front scheme closed to new applications -Amended the Warm Homes and Energy Conservation Act 2000 (WHECA) through the Energy Act 2013 -Announced Second stage of Green Deal called "streamlined and improved" Green Deal.
2014	<p>February</p> <ul style="list-style-type: none"> -Announced changes to Green Deal 's cash back rates, timings and insurance backed guarantees <p>March</p> <ul style="list-style-type: none"> -Renewable Heat Premium Payment (RHPP) householder voucher scheme closed <p>April</p> <ul style="list-style-type: none"> -Domestic Renewable Heat Incentive (RHI) launched <p>May</p> <ul style="list-style-type: none"> -New Green Deal Home Improvement Fund announced <p>October</p> <ul style="list-style-type: none"> -Another £100 million for household energy efficiency announced <p>November</p> <ul style="list-style-type: none"> -Green Deal Finance Company bailed out; DECC gave £34Million loan <p>December</p> <ul style="list-style-type: none"> -The Electricity and Gas (Energy Company

	Obligation) Order 2014 came into force, changes in ECO1 and set legislations for new obligation period (1 April 2015 to 31 March 2017)
2015	<p>March</p> <ul style="list-style-type: none"> Original ECO scheme closed Announced Cutting the cost of keeping warm: a fuel poverty strategy for England <p>April</p> <ul style="list-style-type: none"> The new obligation period (ECO2) started

Figure: Household Energy policy and legislations (UK) since 2011

Sources: Sources: (EST, 2015b) (EST, 2015a), (EST, 2015c), (GOV.UK, 2015e), (GOV.UK, 2015b), (GOV.UK, 2015d), (GOV.UK, 2010), (GOV.UK, 2009b), (GOV.UK, 2009a), (ofgem, 2015b), (ofgem, 2015a)

The above timeline shows the different Acts, legislations, policies, energy efficiency initiatives focused on household energy and changes in them. The timeline shows that there is 'lack of political sustainability' (Lockwood, 2013) in energy policy and climate strategy which has led to series of new energy act, energy efficiency initiatives, closure of the initiatives within short period after launch and changes in the initiatives many times a year. Policy makers and politician often consider popularity of the initiative rather than its sustainability, which is one reason there are so many changes and confusion. (Watson, Gross, Ketsopoulou, & Winskel, 2015) conclude that here is a need to move beyond narrow framings of public attitudes. Because all this frequent changes might be causing uncertainty in the retrofit market, failures of the programmes and search for new initiatives or more changes in the initiative.

Green Deal and ECO are the major household energy efficiency initiatives of the UK government that focus on the improving energy efficiency of the building via various installations and improvements. After the launch of Green Deal in 2012, and ECO in 2013 the initiatives saw series of changes and announcements. Green Deal, which is a market based framework, became a failure and this reached a point in November 2014 Green Deal Finance Company had to be bailed out due to very little sale of Green Deal plan.

3. The relationship of the UK and Scottish Energy Policy and Climate strategy

Scotland as a country and also a part of the United Kingdom has its own government and legislative system. Therefore Scotland has its own household energy policy and climate change strategy. Housing (Scotland) Act 2001 (GOV.UK, 2001), The Home Energy Assistance Scheme (Scotland) Regulations 2009 (GOV.UK, 2009b), Renewables Obligation (Scotland) Order 2009 (GOV.UK, 2009c) and Climate Change (Scotland) Act 2009 (GOV.UK, 2009a) are current major legislations which creates the baseline for the energy efficiency programmes that are unique to the Scotland from the rest of the UK.

Scotland has its own carbon reduction targets and renewables ambitions. Climate Change (Scotland) Act 2009 creates the statutory framework for GHG reductions in Scotland by setting an interim 42 per cent reduction target for 2020, which is deeper than UK government's 34 per cent target, and an 80 per cent reduction target for 2050. The ambitious Scottish renewables target requires meeting the equivalent of 100% of Scotland's electricity demand from renewables by 2020 (GOV.SCOT, 2015a). (Anandarajah & McDowall, 2012) argues that 'meeting Scottish renewable electricity targets diverts investment and deployment in renewables from rest of the UK to Scotland' and implies additional cost to the UK. In another paper (Goulder & Stavins, 2011), talking about the US context, also argue that more aggressive state-level action generally leads to differing marginal abatement costs (options available to an economy to reduce pollution) across states, implying that the same reduction could have been achieved at lower cost through an increase in the in the federally established price of emissions. So, it is important that Scottish initiatives should co-exist not conflict or overlap with the UK's and be helping to control fuel poverty, improve energy efficiency and energy security and not add to the cost.

3.1 UK national and Scottish Household Energy Efficiency Initiatives

The following is the list of the household energy efficiency and renewable initiatives currently run in Scotland;

Initiatives	Delivered by
Green Deal	Certified and accredited Green Deal Finance Providers/and certified installers
Feed In Tariff	Main energy providers
Renewable Heat Initiative	Ofgem
Smart Meters	DECC
District Heating Loan Fund	EST
ECO	Main energy suppliers
Assisted gas Connection	Scotland Gas Networks
Climate Challenge Fund	Keep Scotland Beautiful on behalf of the Scottish Government
Green Homes Network	Scottish Government
Green Homes Cashback Scheme	Scottish Government
Renewable Energy Scotland Renewable Loan Scheme	Home Energy Scotland on behalf of Scottish Government
Community and Renewable Energy Scheme	Local Energy Scotland
Renewable Energy Investment Fund	Scottish Enterprise – Scottish Investment Bank
Warm Homes Fund	Scottish Government
Home Energy Efficiency Programmes Scotland	Scottish Local Authorities on the behalf of Scottish Government
Scottish Partnership for Regeneration in Urban Centre	AMBER – as the fund manager (with the European Investment Bank acting as Holding Fund Manager)
Scheme of assistance by Scottish local authorities	Scottish Local Authorities

Table: List of Scottish energy efficiency initiatives and delivery model / Source: (GOV.SCOT, 2014b)

UK government initiatives
 Scottish government initiatives
 EU initiative
 Local initiatives

When we compare the Scottish and UK initiatives by delivery model there is a very clear difference. All major UK government initiatives (Green Deal, ECO and FIT) are delivered by the private

companies while all the major Scottish initiative (HEEPS, CCF, GHCB etc.) are delivered by the Scottish government or its representing body (for example Scottish local authority). Scottish government's biggest home energy efficiency improvement initiative is HEEPS while UK government's biggest home energy efficiency improvement initiative is Green Deal. The UK government's Green Deal is a 'market-led framework designed to assist individuals and businesses to make energy efficiency improvements to buildings at little upfront cost' (Ofgem, 2013) while HEEPS is a Scottish government programme 'targeted at fuel poor households across Scotland and for the installation of energy efficiency measures' (GOV.SCOT, 2014a).

HEEPS was announced in March 2014, ahead of Scottish Independence referendum of September 2014 with the plan how 'ECO and Warm Homes Discount would be funded in an independent Scotland' (GOV.SCOT, 2014a) suggesting it came as an alternative to the Green Deal and to work along with the ECO. But since Scotland remains part of the UK after September referendum, how Green Deal and HEEPS will work together has not been made clear. According to the Ofgem, "ECO is intended to work alongside the Green Deal to provide additional support in the domestic sector, with a particular focus on vulnerable consumer groups and hard-to-treat homes" (Ofgem, 2013), and in Scotland after HEEPS is announced, which is intended to utilise ECO funding like Green Deal does, there remains obscurity how HEEPS, Green Deal and ECO are going to work together without overlapping or conflicting.

Another distinct difference between the UK and Scottish initiatives is about the community ownership and involvement. UK government initiatives are centrally launched and have been heavily privatised while Scottish initiatives are more locally distributed and community based. Again for example, Green Deal is a market based framework delivered by the private companies, and FIT, which focuses on renewables, is also delivered by the private energy suppliers. The application processing, consumer selection and delivery is all done by the energy providers in FIT and Green Deal. Whereas Scottish initiatives like

CCF focus more on community involvement and community ownership of the programmes. The third and important difference is about the focus on renewable; Scottish initiatives have more aggressive renewables ambition than the UK initiatives.

4 Fuel Poverty and Energy Efficiency Initiatives

4.1 Fuel Poverty in Scotland

According to the Scottish government's definition "a person is living in fuel poverty if, to heat their home to a satisfactory standard, they need to spend more than 10 per cent of their household income on fuel". And household income, fuel costs and energy efficiency have been taken as the main causes of fuel poverty (GOV.SCOT, 2015b).

Earlier we noticed that Scotland has more stringent climate policy and aggressive renewables ambitions than UK. But at the same time last few years have seen rise in the fuel poverty in the country (Scottish House Condition Survey Team, 2014). The above key figure is the figure by Scottish House Condition Survey 2014.

The figure (latest available by the time of writing this paper) shows the condition of fuel poverty in Scotland. From above figure if we look at the 2010 and 2013 data, fuel poverty has increased by 4.4% since 2010. The extreme fuel poverty has also increased by 2.4%. In the figure the updated energy model means the updated methodology for modelling household energy consumption for the 2013 SHCS Key Findings Report to reflect the current industry standard. SHCS report Key Finding states that Increase in fuel prices alone would have led to nearly 6 percentage points rise in fuel poverty. Around one third of this potential increase in fuel poverty was mitigated by growth in household income and improvements in the housing stock where housing improvement contributed 0.4 percentage points of the mitigating effect. This shows household income and energy prices are the main drivers of the fuel poverty. It highlights that the bigger problem is in income distribution and access or affordability of the energy.

4.2 Role of Energy Efficiency Initiatives to Control Fuel Poverty

The energy efficiency initiatives are focused by the UK government as tool to control fuel poverty because 'improved heating and insulation standards are seen as the most rational and sustainable means of ensuring affordable warmth' (NEA, 2013). Fuel poverty is taken as significant problem in both Scotland and in the UK. Housing (Scotland) Act 2001 (GOV.UK, 2001) commits the Scottish Government to ensuring, 'as far as is reasonably practicable', that people in Scotland are not living in fuel poverty by November 2016. But the growing fuel poverty in the recent years shows that this target might impracticable, as of 2015, if there not very robust action taken immediately.

Rising fuel poverty is a worrying issue where there are a lot of efforts have been made to control it. More stringent Scottish climate policy but growing fuel poverty in Scotland suggests the inadequacy of the energy efficiency initiatives, housing and other related socio-economic strategies aimed at tackling this problem. And the inadequacies of these initiatives are likely to have resulted from the problematic relationship between UK and Scottish policies.

From the above list of the energy efficiency initiatives currently run in Scotland, we look at four initiatives focused on the Fuel poverty; ECO, HEEPS, Assisted Gas Connection and Warm Homes Fund. The table shows that among the four programmes ECO and Assisted Gas Connection are UK national level programmes and HEEPS and Warm Homes Fund are Scottish National level programmes. By delivery model, ECO is delivered by the private companies (Big Six energy suppliers), Assisted Gas Connection is delivered by the private sector Scotland Gas Network (SGN), HEEPS is delivered by the Scottish local authorities and Warm Homes Fund is delivered by the Scottish government. By the type of initiatives, all the four programmes focus at fuel poverty and so called 'vulnerable consumers'. Among them ECO and HEEPS are more related to each other because HEEPS follows the definition by ECO to select its targeted consumer. Affordable Warmth scheme under HEEPS and Home Heating Cost Reduction

Obligation scheme under Eco are basically the same programmes run by different organization in different level but aiming to the same group. Similarly Energy Assistance Scheme under HEEPS and Carbon Saving Community Obligation scheme under ECO are also the same programmes run by different organization in different level but aiming to the same group. Here, decision made by UK government on ECO without consulting Scottish government will bring uncertainty in HEEPS. So it is important that the decisions are made in cooperation between Scottish government, UK government, the private sector who deliver the ECO, and the Scottish local authorities who deliver the HEEPS, but has not always been the case as (Currie, 2011), (STV, 2014).

In March 2014 Scottish Housing Minister announced a £60 million HEEPS Area Based Scheme, which is aimed at households living in fuel poverty (GOV.SCOT, 2014a). By October 2014 Scotland has been achieving more ECO than their population share; latest statistics show that Scotland has 11.5% of all ECO measures, according to the Scottish government figures (GOV.SCOT, 2014b). Both ECO and HEEPS focus on fuel poverty, significant amount of money spent on these programmes means a lot have been spent to control fuel poverty. This should result in control of fuel poverty in Scotland but the report (Scottish House Condition Survey Team, 2014) reveals fuel poverty is growing instead. All these 'exciting' figures about money spent on energy efficiency initiatives are more of popular political news and less of the real change in the lives of people and environment until the fuel poverty keeps growing.

5 Discussion and Conclusions

The Green Deal, FITS, ECO and Assisted Gas Connection, which were introduced by UK government nationally, are the programmes delivered by the private companies. Scottish government's HEEPS, although delivered by the Scottish Local authorities, is dependent on Green Deal and ECO funding as well. These UK government initiatives pass the responsibility of the identification of the fuel poverty vulnerable consumer, selection of the consumer, and

delivery of the programme away from state to the private companies. Fuel poverty is serious issue and has effect on people's physical and mental health, wellbeing of community; costs elderly, children and other vulnerable people lives and has larger impacts in the population of the country (Marmot Review Team, 2011). In such serious issue the government is passing responsibility to the private sector from the public sector, which is not justifiable. Delivering the initiatives by private sector takes responsibility for both identifying and tackling income and housing related energy vulnerability away from the state and into the private sector, where cost efficiency will be a greater imperative and accountability likely reduced (compared to the public sector) regarding how vulnerable households are selected, treated or passed over (Walker & Day, 2012).

As looked closely the UK government energy efficiency initiatives are heavily market based and focus on stimulating private sector growth. These market-based solutions focus more on effectiveness and less on social justice (Schaffrin, 2013). Scottish government's initiatives are not privatised and have more community involvement but dependant on UK government initiatives which are market-based. The Scottish and UK initiatives are overlapping and there are obscurities on how similar programmes work together.

The UK government initiatives lack the involvement of the people, the consumer or the group who are considered fuel poor. (Giddens, 2009), (Walker & Day, 2012) and (Schaffrin, 2013) has raised issue of social justice in the UK climate change policy. This requires looking at fuel poverty as a social injustice and demands the involvement of the people in decision-making, ownership of the initiatives and awareness about the issue of fuel poverty. The policy is reflected in the energy efficiency initiatives like ECO and HEEPS and the programmes impact on the lives of people. The access of people on the information about the initiative, the way people heat, and light and use appliance has also big impact on issue of fuel poverty. According to (Wilson, Robertson, & Hawkins, 2012) fuel poverty has risen in all income groups...over the past 6 years of 2012. It means not just the poorest households

that are affected. This may be partly due to the fuel prices but user behaviour and the house condition should not be underestimated. If the user behaviour is wasting a lot of energy or the user doesn't understand the ways of using energy efficient appliances or retrofitted house, even the comparatively high income people can become fuel poor as the statistics by Scottish government (Wilson et al., 2012) showed.

None of the above UK government's energy efficiency includes user behaviour or "human based retrofit" (Pisello & Asdrubali, 2014). Here coupling human behaviour-based energy efficiency programs with more physical-based strategies could become a key low-cost integrated solution for further energy saving in buildings and prevent people from the risk of fuel poverty. High level co-operation and discussion between UK government and Scottish Government at policy making stage and during the operation of the initiatives and formation of a common forum where all the organizations who deliver the energy initiatives are involved are suggested. It should be acknowledged that along with household energy efficiency improvement, controlling fuel poverty demands broader social justice, affordability of energy and equality in income distribution.

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