

# **Ideological Alleviants: A Comparative Analysis of Fuel Poverty Policy**

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## Abstract

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Following more than two decades of relevant research and policy in the UK, fuel poverty is increasingly being acknowledged at the national and supranational level. Although it has yet to be identified as a distinct social issue worldwide, relevant alleviatory policy is extant in most countries. However, although the drivers, effects and policies relating to fuel poverty are often very similar, there is no coherent international dialogue on the subject, and no comparative research exists beyond the EU. This dissertation addresses the gap in knowledge and discourse by developing an understanding of fuel poverty on a global scale.

This understanding induces discussion on the reasons and ideologies behind the scattered and disconnected mechanisms that aim to alleviate fuel poverty. This is initially achieved via welfare regime frameworks; further points for analysis include the ways in which each regime/country perceives its citizens' responsibilities, and the lexical confusion of the relevant vocabulary. As a result of this discussion, several recommendations are offered. These include the potential for policy transfer and a proposal for a universal definition of fuel poverty.

This dissertation is a unique contribution to the literature on fuel poverty, as no similar research has yet been undertaken. Although it cannot form more than a superficial understanding of global fuel poverty, it begins a process of codification and cohesion which must continue if fuel poverty is to be alleviated.

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## Acronyms

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ADEME: *L'Agence de l'environnement et de la maîtrise de l'énergie*

ARI: Acute Respiratory Infection

CATS: Communities Against Turbines Scotland

CDM: Climate Development Mechanism

CEE: See ECE

CERT: Carbon Emissions Reduction Target

DALY: Disability-Adjusted Life Year

DDG: Decentralized Distributed Generation

DECC: Department of Energy and Climate Change

DEn: Department of Energy

DH: District Heating

DTI: Department of Trade and Industry

ECE: Eastern and Central Europe

EEC: Energy Efficiency Commitment

EPEE: European Partnership for Energy and the Environment

EU: European Union

EWM: Excess Winter Mortality

FART: *Fonds d'aide à la rénovation thermique (des logements)*

FSU: Former Soviet Union

GEF: Global Environment Facility

GVEP: Global Village Energy Partnership

HC: Heating and Cooling

HDI: Historically Disadvantaged Individual

HH: Household

INEP: Integrated National Electrification Programme

JRF: Joseph Rowntree Foundation

JRHT: Joseph Rowntree Housing Trust

MDG: Millennium Development Goal

NEA: National Energy Action

NISP: National Improved Stove Programme

NRFC: National Right to Fuel Campaign

ONE: *[L']Office National de l'Electricité*

OPEC: Organization of the Petroleum Exporting Companies

PERG: *[Le] Programme d'Electrification Rurale Global*

PIPP: Percentage of Income Payment Plan

PPP: Public-Private Partnership

REC: Rural Electrification Company

REF: Renewable Energy Forum

RGVY: *Rajiv Gandhi Grameen Vidyutikaran Yojana*

UN: United Nations

UNDP: United Nations Development Programme

UNFCCC: United Nations Framework Convention on Climate Change

## Tables

Table 1: Summary of Regime Frameworks

Table 2: Summary of Key Fuels and Challenges

Table 3: Summary of Alleviants

# 1 Introduction

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The identification of fuel poverty as a distinct social issue has been a gradual process, hindered in several countries by policy responses to the oil shocks of the 1970s. Both the Arab oil embargo (1973-4) and the “second oil crisis” (1978-9) were the result of increased demand and the breakdown of communications between the Organisation of Petroleum Exporting Companies (OPEC) and relevant organisations in the West (Bamberg 2000; Kohl 1982). The consequent exponential increases in oil prices impacted deeply at the household level; however, political responses were conducted with a global focus. Ikenberry (1986) organises the roles of affected developed states into three categories, dependent on their responses.

Firstly, the “State as Facilitator” is exemplified by the Nixon administration’s market adjustment measures in the US which “shape[d] production and consumption decisions” (Ikenberry 1986: 112-116): if prices were lower, the White House reasoned, households would have the financial capacity to consume more energy, thus driving national production. Similarly to the UK, however, counter-inflation measures were necessarily abandoned due to OPEC’s quadrupling of crude oil prices, resulting in a “full return to economic pricing” by the end of the decade (Boardman 1991: 18-19; Ikenberry 1986). This defensive market strategy was considered necessary regardless of its social impact. Since the state has not “radically changed [its] food pricing policies to accommodate the poor but rather [has] designed particular social welfare programs for the poor” (Laird 1977: 8), economists

in the UK advocated “rais[ing] energy prices to the consumer” despite the inevitable “social consequences”, which were barely acknowledged and even less frequently discussed at the energy policy level (DEn 1979: 8).<sup>1</sup>

Ikenberry’s (1986) other two categories concern states whose policy responses focused more on industry than economics. The “State as Negotiator”, exemplified by Japan and Germany, employed “competitive accelerated adjustment” through industrial policy, with the aim of altering attitudes and behaviours relating to energy efficiency in industry (113-116). Finally, the “State as Producer” took a neomercantilist<sup>2</sup> approach, exemplified in France by a push for self-sufficient energy supplies which resulted in the nationalisation of energy firms and a focus on alternative energy (op. cit.: 111-113). This latter role was frequently advocated as a sensible direction for UK energy policy from an economic perspective, despite the fact that the time and cost of diversification would entail serious effects on interim household energy bills for the benefit of manufacturing industries (e.g. DEn 1979; DEn 1982).<sup>3</sup>

Although the efficacy of certain policies was inseparably related to public demand or conservation, there was no attempt to alleviate the negative social effects of higher fuel costs through energy policy (Winkler 2006: 1-3; cf. Kohl 1982:

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<sup>1</sup> A similar criticism is still being made of energy pricing policy in China, where energy is heavily subsidised by the state (e.g. Hang and Tu 2006; see §4.6).

<sup>2</sup> See Hettne (1993: 211) for a full explanation; in short, neomercantilism can be understood as “an articulation of the nation state logic vis-à-vis the free play of [transnational] market forces”.

<sup>3</sup> This discussion is ongoing; see, for example, Jamasb and Pollitt 2008.

91).<sup>4</sup> In the UK, although the 1974 Labour administration principally agreed that warmth should be affordable, it was argued that this should be ensured via social rather than energy policy (DEn 1976). In practice, rapid increases in fuel prices far outpaced any rise in social security benefits for poorer households (Boardman 1991: 18-33); however, the British government introduced additional benefits to assist with heating costs in response to an exponential increase of public awareness and pressure (for example, the inauguration of the National Right to Fuel Campaign (NRFC)) (ibid.).

Although the problems had been extant for some time,<sup>5</sup> the oil shocks drove public, private and independent bodies in the UK to highlight the social implications of unaffordable fuel. The initial public response was simply an extension of the established benefits system, which was necessarily accessed by many households who had not previously needed any state assistance or had trouble paying their bills (Boardman 1991: 24).<sup>6</sup> This demographic of newly poor citizens is a phenomenon that has only later been globally recognised (e.g. Buzar 2007: 6). Fuel poverty is still considered a “new social priority” at the European level (EPEE 2009: 17).

Worldwide, fuel poverty receives still less recognition, despite the fact that “[e]nergy services are fundamental to personal development and to the reduction in

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<sup>4</sup> Cf. Surrey and Cheshire (1979: 11): “Graduation or ‘smoothed’ transition must [...] be a cardinal principal of energy pricing policy in order to comply with considerations of equity”.

<sup>5</sup> The origins of fuel poverty in the modern and contemporary sense are difficult to establish, hence this necessary vagueness; however, Boardman (1991: 25) employs a quote from Marigold Johnson at the 1976 National Energy Conference to explain that “fuel poverty is caused by ‘society’s failure to plan for an age of high-cost fuels’”.

<sup>6</sup> This reactive strategy was necessary largely due to Marigold Johnson’s point in note 5; however, this was criticised partially due to a growing demand for preventative social services, since the efficacy of each method was being heavily scrutinised at the time (Rodgers 1978).

poverty and hunger; have a bearing on gender and social inequalities in health; and are important to tackling maternal and child mortality.” (Wilkinson et al. 2007: 976). Fuel poverty research is largely confined to the UK, with minimal literature elsewhere. Furthermore, there is no comparative literature on fuel poverty beyond the European Union (EU), where comparative analyses proved unfeasible before 2004 and are hindered by “the lack of comparable cross-country data” (Healy 2004: 5); some quantitative comparative analyses of EU fuel poverty have now been undertaken (e.g. Healy 2004, Thomson 2011), but relevant policy has never been studied comparatively from a theoretical perspective.

This dissertation was undertaken in order to fill this gap in academic knowledge. If fuel poverty is to be alleviated, it is essential that current strategies worldwide are analysed and compared. A global comparative analysis demanded a framework for the selection and initial analysis of national policy;<sup>7</sup> consequently, welfare regime frameworks were employed.<sup>8</sup> Due to a lack of active and directly relevant policy worldwide, the bulk of data behind this dissertation is necessarily drawn from the global academic literature, governmental and non-governmental research, grey literature, strategy documents, and other similar sources. As such, the literature review is intrinsically important.

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<sup>7</sup> This dissertation does not attempt to analyse any policy or directives imposed by international and supranational organisations. Although it acknowledges their relevance (and occasionally references certain sources), this is a comparison of national fuel poverty alleviants; as such, the focus is on nationally-designed and -implemented policy.

<sup>8</sup> Cf. Healy (2004: 162): “It is clear that the welfare regime and socio-economic characteristics generally play a big role in mitigating fuel poverty. Countries such as Finland, Denmark, Germany and the Netherlands have relatively strong social welfare support and more equitable income distribution, and despite enduring harsh winter climates all report levels of fuel poverty far lower than those found in southern Europe, the UK and Ireland”.

This is not an attempt to quantify fuel poverty at a global level, for several reasons. A number of frameworks have been presented to date (e.g. Pachauri and Spreng 2004; Buzar 2007), whereas policy has never been analysed. Furthermore, there would be difficulties to overcome before data collection could even begin, such as the global differences in cause, effect, and definition as discussed in the literature review. Even if identical data could be collected for every country, it is recognised that international datasets are “of limited value in developing an accurate and detailed analysis of fuel poverty”, and that national datasets are far more accurate despite the fact that they are extremely difficult to defensibly compare within a quantitative framework (EPEE 2009: 6).

Differences in the conceptualisation and definition of fuel poverty would be particularly problematic to a quantitative approach, and are discussed herein; Amartya Sen’s (1987) work on the assessment of poverty is particularly applicable to the example of fuel poverty conceptualisation, and will be employed in this dissertation to enlighten the discussion on alleviants. Despite the argument that “[r]esource allocation and policy making will have to address the question, among others, of expanding the limits of choice” (Sen 1987: 18), most fuel poverty alleviation has failed to improve citizens’ energy choices. This dissertation presents the argument for the further alleviation of fuel poverty through the recognition that, although fuel as a commodity is becoming increasingly accessible worldwide, there is limited capability amongst consumers to use this commodity effectively (cf. Sen 1987: 6-7).

The overall research question will be summarised following the literature review; as a brief outline, this dissertation presents an understanding of fuel poverty at the global level. By classifying drivers and effects in the literature review, fuel poverty policy drivers become more transparent and globally convergent. Whilst arguing the phenomenon as a distinct social issue worthy of policy attention, this dissertation will examine the reasons behind relevant policy formulation, and the ways in which these are manifested. Through this developing understanding, and with the use of welfare regime frameworks to organise and analyse data, a discussion of fuel poverty policy development and transfer will be induced, and a coherent international dialogue will be inaugurated.

## 2 Literature Review

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### 2.1 Introduction

Commentators and academics in energy-related fields have noted that “major [...] social problems, both local and global, have been associated with the energy system” (Winkler 2006: 1). These problems and their drivers are the subject of a growing body of academic research and literature. Considering this level of recognition, however, it is surprising that only two countries currently define fuel poverty as a “distinct entity separate from generalised income poverty” at the policy level (Healy 2004: 179). In the global study of social policy, it is identified as a fundamentally British term (Spicker et al. 2007: 84),<sup>9</sup> although the international use of the term is continuing to expand (e.g. Hohle 2011). Additionally, a number of equivalent terms (most notably, “energy poverty”) are often used as a substitute for “fuel poverty” despite the fact that their connotations are seen to be different.

This literature review outlines the key sets of drivers, effects and definitions relating to fuel poverty whilst classifying the issue at the global level. In doing so, it asserts that fuel poverty cannot be treated as another component of generalised poverty, and that it requires a different set of alleviatory measures. Furthermore, the categorisation of drivers and effects is pertinent to the discussion on the potential transfer and progression of fuel poverty policy below.

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<sup>9</sup> The connotations of “fuel poverty” are occasionally unsuitable for use in certain countries and circumstances, as outlined in §2.3.

## 2.2 Cause and Effect

### 2.2.1 Causes: High Fuel Costs

Due to the complex factors highlighted above, the UK Labour administration at the time of the oil shocks acknowledged that if fuel poverty was to be tackled, it could not be solved in the long-term via extensions of the extant benefits systems. In 1976, “three government-sponsored reports on aspects of paying for fuel by poor consumers [confirmed] that fuel poverty was seen as a fuel-pricing problem”, although no consequent regulatory legislation was passed (Boardman 1991: 25-28). In the twenty-first century, although the Energy Efficiency Commitment (EEC) required electricity and gas suppliers to cut emissions with 50% of the savings focused on vulnerable consumers before 2008, the move to the Carbon Emissions Reduction Target (CERT) scheme in 2008 reduced this proportion to 40%, and focused on those who were already benefit recipients (DECC 2008: 8).

Additionally, as Boardman (1991) correctly predicted, taxes on fuel have increased fuel poverty in most countries, despite the fact that they could theoretically have been manipulated into an alleviatory system;<sup>10</sup> in Spain, for example, there is currently no energy tax on gas for domestic end-users, although VAT is still applied at 15% (Dromacque 2012: 19).<sup>11</sup> Elsewhere, however, energy taxes and VAT comprise up to 55% of energy bills (op. cit.: 10). The combined effects of the refusal to alter fuel tax systems, deregulating fuel markets, and iterative price

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<sup>10</sup> Cf. Shankleman 2012.

<sup>11</sup> Cf. DTI (2001: 13): “The [UK] Government has confirmed that it will not impose new taxes on the domestic use of fuel and power. This would have an unacceptable social impact and runs counter to fuel poverty policies”.

increases have exacerbated the issue to the extent that any “recent progress to reduce fuel poverty [...] is being reversed by the recent trends of increasing fuel prices” (Wilkinson et al. 2007: 974). Aldridge et al. (2008: 6) estimate that, in the UK, “even if income poverty had been completely eradicated between 2005 and 2007 [...] then the number of households in fuel poverty in 2007 would still have been higher than it was in 2005”.<sup>12</sup> This rise in fuel costs has been accompanied by a fall in switching rates, which has further catalysed the spread of fuel poverty; those who switch are now largely the “internet savvy”, leaving other groups excluded from the process (Davey 2012).<sup>13</sup> Due to the negotiable excess between market fuel prices and real fuel prices to consumers, it has been estimated that householders across the EU could save considerable amounts through switching suppliers (Dromacque 2012: 21-25).

The choices are especially limited in countries with nationalised energy provision (Poputoaia and Bouzarovski 2010: 3820). In FSU countries, “the ideological principles of the political system, which saw social welfare as an integral part of the economic structure [...], distorted pricing structures” on fuel until the fall of the regime (Buzar 2007: 20). This had induced an inefficient and uneconomic culture of energy consumption, particularly at the household level (ibid.),<sup>14</sup> which was problematic when prices began to rise to market-based levels after the fall of the

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<sup>12</sup> This is proportional, and unaffected by any rise or fall in population (Aldridge et al. 2008: 126-127).

<sup>13</sup> For more on the exclusionary nature of the internet, especially in the public sector, see Cordella 2007. The link between a lack of internet access and social exclusion has been widely documented (Aldridge et al. 2011, Crump 2004), and fuel poverty is a practical example of an issue which is exacerbated without internet access.

<sup>14</sup> Wilkinson et al. (2007: 965) argue that a *global* overdependence on subsidised and/or state-provided energy “contributes to unhealthy lifestyles in relation to diet and levels of physical activity”.

regime.<sup>15</sup> Furthermore, the poorly-constructed and -maintained supply networks combined with an energy-inefficient housing stock resulted in a huge rise in customers choosing to disconnect from district heating (DH)<sup>16</sup> in the late-twentieth and early-twenty-first centuries; the resultant underuse of DH networks made them even more difficult to maintain with any level of economic efficiency, which further increased the financial burden on those who – very often – could not afford to disconnect from the network (Poputoaia and Bouzarovski 2010: 3821).<sup>17</sup> Although there are other commercial and non-commercial options for energy supply, the impossibility of switching leaves many customers with an extremely limited set of choices.

Choices between energy sources are even more acute in developing countries. Although Wilkinson et al. (2007: 968) assert that “[a]ll countries, rich and poor, [experience] so-called fuel poverty”, the report implies that this is more distinct in developed than in developing countries. This is not necessarily accurate, although it is difficult to quantifiably compare effects between countries due to differing drivers and – importantly – fuels. Although industrial and transport revolutions demanded commercial fuels in certain sectors, much domestic energy in developing countries is

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<sup>15</sup> In most FSU states, district heating (see note 26) is still subsidised by the state at up to 45% of the real price (Buzar 2007: 65-69). Similar behaviour is also evident elsewhere: China have not fully deregulated their energy prices, which are still largely controlled by the state despite serious criticisms of the country’s resultant energy intensity, which is among the highest in the world (Hang and Tu 2006).

<sup>16</sup> I.e. a grid to which a number of households in one area are connected, for which the energy is often provided by the state. See Buzar 2007.

<sup>17</sup> In urban areas, entire apartment blocks are generally connected to DH and treated as a single household unit. This has the unfortunate effect of making fuel poverty even more difficult to measure, since the connection of entire blocks on a single heating system results in the amalgamation of energy usage figures for several households (Buzar 2007: 22).

still produced from non-commercial sources such as biomass (e.g. Winkler 2006: 1-2; Oguntoke et al. 2012).

As argued by Pereira et al. (1987: 118-119), the effects of high fuel costs across developing countries are very difficult to establish, as “data are increasingly available for urban areas, but are very scarce and difficult to quantify for rural areas”. In most countries (with the notable example of Sudan), increasing populations with increasing energy demands have generally necessitated an incomplete transition from non-commercial to commercial fuels, since there is not the capacity to sustain the production of sufficient non-commercial fuels such as fuelwood (op. cit.: 112-113).<sup>18</sup> This transition has often had an alleviatory effect on fuel poverty: a decade after the process of electrifying households in Malaysia began, for example, rural electrified households were spending five times less on their total fuel consumption than non-electrified households (op. cit.: 113-115).

Despite involvement from international organisations such as the Global Village Energy Partnership (GVEP) and the United Nations Development Project (UNDP), the rural electrification process has been sporadic and incomplete, resulting in a huge pricing disparity between communities. In India, the primary energy costs of non-commercial fuels such as biomass and kerosene are far higher than those of commercial fuels; since rural communities have not been electrified to the same extent as urban communities, this situation exemplifies the urban-rural divide faced by the developing world (Pachauri and Spreng 2004: 275). Although this certainly

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<sup>18</sup> Cf. Wilkinson et al. (2007: 970): “Less than 2% of the USA’s land area could provide all the country’s primary energy requirements from solar sources at current levels of consumption but at currently unacceptable costs”.

does not imply that electricity is a universally affordable fuel,<sup>19</sup> it indicates the extent to which disparity in source can lead to fuel poverty.

Even amongst electrified households, the cost of accessing energy can vary greatly due to the prohibitive cost of acquiring compatible appliances, and it has been argued that electrification is of limited use and importance because of this (Reddy 2003; Pachauri and Spreng 2004; Davis et al. 2008). Furthermore, despite a growing proportion of households switching to commercial fuels in certain countries, (especially China and India; Pachauri and Liang 2008: 4024), increasingly unaffordable commercial fuel prices are forcing households to switch from private supply companies and instead “to rely on informal energy sources” (Wilkinson et al. 2007: 974).<sup>20</sup>

Although this dissertation recognises and discusses these limitations, it continues to present electrification as a useful tool in the alleviation of fuel poverty. From a practical perspective, the positive effects of electrification are manifold, as exemplified by the example of Malaysia above. Theoretically, it cannot be argued that extending a person’s range of choice with an improved option is of little or no value in the fight against poverty. As Sen (1987: 43-44) elucidates, when a person’s set of choices is extended by an element of greater quality than any in their previous set, it is possible that their well-being could improve. A household may not have the capability to make full and efficient use of a commodity such as electricity, but – as

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<sup>19</sup> Cf. Boardman (1991: 20): After the first periods of rapidly inflating real fuel prices in the early 1970s, “[t]he promise of new technology using cheap electricity had, in reality, become an inappropriately installed heating system using an increasingly expensive fuel”.

<sup>20</sup> This is also applicable to certain developed countries: in the US, “up to 27% of households (depending on the state) use other heating sources (e.g. kerosene)” (Shorr et al. 2009: 22).

its financial implications illustrate – the electrification of households can invariably be seen as a positive expansion of choice (cf. Pachauri and Spreng 2004: 276-277), despite the fact that “income and presence of electrical cooking appliances [are] the key determinants of electricity consumption” in post-electrification communities (Davis et al. 2008: 5).

### **2.2.2 Causes: Access**

Although it is recognised that heterogeneity of source can lead to social inequality through pricing disparities, the electrification of households in the developing world has been hindered by a number of factors; questions of supply are among the most acute of these. Since access routes to densely populated areas can be constructed more prescriptively and economically than routes to rural locations (Barnes 2007), much electrification has been focused around urban areas (Pachauri and Spreng 2004: 273-5). Furthermore, although 1.3 billion people worldwide still do not have access to electricity (World Bank 2012), the high levels of multidirectional movement on the “energy ladder”<sup>21</sup> *despite* electrification implies that the proportion of households using inefficient, non-commercial fuels is higher than this figure (Pachauri and Spreng 2004: 273). Furthermore, as noted above, “physical [energy] access alone does not ensure that the household does in fact have access to energy services [since this] can be limited by the purchasing power of the household, the cost of energy and cost of energy-using equipment” (op. cit.: 273). As Sen (1987:

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<sup>21</sup> I.e. steps of progression from inefficient to efficient fuel supply (Pachauri and Spreng 2004).

6) argues, the possession and “characteristics of goods do not tell us what a person will be able to do with these properties”; access to electricity is not equal to the ability to use it effectively, or as effectively as others.

Even in developed countries, the movement of energy from source to citizen is financially problematic: 15% of UK households are not connected to the mains gas grid, and therefore pay inflated prices due to inefficient supply infrastructure (Kennedy 2012: 1). The constraints of a limited access budget have been further tightened by social considerations such as the high volume of complaints from citizens who disagree with the visual aesthetics and safety implications of conduction structures in proximity to their homes (e.g. Carter 2007: 157-159). Across Europe, distribution can account for up to 54% of end-user electricity prices (EU average: 31%; Dromacque 2012: 13) and up to 43% of end-user gas prices (EU average: 26%; op. cit.: 19). Despite the fact that suppliers argue these figures could be lowered via modernising electricity supply networks and integrating more renewable energy sources (most notably, wind energy), organisations such as Communities Against Turbines Scotland (CATS) and the Renewable Energy Forum (REF) have argued that these steps would “require massive investments which are likely to lead to higher distribution tariffs and/or taxes” in the EU (Dromacque 2012: 30; cf. REF 2012). It is not clear if substantial reductions to energy bills will be made possible in the long-term by diversification works in any countries.

Furthermore, distribution costs often concretise the urban/rural energy divide. In rural areas of FSU and ECE states, the cost of extending DH networks meant that

penetration “was significantly lower” than in urban areas (Buzar 2007: 22-23). Alternative fuels (e.g. fuelwood; *ibid.*) are not inflated by the same distribution and supply costs of electricity; however, it cannot be argued that their usage is any more economically efficient than DH systems, especially considering their negative social and health effects (see section (§) 2.2.4).<sup>22</sup>

Access problems such as these are concerns of energy security; that is, “protection of future energy resources, continuity of supply, the level and predictability of energy costs, and reduction of the role of energy as a motive in international conflict” (Wilkinson et al. 2007: 974). This is a relevant concept to fuel poverty; however, the concepts must not be confused. Fuel poverty has a larger number of drivers than energy insecurity, and has a broader range of effects. Where energy security could be considered a question of infrastructure and access, then, it is vital that fuel poverty is viewed as a social issue largely because of its outcomes. These will be outlined below alongside a terminological debate (§2.2.4-7).

### **2.2.3 Causes: Housing**

One of the drivers not directly relevant to energy security is housing. Prior to the publication of Boardman’s seminal work on fuel poverty (1991), the relationship between fuel poverty and energy-inefficient housing was not often considered academically, hindering conceptualisation of the wider problem.<sup>23</sup> Boardman’s

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<sup>22</sup> The costs of conducting commercial energy to remote areas has become so cumbersome in developed countries that there are now schemes promoting the usage of non-commercial fuels (Delev 2012).

<sup>23</sup> Due to a lack of academic literature on energy poverty globally, particularly in ECE and FSU countries, the theoretical connection with housing conditions has yet to be established outside the UK (Buzar 2007: 2).

research was vital in the establishment of fuel poverty as a distinct social issue because, in explaining the interaction of housing with other drivers, it gave the problem a spatial domain. If poverty is conceptualised “as a lived experience, arising from the mediation of everyday life through a [person]’s social and/or built environment”, then for those in fuel poverty “the home becomes a ‘prison’, a space of virtual captivity that creates deprivation via its interaction with the households who use it” (Buzar 2007: 13). These prison-like constraints often delimit the extent to which households can efficiently control their energy costs; to reprise Sen (1987), housing conditions limit the capability with which a household can make use of energy as a commodity.

The lack of relevant building regulations in most countries has catalysed the development of fuel poverty. The British government had advocated “improved insulation and efficient appliances since at least 1946”, and had even introduced a tiered benefits system for households with different heating needs and expenses; however, no regulations were introduced at the policy level for several decades (Boardman 1991: 21-25). Had these building recommendations been adhered to sooner, the current levels of excess winter mortality (EWM)<sup>24</sup> in the UK could theoretically have fallen to the same extent as those in countries with historically tighter efficiency regulations (Healy 2003a, Healy 2004). Healy (2003b: 89) demonstrates the gradual introduction of schemes to combat insufficient household warmth and energy-efficiency amongst EU nations; although most were

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<sup>24</sup> I.e. “the surplus number of deaths occurring during the winter season [...] compared with the average of the non-winter seasons” (Healy 2003a: 785).

implemented in reaction to the oil crises of the 1970s, he notes that “[t]he government in Norway has enforced strict building regulations since the 1960s, well before any oil crises [or fuel poverty] were evident”. Most Scandinavian countries took similar precautions against cold winter climates, with the result that EWM is significantly lower than in countries with less energy efficient homes (Healy 2003a, Healy 2003b, Healy 2004, Thomson 2011).

In many countries outside Scandinavia, however, the lack of sufficient building regulations/supervision, combined with a failure to renew aging housing, has contributed to the establishment of an inefficient housing stock. In Mediterranean climates, an argument has developed that prioritising insulation measures is unnecessary due to the local climate and conditions. In Tunisia, several studies have found that, although “passive components” such as double glazing are effective in improving the heating efficiency of most households at a low cost, these measures would entail a negligible net economic gain for the household (Ghrab-Morcos et al. 1992) and could place residents in danger of overheating during the warmer months (Ghrab-Morcos 1991). This led the researchers to the conclusion that “double glazing is hardly justified in [the Mediterranean] climate” (Ghrab-Morcos et al. 1992: 13), despite the fact that Mediterranean households suffer from very high levels of fuel poverty, especially in comparison with the EU (Thomson 2011).

In FSU countries, “[n]etworked energy structures [...] were one of the key reasons for the construction of large, centrally planned collective apartment buildings, which came to dominate urban landscapes in many FSU and CEE countries”

(Buzar 2007: 23), accounting for up to 80% of households in certain areas (Lampietti and Meyer 2003). Due to factors such as “low thermal efficiency standards, a [sic] historical lack of attention to quality in construction materials and practices, and inadequate levels of maintenance”, these blocks are extremely expensive to heat (Buzar 2007: 23). This is exacerbated by relevant deterioration such as “leaky windows and doors, uneven heat supply within buildings, as well as missing or insufficient basement and roof insulation” (ibid.).

A large number of experimental case studies into the relationship between housing and fuel poverty have underlined the importance and efficacy of improvements to the current housing stock in many countries (e.g. Shortt and Rugkåsa 2005); in Romania, for example, pilot projects have demonstrated that the energy required for heating could be reduced by 40-50% through simple renovation measures (UNDP 2011: 8). However, a small number of studies have begun to question the efficacy of improvement measures. After conducting a staged renovation plan on a typical British semi-detached suburban property and bringing it to its highest possible energy efficiency rating, the Joseph Rowntree Foundation (JRF) found that it was still far less efficient and more expensive to heat than the Joseph Rowntree Housing Trust’s new-build properties, which had been designed to maximise energy efficiency (JRF 2012).<sup>25</sup>

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<sup>25</sup> Although several reports have acknowledged this, it is also widely recognised that replacing the current housing stock is entirely unfeasible; in Romania, the sustenance of current building work levels would result in an entirely new, efficient housing stock only after 255 years (UNDP 2011: 8).

In addition, it is recognised that, especially where households occupy much larger dwellings, some householders “will remain in fuel poverty even if all reasonable energy efficiency improvements are provided” (DTI 2001: 12). This is problematic, as the successful improvements employed in the experimental case studies cannot be extended to every household with a predictable or significant level of efficacy. The reported household benefits of many home improvement measures, therefore, are only applicable in deprived areas of countries with similar buildings to the UK, since these householders “tend to live in either smaller or more energy-efficient properties than their counterparts in other areas” which are easier to improve; indeed, “the vast majority of households in deprived areas are not in fuel poverty” (Kenway et al. 2008: 6).<sup>26</sup> The heterogeneity of the housing stock illustrates the intrinsic importance of flexible alleviatory policies; the tenuousness of extending the results of interventionist experimental case studies is also highlighted here. Some of the most comprehensive studies in this vein have been undertaken by researchers in the health sciences, and the mutating links between health and heterogeneous housing have been well-documented over the past century.

#### **2.2.4 Social Effects: Health**

It is only under our contemporary understanding of public health that fuel poverty can be considered a research concern in this area. As Stewart (2004) writes,

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<sup>26</sup> Despite this fact, the majority of interventionalist studies have been undertaken in deprived areas (e.g. Shortt, N. and Rugkåsa, J. (2005); Heyman et al. 2005).

“The concept of ‘new public health’ has moved away from a medical, reactive model of health to one that focuses on the social aspects of health determination with appropriate health promotion. Public health is increasingly concerned with sociopsychological and physical environments, life styles, and prevention services, and holds addressing health inequalities at its core.”

(525)

The preventative aspect is vital for understanding why fuel poverty should be considered, in part, as a public health issue. Indeed, even before Boardman’s (1991) study legitimately presented and defined fuel poverty as a social issue, preliminary research was already being conducted into the relationship between cold housing and health. This has often taken the form of experimental case studies (Evans et al. 2000; Shortt and Rugkåsa 2005); a relatively rare phenomenon in the social sciences since “in much [...] social research it is not possible to manipulate the variables in which we are interested” (Bryman 2001: 43). Regarding fuel poverty, however, interventionist studies are relatively simple to implement, and have encountered no ethical objections.

Keatinge, one of the earliest health researchers in the field, established a strong empirical link between fatal increases in thrombosis and cold ambient temperatures (Keatinge et al. 1984: 1408). However, when Keatinge (1986) subsequently conducted a very early case study of the effects of an unlimited heating supply on EWM in an elderly population, he found that his sample did not display any statistically significant differences in EWM to that of the general population. He

concluded that sufficient household warmth did not adversely affect health; a point he continues to defend (Keatinge 2001). This was problematic, as it contributed to the idea that fuel poverty had no isolated health implications, and thus that it was not a social problem from the new ideological paradigm of the public health sector.

Recently there have been several more comprehensive studies in this area, which look beyond mortality and temperature and draw conclusions from a larger number of variables.<sup>27</sup> Indeed, even Keatinge's findings on mortality alone are of little value to most researchers: the report implies "that the effects of cold temperatures are either catastrophic or non-existent, i.e. that people either die from cold, or survive unharmed" (Liddell and Morris 2010: 2988). This position has been disputed by a vast number of sources. Sen (1987: 30), in attempting to assess well-being, draws attention to the fact that "only rather gross facts such as longevity and mortality have tended to figure in the development literature[...], reflecting the 'quantity' (rather than the 'quality') of life". More recently, health science-based research in fuel poverty has broadened: Wilkinson et al. (2007) place more emphasis on disability-adjusted life years (DALYs) than on annual deaths. This focus gives a more representative picture of the impact of fuel poverty worldwide than EWM.

At the global level, fuel poverty has been linked to Acute Respiratory Infections (ARIs), which account for three to five million deaths per year among children under five years old alone (Smith et al. 2000: 518). In addition, fuel poverty-

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<sup>27</sup> E.g. Goodwin et al. (2005) compiled a particularly broad range of data around mortality and fuel poverty, which went as far as measuring the outdoor and indoor physical activity of the elderly participants. See also Eng and Mercer (1998).

related health conditions that do not affect mortality must be taken into consideration for several reasons: further to their impact on individual quality of life and the wider community (DTI 2001: 3), their economic effects are substantial. In Ireland alone, Clinch and Healy (2000) have demonstrated that fuel poverty-related EWM costs the exchequer €58m per annum.<sup>28</sup> Furthermore, “[c]old homes also increase the time taken to recover from other illnesses [...] which adds to the pressures on health and social care services” (DTI 2001: 9).

Although this section has focused on the effects of a *cold* home on health, it is vital to note on a global level that there are many other health conditions driven by fuel poverty. Wilkinson et al. (2007: 965) have estimated that, globally, “1.6 billion people are exposed to adverse health risks because of lack of access to electricity” (965). The use of non-commercial biomass fuels is not “inescapably damaging to health, but the technologies used are not clean enough to protect health, and because of the scale of use nearly all humanity is affected”; however, there is technological potential in measures to reduce these effects over the next few decades (op. cit.: 966).<sup>29</sup> Although the health effects of fuel combustion are a problem at a regional, national and global level, a particular concern is their impact at the household level through indoor air pollution; a growing body of research suggests that the prevalence of ARIs, particularly in children, could be dramatically reduced with the electrification of households in developing countries and the

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<sup>28</sup> Cf. Liddell 2008.

<sup>29</sup> Cf. DECC (2012: 38): alongside a proposed increase in biomass fuels as a renewable heat source in the UK, the British government is introducing a strict set of guidelines for the control of their emissions.

introduction of affordable clean fuels at the household level (ibid.; Smith et al. 2000).<sup>30</sup>

### **2.2.5 Social Effects: Social Exclusion**

Although ARIs are devastating in every age group, their social exclusion effects are particularly pronounced for children. In developed countries such as the UK, it has been noted that

“Cold homes also increase the time taken to recover from other illnesses so that children may be off school more, affecting their education and development. Homework can also suffer if the family is squeezed into a small part of their home, and there is nowhere for the children to study in quiet. Fuel poverty therefore impairs the opportunities available for children”

(DTI 2001: 9)

The allegorical conceptualisation of housing as a poverty “prison” (see §2.2.3) becomes a semi-literal representation of the home for many of those in fuel poverty, as it removes or limits the choices and capabilities of a household (cf. Sen 1987).

In the British literature, it is common to refer to a “heat or eat” problem, but it is increasingly recognised that the removal of choice extends beyond nutrition; as noted by the Department of Trade and Industry, “[t]he need to spend a large portion of income on fuel means that fuel poor households may have to make difficult

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<sup>30</sup> Although several developed countries have implemented projects to encourage fuelwood use over the past two decades, these are often accompanied by policy and agencies to regulate air quality (ADEME 2012: 12).

decisions about other household essentials [which] can lead to poor diets and/or withdrawal from the community” (DTI 2001: 8; cf. Liddell 2008). Although academic studies in this area are lacking, there is a vast body of journalistic and anecdotal evidence to suggest that “[f]uel poverty can also exacerbate the social isolation felt by many older households; they cannot afford to go out; or are fearful of going out knowing they will come in, already feeling cold, to a cold home; or are reluctant to invite friends into a cold house” (DTI 2001: 9; cf. Turn2Us 2012; ageuktv 2012).

This social-exclusionary effect has been observed worldwide (e.g. Pelletier 2009: 5; Healy 2004: 165). It has been estimated that since “low income households (especially women and girls in them) spend around 100 h/year [more] collecting biomass fuels than rich households” in developing countries, there is a vast “opportunity cost” induced by a disparity in fuel source (Wilkinson et al. 2007: 970-1; cf. Nussbaumer et al. 2011: 234). In addition to the difficulty of accessing “education, health care, and household resources”, the collection work undertaken by female citizens “increase[s] their exposure to dangers of being outside their own communities (eg, violent assault)” (ibid.). Due to these difficulties in accessing energy without a commercial supply, Dutt and Ravindranath (1993) estimate that low-income households spend more, in terms of money and time, on each unit of energy consumed in comparison to middle- and higher-income households.

This further increases class stratification, and is pertinent to the observation that, in a survey of Indian households, lower electricity use was strongly correlated with lower levels of literacy; furthermore, the stratification between urban and rural

populations is exacerbated through heterogeneous fuel sources, since use of biomass and/or kerosene as an energy source was directly correlated with a lack of investment in infrastructural projects such as education or water supply (Pachauri and Spreng 2004: 275-276; cf. ONE 2005: 25). Although any claims of a causal relationship here would be tenuous without a wider evidence base and a more robust analysis, it can be noted that these correlations are indicative of a symbiotic relationship between variables related to fuel poverty and social mobility.

#### **2.2.6 Social Effects: Financial Exclusion**

As extensively argued by Pereira et al. (1987), high fuel costs – particularly in developing countries – have a significant negative effect on employment, although the authors could draw no conclusions from the data on the consumption distribution of income. Although this dissertation does not extend the concept of fuel poverty to fuel that is not directly purchased by the household, this is an important point to consider alongside the main argument because it indicates the breadth of issues relating to fuel price increases, and further defends the argument that fuel cannot be treated as simply another tradable commodity. In addition, as Black (1985: 13) has argued, although some countries learnt important economic lessons from the first oil shock that led to lower inflation during the second, only Japan learnt and applied lessons on unemployment. The cycles of debt and unemployment, among other factors, have led to increasing numbers of households falling into arrears on their utility bills and facing disconnection (e.g. Wodon 1999; Boardman 1991: 21-22).

These effects are magnified by socio-political factors. The “high social and political costs” of transitional energy reform processes in FSU states have delayed the implementation of compensatory measures for low-income households, which “has often resulted in bill recovery problems, as consumers have been unable or unwilling to pay” (Buzar 2007: 4).

A defence of these usage bills is that many companies in developed countries offer disconnection protection (Thomson 2011); by contrast, the use of prepayment cards and meters (particularly in developing countries) allows virtual self-disconnection from the network if appropriate finances are unavailable (e.g. DoE 2009). Although the benefit here is that a household cannot fall into arrears on energy payments, this enforced self-disconnection is still a problem of financial exclusion as induced by fuel poverty.

In addition, these effects are often further engorged by problems of fuel source and supply, as noted in the previous section. Where biomass is used, for example, “[t]ime spent on collection of fuel also means less time is available for agricultural or other domestic work”, with the result that “[e]xpenditure on fuel as a proportion of total household expenditure could be four or five times larger in poorer socioeconomic groups than in richer groups in the same country” (Wilkinson et al. 2007: 971). The financial exclusion effects of fuel poverty, then, are characterised by a further limitation of choice (cf. Sen 1987). The “heat or eat” scenario, as mentioned above (§2.2.5), exemplifies the global problem of prioritising

necessities; when the option of using the most harmless, efficient energy source is removed due to financial exclusion, the effects are severe.

### 2.3 Policy Thinking and Popular Definitions

Considering these drivers and effects, it is remarkable that convergent global definitions of fuel poverty have proved elusive, and fuel poverty has failed to be classified as a distinct social issue. This is mirrored by a lack of national or supranational policy and/or directives; as Wilkinson et al. (2007) have noted,

“Provision of affordable, clean, and efficient energy systems is linked to all the MDGs,<sup>31</sup> and closely to some, including child and maternal health, poverty alleviation, and environmental sustainability [...]. However, the fact that no specific MDG has been made to reduce the number of people without access to electricity is unfortunate, in view of its proven benefits.”

(1976; cf. Nussbaumer et al. 2011: 231)<sup>32</sup>

A term to encompass all of the drivers and effects is vital, as it is only when the separate elements are combined as a convergent policy focus that the “substantial” societal benefits of their concurrent alleviation (Healy 2004: 4) can be understood.

Energy policy has not progressed in terms of its social considerations since the 1970s oil shocks (see §1); as Buzar (2007: 3-6) argues, “the failure to conceptualize energy

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<sup>31</sup> Millennium Development Goals (i.e. targets set by the UN regarding global development and the universal alleviation of poverty; see UN 2012).

<sup>32</sup> The UN *is* taking action to improve access to energy sources (e.g. UNFCCC 2010) and to improve the domestic energy efficiency policies in certain areas (e.g. UNDP 2011). However, its continuing lack of an umbrella term for/definition of fuel poverty is problematic.

poverty as a distinct phenomenon, with specific contingencies and implications, has led to the theoretical marginalization of the housing, social policy and governance dimensions of energy reforms”, the inadequate coordination of which has further exacerbated the issue.

In the EU, the UK and Ireland are the only countries with indicator-based, working, policy definitions for fuel poverty (Thomson 2011: 14; EPEE 2007: 5). In Ireland, fuel poverty is defined as “the inability to afford adequate warmth in the home, or the inability to achieve adequate warmth because of the energy inefficiency of the home” (Office for Social Inclusion 2007: 67). In the UK, several key values are quantified: a household is considered fuel poor if it is:

“one that cannot afford to keep adequately warm at reasonable cost. The most widely accepted definition of a fuel poor household is one which needs to spend more than 10% of its income on all fuel use and to heat its home to an adequate standard of warmth. This is generally defined as 21°C in the living room and 18°C in the other occupied rooms”

(DTI 2001: 6)

This emphasis on what a household *would need* to spend, rather than what it spends in real terms, is problematic in translation. In France there is a growing recognition of fuel poverty (*précarité énergétique*) at the government level; however, the French government has provisionally defined fuel poor households as those who *actually*

spend over 10% of their income (Pelletier 2009).<sup>33</sup> This confusion permeates the application and utility of quantification frameworks: although a 2007 report by the European Partnership for Energy and the Environment (EPEE) attempted to quantify fuel poverty in France, EPEE later rejected this quantification in favour of an extremely broad estimation (i.e. “between 2 million and 5 million households”; EPEE 2009: 7) because of the problematic definition.<sup>34</sup>

The British and Irish definitions have also been used as the basis for establishing indicators for a small number of reports quantifying fuel poverty across the EU (Thomson 2011; EPEE 2007); although this work is certainly valuable, the chosen definitions are not globally relevant or applicable due to their focus on affordable warmth rather than a broader understanding of fuel poverty (cf. Buzar 2007: 9). The focus on heat is a result of the fact that the majority of research in the field is being conducted in the UK and EU: despite Boardman’s (1991: 5) acknowledgement of “the non-heating uses of energy [as] another component of fuel poverty”, only the heating implications of fuel poverty are discussed in her work. This focus could be attributed to the lexical frame of reference used in the UK.

Elsewhere, it is common to refer to household energy costs through a different lexicon: due to the varied US climate, for example, it is common to refer to “heating and cooling (HC) expenses” (e.g. Shorr et al. 2009: 19) instead of “affordable

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<sup>33</sup> Pelletier’s (2009: 7) report does note the limitations of this approach, but continues with it regardless.

<sup>34</sup> Cf. the definition used in the EPEE (2009: 11) paper: “Fuel poverty as a household’s difficulty, sometimes even inability, to adequately heat its dwelling at a fair, income indexed price”.

warmth”.<sup>35</sup> Although there is no distinct policy definition of what constitutes a fuel poor household in the US (Healy 2004: 179), several similar state-wide schemes to aid low-income citizens with energy bills have established a convergent “reasonable percentage of [household] income” to be spent on energy (Colton 1990: 1080). Since the inauguration of the first Percentage of Income Payment Plan (PIPP) scheme in Ohio in 1983 (op. cit.: 1079), this figure has stood at 6% of household income for gas and electricity bills,<sup>36</sup> and at 10% of household income for electricity bills in certain states (see Reed and Cross 1999; cf. Colton 1995); any expenditure that would fall above this limit is covered by the state alongside Low-Income Home Energy Assistance Program (LIHEAP) schemes (Cisel 2010). Although this forms a useful comparison with the UK, it cannot be considered a working policy definition of fuel poverty. There is no use of an umbrella term incorporating the major drivers and effects of fuel poverty, and since available support is reactive and based on extant income security schemes, it cannot be said that the US has recognised or defined fuel poverty as distinct from generalised poverty (cf. Healy 2004: 179).

In the developing world, the main uses of grid electricity<sup>37</sup> are rarely HC functions, so a global definition must be broadened once again; in Vietnam, for example, grid electricity has mainly been used for lighting (Khandker et al. 2009:

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<sup>35</sup> Rather than taking a quantitative approach to defining “affordable warmth” (e.g. Boardman 1991: 200-205), this dissertation uses the term more broadly to indicate household heat which is easily accessible. As noted, quantitative definitions of key terms would be limiting for this study.

<sup>36</sup> This is at the peak of state and national average household energy expenditure, which is estimated at 4-6% of household income (Reed and Cross 2009).

<sup>37</sup> I.e. electricity which is supplied by a national grid, and not through sources such as mini-grids and biomass fuels. This is not to imply that off-grid sources are used for other purposes, but only that there is not enough data on its usage to extend the observation to these energy sources; for an assessment of the technical and economic impacts of off-grid energy supplies such as Decentralized Distributed Generation (DDG; Ministry of Power 2007), see World Bank 2006.

10).<sup>38</sup> There are no consistent or persistent definitions of fuel poverty in the developing world, although extant poverty markers are largely based on actual energy usage rather than income and ambient household temperature. Pachauri and Spreng (2004), for example, have compiled an energy use per capita scale for households in India, and have drawn a subjective poverty line below those who have the energy capacity to create two hot meals per day, demanding 30-60watt/cap. This is an innovative approach to measuring energy shortages in the developing world.<sup>39</sup> the authors “do not only measure consumption, but also, in some sense, capability” (op. cit. 277; cf. Sen 1987). Through a similar ideology, Nussbaumer et al. (2011) devise a multidimensional index based on a far wider range of indicators, such as the possession of certain household appliances. This is not as applicable in quantification as it relies heavily on household data, which is often unavailable for developing countries; it is, however, convergent with the frameworks being employed in the European studies referenced above *because* of this reliance, since studies conducted within the EU often use data on habitat as well as energy usage (e.g. Healy 2004; Thomson 2011).

The convergent applicability of variables is vital in defining fuel poverty universally; one of the underlying arguments of this dissertation is that, for fuel poverty to be acknowledged globally, a suitably inclusive lexicon must be established. Although this work refers to “fuel poverty”, the author recognises that

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<sup>38</sup> Cf. Nussbaumer et al. (2011: 234), who draw attention to the problematic fact that “no comprehensive set of data exists on adequate lighting for households”, which has the potential to provide “numerous developmental benefits”.

<sup>39</sup> E.g. Foster, Tré and Wodon (2000) simply measure the energy use of a household in their attempt to quantify fuel poverty in Guatemala.

the term is exclusionary in a global study, since it is often identified under a different moniker. The phrase “energy poverty” has occasionally appeared above; although this introduces a level of semantic confusion, it has not been altered here as an illustration of the confusion surrounding the terms within the field. Many reports confuse the terms, using “energy poverty” and “fuel poverty” interchangeably (e.g. EPEE 2009).

Having said this, several reports draw a distinction. In the UNDP project report on Romania (2011), the terms are finely separated:

“As a general definition, a household is said to be in fuel poverty if it is unable to afford to maintain an adequate level of warmth [...]. In contrast, energy poverty occurs when a household lacks physical access to sources of energy.”

(9)<sup>40</sup>

This is the most accurate method of distinguishing between the terms, if a distinction is to be drawn; a less accurate example would be the implicit application of “fuel poverty” only to developed countries, and “energy poverty” to developing countries (e.g. Ürge-Vorsatz and Metz 2009: 92). This erroneously indicates a separation between two issues that are – as this literature review argues – the same.

Given its focus on comparatively analysing policy as opposed to quantification, this dissertation need not establish its own, static definition of the phenomenon;

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<sup>40</sup> Cf. Fankhauser and Tepic 2007, who implicitly draw the same distinction between access and affordability, in another report focused on transition (i.e. FSU/ECE) countries.

indeed, considering the divergence of terms in the literature, it would be restrictive to apply a focus that was relevant only to the UK, for example, or that was more relevant to developing countries. It will continue to use “fuel poverty”, as the term connotes a broader range of social variables than the more access-focused “energy poverty”. Creating another umbrella term in this linguistically-oversaturated area would increase confusion, and therefore the most suitable option was chosen from those available.

## **2.4 Summary**

The reports forming the foundation of this literature review are largely disconnected, and form an incoherent dialogue around fuel poverty. This is the first piece of research to form a connected discussion on the subject at a global level, and it is one of the very few pieces to study fuel poverty policy. This dissertation does not claim to plug the knowledge gap, as this would require a substantial body of academic and policy research; however, despite its superficiality, its method of sorting drivers and effects into universal categories has instigated an important process of classification.

When the drivers are placed into groups, as in the literature review, relevant policy can be sorted and compared similarly. This introduces opportunities for the discussion of fuel poverty policy transfer; the previous lack of attention in this area is partly a product of the fact that relevant policy is invariably poorly-coordinated, and that responsibility for fuel poverty alleviation is spread across various governmental

departments and external organisations in each country. This has made international policy analysis problematic.

This dissertation argues that, due to the comparable drivers and effects observed above, some level of policy transfer could be viable if enough attention was devoted to fuel poverty at the national and, more importantly, international levels. The use of welfare regime frameworks in the discussion section is a further step towards identifying conditions within which policy transfer could occur. As a final research question, then, this dissertation asks how best to further fuel poverty alleviation through policy on a global scale, by developing an understanding of the issue and studying the drivers and ideologies behind national policy formulation. It sets a foundation for future study in the area, and uses its findings to discuss the future of fuel poverty policy.

## 3 Methodology

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### **3.1 Introduction**

The knowledge gaps in the literature provided a sufficient rationale for the research questions, as outlined in the introduction and literature review; these were operationalised through an analytical policy review and discussion. In order to examine the reasons and ideologies behind fuel poverty alleviants worldwide, a data search of policy documents, press releases, grey literature, academic papers, news articles, and miscellaneous sources, was conducted. The broad focus of this dissertation was a challenge for two main reasons.

Firstly, there are little or no data available on fuel poverty policy and alleviants for a large number of countries; this fact was further exacerbated by language barriers, and different uses of terminology (§2.3; §5.3). Secondly, due to the spatial restrictions of a Masters dissertation, it was not possible to analyse every country individually. This universality would not have been logical, given that countries (with a smaller population, especially) do not tend to follow distinct welfare regime tendencies, and are particularly difficult to analyse due to a sparseness of relevant data (Sharkh and Gough 2010). However, it is recognised as a limitation here, since it cannot be claimed that one country is directly representative of others. It would therefore be difficult to defensibly apply the findings of this dissertation universally.

Despite this, a welfare state perspective was chosen because it provided an academically valid method of taking a stratified global sample from the perspective

of social policy. The two frameworks maximised the potential for classifying fuel poverty *beyond* the selected countries, and also formed a foundation for discussions regarding policy transfer. In addition, the comparative nature of the analysis allows the introduction of examples from other countries in the same cluster to support or question the findings from the country of focus; cluster characteristics were used as the foundation of the data analysis.

### **3.2 Data Selection**

In order to strategically formulate a stratified sample of social policies and alleviants relating to fuel poverty, two frameworks were applied to sort nations into sets according to their welfare regimes. Initially, Esping-Andersen's (1990) framework was employed for OECD countries. This was chosen for several reasons: firstly, it is an ideological approach to explaining the varying nature of the welfare state through its "theoretical substance", rather than simply its expenditure as in many alternative models (Esping-Andersen 1990: 19). This is relevant to the aims of this project, since this dissertation questions *why* responsibility for and delivery of fuel poverty alleviants is varied. Secondly, although it has been criticised for its alleged inapplicability and lack of use in empirical studies (e.g Bambra 2006, Menahem 2007), it is a framework that is flexible enough to be applied in most areas of social policy (Goodin et al. 1999). It therefore enhances the convergent validity of this work with others in the area of social policy. Furthermore, the independent

variables by which countries are clustered “not only explain their past evolution but also their future prospects” (Esping Andersen 1990: 33).

Esping-Andersen’s (1990) original model divided countries into three clusters, as described in Table 1. Countries with a “liberal” welfare regime are characterised by a “modest”, “means-tested” benefits system with some minimum-standard universal provision, largely catering to “low-income, usually working-class, state dependents” (Esping-Andersen 1990: 26-27). “Corporatist” or “conservative” states attach social rights more “to class and status”, and tend to uphold “traditional familyhood”; “the state will only interfere when the family’s capacity to service its members is exhausted” (ibid.). Finally, in “social-democratic” welfare regimes, “the principles of universalism and de-commodification<sup>41</sup> of social rights were extended also to the new middle classes” (ibid.).

Esping-Andersen has extended his model in later works (e.g. Esping-Andersen 1996), including Latin American, East Asian and ECE states. However, these were not factored into this study since this broader model does not include developing countries; this dissertation required a more inclusive approach. Several typologies for grouping non-OECD countries were also rejected: Crouch’s (2010) framework, for example, extended the Esping-Andersen (1990) typology by adding three further categories of FSU states. It was not applied here because it does not *meaningfully* add further divisions to the Esping-Andersen typology; FSU states (or the European second world) are divided by a different variable to the European first world (Crouch

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<sup>41</sup> “De-commodification occurs when a service is rendered as a matter of right and when a person can maintain a livelihood without reliance on the market” (Esping-Andersen 1990: 21-22).

2010: 5). Additionally, it was unsuitable for this study because it only incorporates European countries; a global analysis necessitates a global framework.

The additional typology selected was formulated by Sharkh and Gough (2010), who clustered sixty-five non-OECD countries (satisfying criteria on population and data availability) into eight clusters – A to H – hierarchically graded by their welfare provision, with A being the “closest” to OECD standards. These clusters, as well as Esping-Anderson’s OECD typology, are outlined in Table 1. The framework is convergent with Esping-Andersen’s choice of explanatory, independent variables,<sup>42</sup> and incorporates a broad selection of countries across all continents, whilst logically omitting those countries for which too little data was available. Sharkh and Gough (2010: 49) recognise that a continuous “temporal consistency” of cluster “stickiness” was only present for countries in higher clusters, and that welfare regimes were less pronounced in less-developed countries; however, these inconsistencies are not necessarily problematic for this dissertation. The discussion section engages with these instabilities.

Using all of the clusters outlined in Table 1, a country from each group was selected. Data availability was very low, limiting the selection procedure somewhat; in many cases, there was little choice. Furthermore, since the literature review indicated that many developing countries were almost identical in their experiences

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<sup>42</sup> This is not to claim that precisely the same variables were used; Sharkh and Gough (2010) constructed a decommodification index based upon state spending, literacy and morbidity levels, which is not measured in precisely the same manner as Esping-Andersen’s (1990). However, considering the vast differences between OECD and (most) non-OECD countries, it would be inaccurate to measure and subsequently cluster all nations by precisely the same formula (cf. Esping-Andersen 1990: 2).

**Table 1: Summary of Welfare Regime Frameworks**

Framework	Regime	Characteristics	Constituent Countries	Selected Country
Esping-Andersen <sup>43</sup>	<i>Liberal</i>	Focus on means-tested support for working classes, some universal transfers, modest social-insurance plans, largely/solely for low-income citizens and state dependents.	Australia Canada Ireland UK US	<b>UK</b>
	<i>Corporatist</i>	Social rights granted, but class and status differences upheld; little redistribution. Subsidiarity only when all other options have failed. Strong family emphasis. Focus on working-classes.	Austria Belgium France Germany Italy Japan Switzerland [The Netherlands]	<b>France</b>
	<i>Social-Democratic</i>	Universalism and de-commodification extended to middle-classes, through a higher standard of social provision. Pre-emptive subsidiarity; direct responsibility of the state in caring for vulnerable groups.	Denmark Finland Iceland Norway Sweden	<b>Norway</b>
Sharkh and Gough <sup>44</sup>	<i>A</i>	Successful formal security regimes. Extensive public responsibility for welfare with relatively high spending and good outcomes; most similar to OECD countries.	Argentina Belarus Brazil Bulgaria Costa Rica Croatia Estonia Israel Lithuania Poland Romania Tunisia Ukraine Uruguay	<b>Romania</b>
	<i>B</i>	Successful informal security regimes. Low state spending on welfare and little aid, but with good social security outcomes, occasionally through publically-mandated but privately-administered social protection.	Bolivia Chile China Colombia Iran Kazakhstan South Korea Malaysia	<b>China</b>

<sup>43</sup> All information taken from Esping-Andersen (1990), especially 26-29.

<sup>44</sup> All information taken from Sharkh and Gough (2010).

			Mexico Moldova Paraguay Peru Philippines Tajikistan Thailand Turkey	
	<i>C</i>	Heavy reliance on remittances from abroad; informal security often provided via migration and remittances.	Dominican Rep. Ecuador El Salvador Jamaica Morocco Nicaragua Sri Lanka	<b>Morocco</b>
	<i>D</i>	Relatively high welfare spending with good impacts, and high literacy; however, very low life expectancy (often due to HIV-AIDS).	Botswana Kenya Namibia South Africa Zimbabwe	<b>South Africa</b>
	<i>E</i>	Moderately high welfare spending; mixed results, with fairly low literacy and average life-expectancy. Poor democracy.	Cameroon Rep. Congo Ghana Indonesia Tanzania	
	<i>F</i>	Low levels of public responsibility; low public spending, heavy reliance upon aid. Very poor welfare outcomes (esp. regarding life expectancy and mortality).	Bangladesh Cote d'Ivoire India Nepal Pakistan Papua New Guinea Togo	<b>India</b>
	<i>G</i>	Low levels of public responsibility; low public spending, heavy reliance upon aid. Very poor welfare outcomes (esp. regarding literacy).	Benin Burundi Ethiopia Mali Senegal	
	<i>H</i>	Low levels of public responsibility; low public spending, heavy reliance upon aid. Very poor welfare outcomes (low life expectancy and literacy; low social contributions).	Mozambique Guinea-Bissau Rwanda Zambia	

and treatment of fuel poverty, a decision was taken to minimise repetition and to ensure an even discussion across the two frameworks: several categories were merged. Considering their similar approach to welfare provision and the lack of descriptive information in Sharkh and Gough's (2010) framework, Bands F, G and H were represented by a single country: India. The only discernible differences between the bands were in the social outcomes of policy, in terms of mortality, literacy and social contributions); since this dissertation focuses explicitly on policy rather than effects, these details are superfluous. It was also necessary to merge Bands D and E; both categories contained few countries, which severely limited data availability. Since the frameworks were used largely as a method of formulating a stratified sample, and formed only the basis of the analysis section, the merges were not seen as a detrimental limitation. They were particularly useful for addressing the research question, since they enabled an approach that was both broad and focused; merges minimised repetition, and maximised the potential for a detailed analysis. The final selection of countries allowed an understanding of fuel poverty policy at the global level, and covered all of the major categories of relevant alleviants.

Selecting a country from each set was, primarily, based on the availability of data. Since the majority of research into fuel poverty is being undertaken in the UK, it was a logical choice for liberal regimes. Linguistic barriers were the next to overcome: on the grounds of accessibility, France and Morocco were selected from the corporatist group and Band C respectively. The other countries were selected for

the availability of data in French and English, although translation software was utilised in several cases, as noted below.

### ***3.3 Data Collection***

Data collection was, necessarily, largely conducted using the internet. Certain sections (in particular, the literature review) also utilised resources from the libraries at the University of York, Cardiff University, and the British Library; however, data collection mostly involved the use of commercial and academic search engines to identify fuel poverty alleviants globally. Key search terms varied due to language, terminology and cultural recognitions; a particular problem was the confusion between the terms “fuel poverty” and “energy poverty”, which is covered in the discussion. However, the search terms were kept as similar as possible, and were all used for each country as they were established. This was for two reasons: firstly, that manipulating the search terms in order to specifically search for alleviants that supported any arguments herein would have introduced an unacceptable level of research bias, and would have skewed the results in a certain direction. Secondly, that the discrepancies between the first and last countries researched could have been too great, considering that the iterative collection of information induces a process of learning and refining search terms. Although it is recognised that the initial search terms would have been skewed by the overabundance of British literature and terminology in the field, this reiterative search process reduced this British bias as far as possible.

Language barriers were particularly problematic considering the global focus of this dissertation. Where articles were written in French, they were translated by the author. Where other languages were used, virtual translation tools were used alongside bilingual dictionaries to ensure that the correct interpretation was taken from the text. However, since this was not a satisfactorily accurate method of gathering data, this dissertation used English-language sources as far as possible. This limited the scope of data collection. However, it is defensible in that it ensured that no inaccuracies were allowed to enter the work through mistranslation.

### ***3.4 Data Analysis***

The findings were initially examined via the frameworks through which they were selected. Extant alleviants in each country were measured against the values attributed to their welfare regime, and compared to the equivalent policy in similar regimes where appropriate, facilitating a strategic approach to comparative analysis, and to the question of ideologies. Some problems with the selected frameworks were experienced at the analysis stage: notably, that Sharkh and Gough's (2010) framework is not as theoretically developed as Esping-Andersen's (1990). Whereas the latter framework analyses the motivations and paradigmatic stimuli behind the formulation and development of the welfare state, the former simply charts the current welfare expenditure and outcomes of its selected nations and groups them accordingly. This lack of focus on ideologies in favour of actions led to a limited typological discussion for Bands A-H.

Due to this theoretical disparity, the data were analysed from several subsequent social policy perspectives. These were pertinent to the issues raised by the two typologies, and furthered discussion on the explanations for certain policies worldwide and the conceptualisation of fuel poverty. Furthermore, these perspectives gave some explanation for certain policies that were uncharacteristic of their regime. The state's conceptualisation of the consumer is particularly pertinent to the overarching research questions, and Sen's (1987) theories on poverty were reintroduced here alongside a limited selection of the literature regarding positive discrimination and stratification.

The other two main areas for analysis were the lexical and connotative confusion permeating the literature and policy relating to fuel poverty, and also the possibility and instance of policy transfer. The latter is the subject of a huge body of theoretical writing, and has been condensed into frameworks by several transfer scholars (e.g. Evans and Davies 1999; Bennett 1991). Fuel poverty policy transfer would be a sufficiently broad topic for a separate piece of research; as a necessarily brief note, Dolowitz and Marsh's (1996) framework and theoretical position have been employed because their popularity increases the chance that this dissertation will be convergent with any future reports handling a similar topic.

## 4 Policy Review

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### 4.1 Introduction

Due to spatial constraints, only key policies and alleviants will be discussed; a more comprehensive overview can be found in the tables, which form a vital part of the classification and analytical process. Table 1 (above) outlines the welfare regime framework utilised in this study, and lists the countries in each group. Table 2 provides background information regarding the characteristics of energy provision for each country: its supply sector, major fuels, and specific challenges. Table 3 is the most important tool from a policy perspective, as it details the *significant* alleviants available in each country, with a specific focus on policy. Certain details will be highlighted in this policy review.

### 4.2 Liberal: United Kingdom

The UK has been praised for its attention to fuel poverty (Thomson 2011: 87), which has most recently been exemplified by the Hills (2012) report; a publicly-funded review of fuel poverty in the UK, which argued that fuel poverty is (and should be treated as) a severe, distinct social issue. Action to alleviate the issue has taken a wide range of different forms; these are often extensions of extant benefit systems, such as Winter Fuel Payments and Cold Weather Payments (DTI 2001: 25). These reactive measures do not alleviate fuel poverty in the long term, aside from potentially reducing the likelihood of a household falling into arrears.

**Table 2: Summary of Key Fuels and Challenges**

Country	Supply Sector	Key Fuels	National Contributory Challenges
<b>UK</b>	Private	Gas <sup>45</sup> Electricity <sup>46</sup>	Poor housing stock <sup>47</sup> High energy costs <sup>48</sup>
<b>France</b>	Mixed <sup>49</sup>	Electricity <sup>50</sup>	Poor housing stock <sup>51</sup> High energy costs <sup>52</sup>
<b>Norway</b>	Private <sup>53</sup>	Electricity (especially from hydro, nuclear and thermal sources) <sup>54</sup> Off-grid sources (e.g. DH, mini-grid systems, heat pumps, solar systems, etc) <sup>55</sup>	Cold climate <sup>56</sup> High energy costs <sup>57</sup>
<b>Romania</b>	Mixed <sup>58</sup>	Gas <sup>59</sup> Electricity <sup>60</sup>	High levels of DH debts, which exceed the limits of municipal debt-management services <sup>61</sup> Inefficient DH systems <sup>62</sup> Poor housing stock <sup>63</sup> High fuel prices due to high import levels <sup>64</sup> Lack of professional energy-efficiency knowledge <sup>65</sup>
<b>China</b>	Public <sup>66</sup>	Electricity <sup>67</sup>	Ongoing state energy

<sup>45</sup> Boardman 1991

<sup>46</sup> Boardman 1991

<sup>47</sup> Boardman 1991; JRF 2012.

<sup>48</sup> Aldridge et al. 2008.

<sup>49</sup> E.g. Électricité de France (EDF) is owned by its shareholders; the state holds an ~85% stake in the company, and most of the remainder is held by private and institutional investors (EDF 2010).

<sup>50</sup> EDF 2010

<sup>51</sup> Healy 2004: 163

<sup>52</sup> E.g. Wilkinson et al. 2007.

<sup>53</sup> Christie and Wangensteen1998

<sup>54</sup> Christie and Wangensteen1998

<sup>55</sup> IEA 2011: 42

<sup>56</sup> E.g. Healy 2004

<sup>57</sup> IEA 2011

<sup>58</sup> Even DH systems are not fully publicly owned, but are often owned by a number of investors from different sectors. The UK company Dalkia owns DH utilities in several Romanian states (UNDP 2011: 8)

<sup>59</sup> Buzar 2007

<sup>60</sup> Buzar 2007

<sup>61</sup> Up to 0.25% of GDP (Herrero and Ürge-Vorstaz 2011: 5)

<sup>62</sup> UNDP 2011: 8-9

<sup>63</sup> Ibid.

<sup>64</sup> Ibid.

<sup>65</sup> Op. cit.: 15

		Kerosene <sup>68</sup> Biomass <sup>69</sup>	subsidisation <sup>70</sup> High energy intensity <sup>71</sup> Social and health effects of biomass fuels <sup>72</sup> Poor housing stock <sup>73</sup> Electrification <sup>74</sup>
<b>Morocco</b>	Public <sup>75</sup>	Electricity <sup>76</sup> Biomass <sup>77</sup>	Social, health and ecological (i.e. deforestation) effects of biomass use <sup>78</sup> Electrification <sup>79</sup>
<b>South Africa</b>	Public <sup>80</sup>	Electricity <sup>81</sup> Biomass <sup>82</sup>	Electrification <sup>83</sup> Social and health effects of biomass fuels <sup>84</sup>
<b>India</b>	Mixed; regional differences <sup>85</sup>	Mixed sources for most households, including: Electricity Kerosene Biomass LPG <sup>86</sup>	Electrification <sup>87</sup> Incomplete switching to accessible, efficient fuels <sup>88</sup> Little marketplace mediation of non-commercial fuel consumption <sup>89</sup>

<sup>66</sup> Yao et al. 2005

<sup>67</sup> Mostly from coal; other sources include oil, hydro and a small proportion of natural gas (Andrews-Speed and Ma 2008: 249)

<sup>68</sup> Pachauri and Liang 2008: 4025

<sup>69</sup> Jin et al. 2006

<sup>70</sup> Hang and Tu 2006

<sup>71</sup> Hang and Tu 2006

<sup>72</sup> Jin et al. 2006

<sup>73</sup> Yu et al. 2009

<sup>74</sup> Jin et al. 2006

<sup>75</sup> ONE 2005: 31

<sup>76</sup> From hydroelectric, thermal and fossil fuel sources; ONE 2005, p. 31

<sup>77</sup> ONE 2005; GEF 2009

<sup>78</sup> ONE 2005: 61

<sup>79</sup> ONE 2005; GEF 2009

<sup>80</sup> Winkler 2006: 5

<sup>81</sup> DoE 2009

<sup>82</sup> DoE 2009

<sup>83</sup> DoE 2009

<sup>84</sup> Winkler 2006

<sup>85</sup> Ministry of Power 2005

<sup>86</sup> Pachauri and Spreng 2004: 273

<sup>87</sup> Ibid.

<sup>88</sup> Op. cit.: 273-275

<sup>89</sup> Ibid.

Its preventative policies are more advanced, and international attention to these is vital as they demonstrate the importance of viewing fuel poverty as a distinct social issue. The UK has recently passed policy to introduce an amalgamated plan for improving the energy efficiency of all households. Where, previously, a system of grants was available for recipients of certain social benefits (e.g. the Warm Front in England, which was originally universal), the new scheme provides loans to any property owners, including tenants and residents of social housing. Under the Green Deal, a loan is provided by private energy companies to cover the expenses of renovating the property, and is paid back through energy bills (DECC 2010). Since subsequent bills will be lower due to the improvements, the household energy bills should not rise except through the iterative inflations of market fuel prices; this is known as the “golden rule” (ibid.).

In addition to this, active Public-Private Partnerships (PPPs) include the Community Energy Saving Programme (CESP, although this will be phased out by 2013; see Ofgem 2009). The Green Investment Bank is also an important policy area for fuel poverty alleviation, as it draws funding for green energy development from private investors rather than adding these costs to consumers’ fuel bills (House of Commons 2011). In addition to these public and private bodies, there are a number of third sector and non-governmental organisations that are active in research (e.g. the eaga Charitable Trust), campaigning (e.g. the NRFC), and/or direct fuel poverty alleviation (e.g. National Energy Action; NEA).

### **4.3 Corporatist: France**

Action to alleviate fuel poverty in France has been catalysed by EPEE's four recommended actions "for preventing fuel poverty: A common definition, A legislative framework, A consistent diagnosis, A fuel poverty special interest group" (EPEE 2009: 10). A paper published by the recently-established French working group on fuel poverty includes plans to develop all of these goals (Pelletier 2009); however, a definition has still not been accepted at the policy level, and alleviatory measures from the state have been sparse and diverse. An EPEE report described the policy situation in France as follows:

"policy is not well coordinated [...]. Within France, fuel poverty has been regarded and treated as a problem of general poverty. Consequently, a range of infrastructure and welfare measures have been developed to help fuel-poor households but they are more curative than preventative and are not well directed towards addressing the causes of fuel poverty"

(EPEE 2009: 7).

Two examples of these welfare measures are the *Tarif de Première Nécessité* (TPN) and the *Tarif Spécial de Solidarité* (TSS), which allocate social tariffs for electricity and gas respectively. The tariffs can subsidise up to 60% of energy bills (dependent upon the household size), but they are limited in scope: TPN, for example, is only available to customers of the state-controlled utility EDF (see Table 2), and both schemes are only available to low-income households (*Médiateur National de l'énergie* 2012).

Although Pelletier et al. (2010: 6) recognise that “the most effective policy option is to tackle the problem and ameliorate the energy efficiency of housing in order to reduce the cost of keeping temperatures healthy and comfortable”, a cohesive set of policies is yet to emerge in this vein. There is some public provision for thermal housing renovations through the *Fonds d’aide à la rénovation thermique (des logements)* (FART) scheme (JORF 2012). However, the funding is only accessible by customers who are perceived (but not coherently defined) as being vulnerable (ibid.). The major *action* against fuel poverty in France is still undertaken by charitable and campaigning organisations (see Table 3). French activity regarding fuel poverty is very much comparable to that in other corporatist welfare regimes: for example, social tariffs exist in Italy, but there is a lack of awareness around long-term strategies in most corporatist nations, as exemplified by the reactive, Belgian alleviatory system (EPEE 2009: 7).

#### **4.4 Social-Democratic: Norway**

Similarly to most Scandinavian countries, Norway “demonstrate[s] exemplary thermal-efficiency standards”, since it has historically recognised the importance of “prioritis[ing] these measures in the design and construction of new housing” due to its extreme climate (Healy 2004: 34). Building regulations in Norway have been tightened further since 2007, when new legislation was introduced to make all new and renovated properties even more energy-efficient; one particular clause limits the amount of energy derived from grid electricity used by a household, which (it is

hoped) will encourage citizens to rely on Norway's often underused and inefficient DH systems, thus making DH services more affordable to all customers (IEA 2011: 42).

Energy prices in Norway are low due to the high levels of national energy production through hydro, nuclear and thermal resources (Christie and Wangensteen 1998: 44). The consequent low costs associated with transmission and distribution are further improved by government subsidies for areas in which end-users would have to pay a higher distribution rate (IEA 2011: 104). Considering this, the fact that “[e]lectricity use per capita is higher than in any other IEA member country and second only to Iceland in the world” (op. cit.: 17) is a sequitur. Even so, prices are becoming increasingly inflated: IEA (2011: 24-25) notes that the Norwegian government is directing copious economic resources towards research and development in the energy sector, and that it must review consequent impacts on the consumer in terms of market fuel prices.

Public fuel poverty alleviation in Norway is largely concerned with preventative rather than reactive measures. There are no direct monetary grants or loans for paying energy bills. It is difficult to establish how beneficial such a system would be in Norway, considering the low fuel bills enjoyed by the high proportion of extremely energy-efficient and passive<sup>90</sup> homes, which is set to increase further under the 2007 regulations.

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<sup>90</sup> I.e. “buildings in which the space heat requirement is reduced by means of passive measurements to the point at which there is no longer any need for a conventional heating system” (Feist et al. 2001: 1)

#### **4.5 Band A: Romania**

Romania's establishment of a working group on fuel poverty is a significant step towards the alleviation of the issue. Although (as noted in Table 3) there is no policy definition of fuel poverty in Romania, there is provision in the UNDP to develop policy recommendations through the working group, and to incorporate fuel poverty policy into energy policy (UNDP 2011: 39-41). Importantly, the Romanian government recognises the considerable benefits to "social inclusion, [and] economic and political empowerment of vulnerable groups" (op. cit.: 7) related to alleviating fuel poverty. The first goal of the project was to do so specifically in low-income areas.

This focus was misguided. As noted in the literature review, connection to DH systems (especially in urban areas) is very common. Although DH subsidies are available, these have recently been restricted to low-income households only (UNDP 2011: 9). Considering that over 50% of DH households pay more than 10% of their income on heating during the colder months (op. cit.: 10; cf. Boardman 1991), this restriction is problematic, and there is no current data on proportional uptake of these subsidies.<sup>91</sup> Furthermore, a "low-income household" is not coherently defined, especially at the policy level; the validation procedure for low-income households is

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<sup>91</sup> UNDP (2011: 10) also notes that this would be exacerbated as poorer customers disconnected from the network and prices for remaining customers rose.

consequently vague,<sup>92</sup> and even those who successfully applied for a subsidy would notice their prices rising due to VAT inflation (UNDP 2011; cf. ERGEG 2009: 11).

Long-term, preventative measures take two main forms: minimum energy efficiency requirements for buildings were introduced in 1998, and DH companies are subject to regulations regarding maximum profit, which can be no more than 5% of their gross income (UNDP 2011: 18-21).<sup>93</sup> However, the working group recognise that there is “no central coordination body which helps the different programmes achieve synergy” (op. cit.: 13).

#### **4.6 Band B: China**

The cost of energy in China remains extremely low to the consumer, due to the state’s subsidisation of fuel costs and the wealth of national natural resources (Andrews-Speed and Ma 2008: 248). This policy on fuel pricing has been (or is being) largely phased out by most nations in which it was implemented (cf. §4.5 regarding Romania, and §1 regarding the oil shocks). The manipulation of energy markets has been heavily criticised by Hang and Tu (2006) for its contribution to the country’s highly intense energy usage, in particular; however any alteration to this would be “multidimensional”:

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<sup>92</sup> This is particularly problematic considering that estimations of the proportion of Romanian households struggling to pay their bills range from 14.6% (UNDP 2011: 9, via national surveys) to 23% (Thomson 2011: 64-65, via EU-SILC data). A definition of a low-income household is necessary for quantifying the fuel poor, in order to inform policymaking.

<sup>93</sup> Since April 2011, however, state subsidies for private DH companies have been phased out. The effect this will have on the affordability of fuel is unclear as yet (UNDP 2011: 21).

“Increasing prices will improve energy efficiency and increase energy supply, but it will also add more burdens to vulnerable households. Because of the big gap between the poor and the rich in China [...], it will be a great challenge for the state government to eliminate fuel poverty.”

(2986-2987).

The authors proceed to note that the alteration of energy subsidisation in China requires a very gradual economic approach, since “policy makers face a trade-off among economic growth, social stability, energy supply security, and energy efficiency” (ibid.; cf. Surrey and Chesshire 1979: 11). However, despite the fact that energy policy is exceedingly difficult to alter due to the sheer number of actors involved (Meidan et al. 2009: 592), Hang and Tu believed, in 2006, “that a new round of energy price reform lies just ahead” (2987); recently, Meidan et al. (2009: 593) have noted that the Hu-Wen administration have regulated the energy markets even *more* tightly than their predecessors.

The current administration has “put a greater emphasis on social equity” than their predecessors; however, there are several ongoing problems that have not been addressed. In rural areas, there is still a substantial issue with the social and health effects resulting from the household usage of biomass fuels and, in particular, coal (Jin et al. 2006). The Chinese government have installed over 130 million improved-efficiency stoves to rural households over the last thirty years through the National Improved Stove Programme (NISP);<sup>94</sup> however, this has now been privatised (Sinton

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<sup>94</sup> Sinton et al. (2004) found that this scheme was fairly effective for biomass users, but far less so for coal users.

et al. 2004: 34). Sinton et al. (2004: 35) note that the Chinese Ministry of Health implemented an “improved kitchens programme” in the 1990s, although there is very little evidence of this scheme and no data on its usage or efficacy. China has imposed energy efficiency regulations on new residential buildings since 1986; however, these standards are low compared with western industrialised countries (Yao et al. 2005). Furthermore, despite “the high cost of energy efficiency” to households, no grant or subsidy systems are in place to support the development of extant properties (op. cit.: 1987), despite several studies indicating the consequent economic and social improvements (Yu et al. 2009).

#### **4.7 Band C: Morocco**

Similarly to the other developing countries in this study, Morocco developed a programme to catalyse electrification in urban areas during the 1960s and 1970s, and in rural areas from 1975, with the latter gaining momentum through the 1980s and, particularly, the 1990s (ONE 2005: 9-10 & 35). Although the Moroccan administration had difficulty extending the national grid to remote locales, they developed an innovative pre-electrification programme, focusing on the installation of off-grid and mini-grid systems. This was initially financed through a “Special Fund” built from a 4.5% deduction on profit from national electricity sales (ibid.); however, the project became so financially cumbersome that it required a \$30million loan from the World Bank, and substantial supplements from the European Investment Bank and the International Bank for Reconstruction and Development (op. cit.: 35-

36). Additionally, each electrified locale and household was obliged to pay 20% and 25% of the total cost respectively, which (including subsequent operation costs) would require approximately 15-20% of the household's annual income (op. cit.: 41-42 & 57). No public financial assistance has been made available (despite private and third sector loan trials in certain regions); "the insufficiency of resources in many communes" has impeded the successful implementation of the scheme (ibid.).

Energy payments are often conducted via "Nour" prepayment cards, eliminating the risk of falling into arrears but introducing the possibility of self-disconnection (op. cit.: 50). Electrification has been relatively successful, although it is unclear whether it has been measured by households or by villages, or how successful it has been from a socioeconomic perspective (op. cit.: 68). The *Office National de l'Electricité* (ONE) claim to have been contracted in by nearby and neighbouring countries "for the concession of rural electrification" (ONE n.d.). However, despite Morocco's steps to improve their energy security through diversification (ONE 2005: 31), these schemes have not been as profitable as government reports imply; the country imports "over 97% of its energy, and fuel price subsidies in 2006 were costing the Government of Morocco close to US\$1billion, representing 5.4% of the government budget" (GEF 2009: 4). Measures to improve the energy efficiency of buildings were only introduced in 2009 through a UNDP-managed and -funded project; this is due to be completed and fully implemented at the policy level in 2013 (GEF 2009).

#### **4.8 Band D: South Africa**

95% of electricity demand in South Africa is supplied by Eskom, a public utility boasting “the lowest electricity cost in the world” due to plentiful domestic coal resources generating up to 93% of the country’s electricity (Winkler 2006: 5). Due to an historically low proportion of electrified households, however, South African citizens have been unable to take advantage of this low-cost energy; in 1994, at the time of the fall of apartheid, this proportion was only 30% (DoE 2009: 30) compared to the global average of around 63% (IEA 2010: 45). Following this political and social revolution, the South African government inaugurated the Integrated National Electrification Programme (INEP); although this was initially focused on Historically Disadvantaged Individuals (HDIs),<sup>95</sup> it has increasingly been recognised that rural areas are the most impoverished in terms of energy supply, and the focus has been broadened to include these localities (DoE 2009: 10).

In addition to its preventative electrification strategy, the South African government provides an energy allowance of 50kWh to every citizen, regardless of social status or income (Davis et al. 2008). Since 50kWh is only 5.7watt/cap,<sup>96</sup> this does not meet Pachauri and Spreng’s (2004: 275) poverty line for energy; the state provision would not provide enough energy for 15W/cap, which would provide “[l]ess than one warm meal per day, a kerosene lamp, possibly a little hot water”.

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<sup>95</sup> I.e. “a South African citizen who, due to the apartheid policy that had been in place, had no franchise in national elections prior to the introduction of the Constitution of the Republic of South Africa, 1983 (Act 110 of 1983) or the Constitution of the Republic of South Africa, 1993 (Act 200 of 1993); and/or who is a female; and/or who has a disability, provided that a person who obtained South African citizenship on or after the coming into effect of the interim Constitution, is not deemed to be an HDI” (KZN Health n.d.: 2-3).

<sup>96</sup> Based on the fact that kWh can be calculated by multiplying W/cap by the duration of use in hours, 50kWh = 50000/(24 \* 365) = 5.7W/cap.

Furthermore, Davis et al. (2008) have discussed the instrumental effect of electrical appliance ownership and income on electricity use in South African electrified communities: where income is insufficient for the purchase of equipment, electricity usage does not increase. Although there are no nationwide schemes to improve the energy efficiency of homes (and no relevant household building regulations), there are a small number of opportunities for household efficiency improvements at the regional level (e.g. Optimum Energy Services 2011).

#### ***4.9 Band F: India***

India has also introduced an electrification scheme (Rajiv Gandhi Grameen Vidyutikaran Yojana; RGGVY) aimed directly bridging “the urban-rural gap” by improving electricity infrastructure via the Rural Electrification Company (REC), a public body (Ministry of Power 2005: 9). Electrification has spread since the inauguration of the scheme; furthermore, the definition of an electrified village was altered in 2004 from a broad statement covering any electrical usage “whatsoever” to the inclusion of a clause that “[t]he number of households should be at least 10% of the total number of households in the village” (op. cit.: 12). Due to the previous focus on electrification for industry and farming, this change marks an important paradigm shift within the Ministry of Power, from an economic to a social focus.

However, several papers have noted that the scarcity and intimidating cost of acquiring compatible household appliances in India has severely limited the efficacy of schemes such as RGGVY (e.g. Reddy 2003; Pachauri and Spreng 2004). There is no

government scheme to fund improvements to household appliances; REC mention the importance of providing relevant equipment to schools (REC 2011: 2), but following the fully-subsidised connection to the network for households that fall below the poverty line (Ministry of Power 2005: 16) there is no state support for accessing and using energy. Aid in this area is only provided by supranational and/or charitable organisations; for example, the distribution of long-life compact fluorescent lamps to low-income households in the Visakhapatnam province by the Climate Development Mechanism (CDM) of the United Nations Framework Convention on Climate Change (UNFCCC) (UNFCCC 2010; CDM 2006). Fuel poverty-related policy, therefore, is only tenuously effective in alleviating the negative social effects of the issue. Although the government have recognised a lack of energy access as a social problem, they have not extended this focus to consider the myriad drivers of fuel poverty.

**Table 3: Summary of Alleviants**

Country	Band	Official policy definition of fuel poverty?	Alleviants			
			Public	Private	Third	Other
UK	Liberal	Yes <sup>97</sup>	Green Deal Fuel Poverty Strategy <sup>98</sup>	[Green Deal] Payment rescheduling and prepayment cards <sup>99</sup>	Campaigning organisations (e.g. NRFC) Action organisations (e.g. NEA, NEF) Research organisations (e.g. eaga-ct)	<i>None significant</i>
France	Corporatist	No <sup>100</sup>	Income supplements for household improvements (e.g. FART <sup>101,102</sup> ) Social Tariffs (TPN, TSS) <sup>103</sup> Public efficiency campaigns <sup>104</sup> RT 2012 building regulations <sup>105</sup>	<i>None significant</i>	Campaigns from NGOs (e.g. <i>Secours Catholique</i> ) <sup>106</sup> Insulated [social] housing (e.g. <i>Fondation Abbé Pierre</i> ) <sup>107</sup>	<i>None significant</i>
Norway	Social-Democratic	No	Enova SF (Household support scheme <sup>108</sup> ; DH and local heating schemes <sup>109</sup> )	<i>None significant</i>	<i>None significant</i>	<i>None significant</i>

<sup>97</sup> DTI 2001: 6<sup>98</sup> Healy 2004: 4<sup>99</sup> Healy 2004: 173<sup>100</sup> Healy 2004: 178-179 (although, cf. JORF 2012).<sup>101</sup> JORF 2012<sup>102</sup> Healy 2004: 178<sup>103</sup> I.e. *Tarif de Première Nécessité* (electricity) and *Tarif Spécial de Solidarité* (gas) (Médiateur National de l'énergie 2012)<sup>104</sup> ADEME 2012: 32<sup>105</sup> ADEME 2012: 32 (currently only applies to commercial buildings; to be applied to new-build residential homes from January 2013)<sup>106</sup> Healy 2004: 178<sup>107</sup> Fondation Abbé Pierre 2012<sup>108</sup> Enova SF n.d.<sup>109</sup> IEA 2011: 19-20

			<p>2007 Building Legislations<sup>110</sup></p> <p>Low-Energy Programme<sup>111</sup></p> <p>Tax breaks for retrofitting in older owner-occupier properties<sup>112</sup></p>			
Romania	A	No <sup>113</sup>	<p>Working group on fuel poverty<sup>114</sup></p> <p>Non-economic support (largely allocated to disabled people)<sup>115</sup></p> <p>Economic support for gas and electricity<sup>116</sup></p> <p>UNDP Energy Efficiency Programme<sup>117</sup></p> <p>Subsidised DH (for vulnerable customers only since 2011)<sup>118</sup></p>	Working group on fuel poverty	Working group on fuel poverty	Disconnection from DH often technically impossible <sup>119</sup>
China	B	No	<p>Heavily-subsidised energy costs<sup>120</sup></p> <p>Kitchen improvement scheme<sup>121</sup></p> <p>National Improved Stove Programme (NISP)<sup>122</sup></p>	Implementation and management of NISP <sup>123</sup>	<i>None significant</i>	<i>None significant</i>
Morocco	C	No	<p>Ambitious electrification programmes (PERG)<sup>124</sup></p> <p>Part-subsidisation of</p>	Some funding/loans available for progression of	Some funding/loans available for progression of	UNDP/GEF-funded and -managed project to

<sup>110</sup> IEA 2011: 42-43

<sup>111</sup> IEA 2011: 43-44

<sup>112</sup> Healy 2004: 178

<sup>113</sup> Thomson 2011: 51-52; although, cf. UNDP 2011: 13

<sup>114</sup> UNDP 2011: 39-40

<sup>115</sup> Thomson 2011: 57

<sup>116</sup> Thomson 2011: 57; UNDP 2011: 13

<sup>117</sup> UNDP 2011

<sup>118</sup> UNDP 2011: 9

<sup>119</sup> OECD/IEA 2004

<sup>120</sup> Andrews-Speed and Ma 2008: 248

<sup>121</sup> Sinton et al. 2004: 35

<sup>122</sup> Sinton et al. 2004: 34

<sup>123</sup> Ibid.

<sup>124</sup> ONE 2005

			energy costs <sup>125</sup> Some input into UNDP project <sup>126</sup>	PERG <sup>127</sup>	PERG <sup>128</sup>	improve energy efficiency regulations <sup>129</sup>
South Africa	D	No	INEP <sup>130</sup> 50kWh free electricity per HH/month <sup>131</sup>	Optimum Energy Services (Gauteng Province only) <sup>132</sup>	<i>None significant</i>	<i>None significant</i>
India	F	No	Biogas subsidies for rural customers <sup>133</sup> RGGVY (a rural electrification programme) <sup>134</sup> Free connection to electricity for BPL households <sup>135</sup>	<i>None significant</i>	<i>None significant</i>	Aid from the UN: energy-efficient appliances distributed across selected regions with grid access <sup>136</sup>

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<sup>125</sup> GEF 2009: 4-5

<sup>126</sup> GEF 2009

<sup>127</sup> ONE 2005: 40-42

<sup>128</sup> ONE 2005: 40-42

<sup>129</sup> GEF 2009

<sup>130</sup> DoE 2009

<sup>131</sup> Davis et al. 2008

<sup>132</sup> Optimum Energy Services 2011

<sup>133</sup> Reddy 2003: 1117

<sup>134</sup> Ministry of Power (n.d.)

<sup>135</sup> Ministry of Power 2005: 16.

<sup>136</sup> UNFCCC 2010; CDM 2006.

## 5 Discussion

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### 5.1 Welfare Regimes

Although there is some variation in the prominence of drivers between countries, fuel poverty is a distinct social issue on a global scale. Identifying a cause for the disproportionate amount of relevant attention it is paid in the UK is problematic; based on evidence from the literature and policy reviews, it can be hypothesised that this attention is the result of a sequence of catalytic milestones. Campaigns against fuel poverty at the time of the oil shocks developed a lexicon around energy with social connotations, such as the National *Right to Fuel* Campaign and the birth of the composite phrase “fuel *poverty*”. Subsequently, Boardman’s research from the late 1980s was the keystone of a growing literature linking a lack of accessible energy to various causes and effects that either should have been, or were already being alleviated by social policy.<sup>137</sup> Boardman’s seminal 1991 text was so polemical that it rapidly became influential in the study and formulation of social policy; although there are still those in the UK who disagree that fuel poverty should be considered as a distinct social *issue* (Hills 2012: 38), the increasing volume of study in the area has concretised the phenomenon as a distinct social *subject*.

For some time, the public and academic attention paid to fuel poverty were policy drivers, to the extent that some of the alleviatory measures undertaken were

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<sup>137</sup> That is, social policy according to the Beveridge (1942) paradigm, which argued that “five great evils” must be eradicated by the welfare state: squalor, ignorance, want, idleness, and disease. Fuel poverty is extremely relevant to each of the evils.

uncharacteristic in terms of regime group. Admittedly, reactive policy and strategy were typical of Esping-Andersen's (1990) "liberal" universal, *minimum standard* social services for the lowest-income groups. The means-tested PIPP scheme in the US (see §2.3), for example, is as characteristic of a liberal regime as the Winter Fuel Payments offered in the UK and Ireland. They are not innovative fuel poverty strategies but, rather, extensions of extant social benefits; as such, the two measures are similarly convergent with Esping-Andersen's framework. Ireland, another liberal country, employs an extremely similar system of winter fuel grants (Healy 2003b: 2). Furthermore, the consolidation of several extant household insulation improvement schemes to create the Green Deal is characteristic of a liberal regime, in that it ensures that recipients of a loan for housing improvements are taking responsibility for their own welfare needs.<sup>138</sup>

However, preventative steps taken in the UK have been uncharacteristic in certain ways, such as the Warm Front scheme, which was social-democratic in its *initial* commitment to equality and social inclusion (if not in its rapid development towards becoming a means-tested procedure).<sup>139</sup> A subsequent regression towards a liberal benefits system is manifested to varying extents in the Green Deal. On the one

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<sup>138</sup> The concept of "responsibility" in the study of social policy is complex, and cannot be explored here; however, it must be noted that it has been instrumental in the formulation of social policy in the last few decades, especially in the UK. This is problematic to fuel poverty alleviation, as it allows the state to justify a lack of support on the grounds of citizens' perceived "irresponsibility"; see, in particular, Dwyer 1998, and Giddens 1994.

<sup>139</sup> The OECD acknowledged in a 2002 report that "[t]he UK was and remains one of the pioneers in the reform of the electricity and gas sectors" (6), and notes that one of the New Labour administration's "key initiative[s] in this area has been an array of measures designed to address the problem of 'fuel poverty'" (24). The subsequent change in administration and its effect on fuel poverty policy has unfortunately received little academic attention. Since this dissertation is in the subject area of social policy, this discussion has been neglected in favour of a more subject-relevant approach; however, it can certainly be noted that the new administration could be seen as a driver for these policy changes.

hand, its non-means-tested universalism ensures that there is no class-based stigma attached to the loans, which is more characteristic of a social-democratic regime. On the other hand, this “universalism” is not necessarily universal; in an experimental case study of building refurbishments, the Joseph Rowntree Foundation (JRF) note that “[i]f as-built performance does not meet design predictions, then ‘the golden rule’ of the Green Deal is at risk of being broken” (JRF 2012: 23; cf. DTI 2001: 12). The inflexibility of the Green Deal regarding this “golden rule” of predicted energy savings undermines the potential universalism of this refurbishment policy, and has ensured that the liberal “minimum standard” of welfare provision is upheld.

The UK, therefore, has overcome initial, well-publicised drivers for developing fuel poverty policy, and has regressed towards a liberal system; elsewhere, policy has been slower to develop without these societal and academic drivers. In France, recent measures to tackle fuel poverty have not resulted in any active policy. Consequently, it is difficult to ascertain whether the current activity has any foundation of intent, or whether it is a token measure necessitated by EU directives and pressure from national campaigning groups (see Table 3); this will be a particularly interesting area of development. Currently, however, French policy incorporates several measures aimed at lowering the cost of energy to the consumer: reactive measures such as social tariffs for both electricity and gas form the backbone of fuel poverty alleviation, and several strategies related to the energy efficiency of buildings have recently been introduced. Of particular interest here is the FART scheme, which awards means-tested grants to low-income, benefit-

recipient households who undertake insulation and efficiency works that improve their household energy efficiency by at least 25% (JORF 2012).

Compared to the UK, relevant French policy has consistently been closely aligned with its theoretical welfare regime characteristics. The provision of state support (especially for the working classes) *only* when all other options have failed is maintained: only those who have already been assessed as requiring state assistance are entitled to apply for the FART scheme, and there is no guarantee of success.<sup>140</sup> Although the proposals of the French working group are progressive, they are currently nothing more than proposals. The French reaction to fuel poverty has been typical of a corporatist welfare regime thus far, and the application of the working group's proposals will be integral in determining how far this will continue.

It is very difficult to analyse fuel poverty-related policy in social-democratic countries, because the prevalence of fuel poverty in Scandinavia is low (e.g. Healy 2004); consequently, there are few drivers for reactive policies. The Norwegian social-democratic approach to welfare provision has made it very difficult for the issue to develop; in Esping-Andersen's (1990: 28) words, "the principle is [...] to preemptively socialize" the household's needs. Although Norway has been criticised for its high spending on research which inflates energy costs for the consumer, this is offset by the low cost of nationally-produced energy, and by government subsidisation of expensive supply routes. In addition, long-standing building regulations have equipped the country with an extremely energy efficient housing

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<sup>140</sup> The scheme could also be criticised in the same way as the Green Deal has been, regarding the inaccuracy of predicting improvement outcomes.

stock. It is difficult to ascertain the key drivers behind these reactive policies, as there is no record of the prevalence of fuel poverty in Norway prior to their introduction; in the absence of this data, this dissertation can only conclude that they are the product of a social-democratic welfare environment and a cold climate.

Despite a comparable lack of current data in the developing world, the literature review organises the challenges faced by the nations in Sharkh and Gough's (2010) framework into the same root issues faced by OECD countries. In developed countries, these issues are often prioritised in a similar way: Romania, in the top band of Sharkh and Gough's typology, prioritises the *affordability* of heat and energy above measures of access or housing (although the government have recently introduced regulations regarding the latter, and are beginning to act against fuel poverty across several policy areas; see Table 3).<sup>141</sup> This similarity to the strategies employed by OECD countries is particularly comparable to France, considering its recent establishment of a working group on fuel poverty and its use of social tariffs/subsidies.<sup>142</sup>

However, Romania's typically-FSU housing stock has necessitated development work undertaken through the United Nations (UN), which is more symptomatic of countries in Bands B and C with a heavier reliance on aid. Although experimental case studies have been undertaken in other Band A countries such as Tunisia, the attention to research has hitherto proved fruitless in terms of active

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<sup>141</sup> Cf. UNDP 2011: 9.

<sup>142</sup> These measures can be presumed to be symptomatic of Romania's developing relationship with the EU; this would be a particularly interesting topic for analysis in another paper.

policy due to a lack of perception regarding fuel poverty drivers (Ghrab-Morcos et al. 1992). The recent action to alleviate fuel poverty in Romania is characteristic of the country's progressive, international aspirations; however, despite the similarity between action in Band A and action in OECD countries, the Sharkh and Gough (2010) model is only flexible in terms of re-categorisation internally (see §3.2). Despite the corporatist characteristics of Romanian fuel poverty strategy, it would be unsuitable for this dissertation to label it as an increasingly corporatist welfare regime due to its political and social history.

Below Band A, the primary challenge to policymakers is not affordability of fuel, but access to fuel. Despite the work of almost all non-OECD countries to improve access,<sup>143</sup> electrification is ongoing, especially for growing populations: as Pachauri and Jiang (2008: 4022) acknowledge, "India and China, the two Asian giants, account for almost two-fifths of the world's population, but less than one-fifth of the world's primary energy use". Despite their similar challenges, however, each of the "Asian giants" have reacted in a manner convergent with their Band. Chinese measures to alleviate fuel poverty have progressed further than those in lower Bands due to a broad understanding of the comprehensive provision necessary to secure access; again, however, a lack of data quantifying fuel poverty complicates the identification of policy drivers here. Until almost two decades ago, the state maintained the NISP scheme (see §4.6); however, in accordance with Sharkh and

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<sup>143</sup> Nineteen countries are currently served by the Global Village Energy Partnership (GVEP), an international NGO which stimulates the creation of localised private enterprises for rural electrification. All of these are non-OECD countries, spread from Bands A-H. Although none of the featured nations are beneficiaries of the scheme, it must be noted for its supranational alleviatory effects (GVEP 2011).

Gough's (2010) conceptualisation of Band B social policy, the scheme was privatised. Although there is some evidence of a state project to provide energy efficient, electrical kitchen equipment, this evidence is sparse and predominantly anecdotal. Without any valid data regarding equivalent, state-operated schemes, it must be concluded that Chinese action to alleviate fuel poverty has progressed very much according to Sharkh and Gough's framework: although social provision in China is state-administered and -mandated, financial and managerial responsibility is often privatised (see Table 1; cf. Sharkh and Gough 2010: 37-38).

In terms of regime theory, Morocco is a more complex case. The involvement of the UN (via the UNDP/Global Environment Facility) is typical of that in many non-OECD countries, but the lack of data regarding the applicability of remittances to the alleviation of fuel poverty is problematic, since remittances and migration are the defining characteristics of the set. The usage of "Nour" prepayment cards for energy bills could be seen as symptomatic of a culture of remittances; however, no further information regarding the cards is available, and there is no evidence that these can be "topped up" via remittances from abroad. Without this evidence, it cannot be concluded that the introduction of prepayment cards was driven by a recognition of remittance culture, which does not play a formal or considerable role in alleviating this particular social issue. As highlighted in the policy analysis, conflicting data portrays the national electrification scheme (*Programme d'Electrification Rurale Global*; PERG) as both a social success and an socioeconomic failure. Despite asking citizens to part-fund their own connection to the grid (in an archetypal move from a

Band C nation, in that it assumes a level of financial self-support of all households), the government is still spending an enormous amount on a formal state social security measure. This is atypical, and is an illustration of Sharkh and Gough's (2010) recognition that welfare regime "stickiness" in the third world is less pronounced than in Band A, Band B, and OECD regimes. If fuel poverty provision is taken as an indication of generalised social policy, it could be hypothesised that Morocco is shifting towards Bands D or E.

The necessity of iteratively reassessing and re-categorising non-OECD welfare regimes is exemplified by South Africa, which was moved from Band B to Band D between 1990 and 2000. This is concurrent with the fall of apartheid, and with a paradigmatic shift regarding welfare provision: South African welfare spending has been relatively high with some impressive consequences. The national electrification process has been varied in terms of impact, due to its previous misallocation of funding towards HDIs. However, the recent focus on rural areas has vastly increased the efficacy of electrification schemes, and INEP is achieving high success rates with low input from international and supranational organisations. Although Sharkh and Gough (2010) assert that Band A bears the closest resemblance to OECD countries in terms of social provision, the South African welfare state must not be considered ineffective. Fuel poverty is largely irrelevant to HIV/AIDS,<sup>144</sup> which makes further

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<sup>144</sup> Although cf. Wilkinson et al. (2007: 976): "The adverse health consequences of climate change will also probably fall disproportionately on individuals already disadvantaged by poverty and disease, including HIV/AIDS, and energy is central to issues surrounding global partnerships and governance for development"

analysis of South Africa difficult within the framework.<sup>145</sup> However, its establishment and application of a minimum-standard, universal state energy provision of 50kWh per household is more comparable to liberal regimes than to other Band D nations, many of which are currently reliant on schemes such as the GVEP (GVEP 2011).

A contrasting example of regime “stickiness” can be found in Indian fuel poverty provision, which has progressed almost exactly according to Sherkh and Gough’s (2010) Band description. Although RGGVY has been successful in certain provinces, especially considering its newly-formulated definition of an “electrified village” (Ministry of Power 2005), the state takes an extremely low level of responsibility for further fuel poverty alleviation. All state benefits, including RGGVY, are directed towards marginalised groups such as rural communities and households which fall below the poverty line; however, even these benefits are of little value considering that low-income households receive no further support for electricity payments, with the result that electrified households often cannot access electricity. A characteristic reliance upon aid is also manifested in Indian fuel poverty provision, especially through the work of the UNFCCC (2010); however, even these measures relieve the state of responsibility and do not act as policy drivers. By distributing energy-efficient appliances across selected underdeveloped electrified regions, the UNFCCC not only contributes to the class-stratification effects of welfare provision, but also places the onus for fuel poverty alleviation and efficient energy use onto the

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<sup>145</sup> It could be argued that, due to the unsafe conditions in which women and girls are obliged to collect non-commercial fuel sources such as wood (see 2.2.5), electrification could theoretically lead to a drop in new infection rates. Establishing a causal relationship here would require substantial analysis of as-yet-non-existent data; however, this would be a particularly valuable topic for further research.

citizen. This is a trend of mixed intensity across the selected countries, and is a relevant topic for discussion.

## ***5.2 The Role of the Consumer***

One of the major ideological differences between the countries of focus lies in their treatment of domestic citizens. As noted in the literature review, although there have been proposals for systems of taxation or of utility profit regulation that would potentially bring down real fuel prices for the consumer without directly manipulating the market, these have very rarely been implemented. Instead – particularly in developed countries – there have been a number of attempts to reduce consumers' spending on fuel by changing the behaviour of the consumer. Collier et al. (2010: 20) use the CERT scheme in the UK to illustrate this point, which “distributed 27.7million energy efficient light bulbs in the first two quarters of 2008”. Certainly, this was not a negative or inutile step towards alleviating fuel poverty (and reducing emissions). However, the ideology behind the scheme is that the citizen should take responsibility for both the government's self- and supranationally-imposed targets, and for reducing their own energy bills. This is comparable to the Green Deal in its focus on shifting responsibility for funding household energy efficiency improvements from the state to the citizen (and also to private companies).

This paradigm is not limited to the UK. In France, public efficiency campaigns form the backbone of fuel poverty alleviation strategy; and in many developing

countries (e.g. South Africa) the government takes no responsibility at all in areas such as the energy efficiency of housing (see Table 3). Citizens must undertake relevant improvements of their own volition, and the necessary equipment and expertise is only available from commercial companies which often only operate in certain Provinces.<sup>146</sup> These are active and passive realisations of the same ideology: that the onus is on citizens to change their behaviour regarding energy in order that they can afford inflated fuel prices, rather than on the government to alleviate the negative social effects created by a combination of past and present national policy (or lack thereof) and international fuel markets.

Having said this, in most of the other countries of focus here, the government does take some of the alleviatory burden regarding fuel poverty. Electrification schemes are a prime example: in Bands B-G, the process is almost entirely state-coordinated, and is either nationally or regionally implemented by the authorities (see Table 3). Exceptions to this rule are countries that, due to economic constraints, rely on organisations and projects such as the UNDP and the GVEP. Furthermore, the Chinese government has allegedly furthered state responsibility through the provision of suitable equipment (§4.6). Although this manner of support is rare, it demonstrates that governments of developing nations are attempting to improve energy efficiency and access through their own means, rather than attempting to influence the behaviour of citizens in order to fulfil welfare and environmental goals.

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<sup>146</sup> GVEP is currently developing localised small and medium enterprises addressing household energy efficiency in nineteen countries (GVEP 2011).

Since access discrepancies are often the most important driver for fuel poverty in developing countries, this is a particularly effective public alleviant.

Housing issues are of comparably high importance in developed countries, and have often received a similar level of state attention. In Norway, a state scheme was run in which the government took full responsibility for funding household energy efficiency improvements; however, the scheme is now defunct, and it has been argued that it was largely used by “free riders” who could have funded their own household improvements (Haugland 1996). Despite these criticisms, this is very much compatible with Norway’s social-democratic ideology: the state pre-emptively meets the expectations of both its working- and middle-class citizens by providing universal cover. There is no attempt to place responsibility for energy-efficiency on the citizen, even if they would not necessarily need support.

The differing conceptualisations of the role and responsibilities of the citizen instigate discussions on stratification through fuel poverty policy. Again, this is largely compatible with Esping-Andersen’s welfare regimes for each of the selected countries. Norway’s policy of pre-emptively distributing “an equality of the highest standards” (Esping-Andersen 1990: 27) in terms of protection from the cold has not stratified certain classes or income bands, and has ensured that no stigma is attached to receiving state assistance for improvement measures. Some of the measures introduced in the UK have taken a similar universalistic stance, although their standards were not quite as high (see §4.2 & §4.4): although the Green Deal is, theoretically, a universal social provision, it essentially privatises fuel poverty

provision due to the nature of its funding, thus removing responsibility from the state despite its initial input. This is comparable, in some respects, to Chinese fuel poverty alleviation which is state-mandated but not state-funded.

Furthermore, the majority of reactive measures worldwide are simply extensions of extant benefits systems, and are only available to groups such as the elderly and unemployed. Certainly, this dissertation would not disagree that recognising and defining a “vulnerable household” is of global importance (and of particular relevance to fuel poverty; see Thomson 2011). However, the lack of universal state support through certain channels serves to stigmatise the reception of these particular measures. A particularly prominent illustration of positive discrimination<sup>147</sup> can be gleaned from early fuel poverty provision in South Africa, which was directed towards HDIs; however, the refocusing of the scheme onto rural areas is symptomatic of the rapid development in South African social policy, and its movement between Bands.<sup>148</sup>

The situation in Romania is comparable, as subsidies are available for vulnerable customers only; however, it could be argued that this focus is a preventative as well as a reactive measure, and that its accompanying stratification is – to some extent – justified on behalf of its redistributive effects. Due to high DH disconnection levels, profits in the sector are dropping, leaving narrower margins for carrying out improvement works; the consequent inefficiency inflates the cost of DH

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<sup>147</sup> See Edwards 1987.

<sup>148</sup> This paradigmatic shift exemplifies Edwards’ (1987: 2) recognition of an interplay between “the needs principle” and “the principle of rights to compensation from harm”; utility maximisation is constantly improving in South Africa.

to the customer, thus increasing the likelihood of falling into fuel poverty (e.g. Tirado Herrero, S. and Ürge-Vorsatz 2011: 67). Romania's choice to offer subsidised DH to vulnerable households is, as a primary reactive measure, similarly stratifying to the British and French examples. However, a secondary effect is an incentive for certain customers to connect, reconnect or stay connected to DH systems; the state funds allocated to alleviating fuel poverty are thus redistributed *up* through the social system, to DH users who would not qualify for supplements, through potentially lower energy costs. Having said this, the negative social factors of this scheme seem to outweigh the benefits: as Sen (1986) argues, the quality of the choices available to each citizen can be used as a measure of how far their well-being has the potential of being extended. Despite the fact that the citizen is not in fuel poverty in terms of finance and warmth, therefore, Sen's conceptualisation of poverty could be used to argue that their lack of choice does not enable them to live as well as they possibly could, and that they are still in a form of fuel poverty.

### ***5.3 Lexicon and Connotations***

Unfortunately, definitions of fuel poverty are often either too precise or localised for this choice-based conceptualisation to hold much value internationally. "Fuel poverty" itself is only considered relevant to the UK; Spicker et al. (2007: 84) recognise the non-heating uses of household fuel, and yet continue to refer to fuel poverty only in the British sense. Furthermore, some of the relevant literature in Britain persists in describing fuel poverty as "a peculiarly British public health

scandal” (qtd. in Walker 2008: 4514) despite evidence to the contrary. Although the origins and connotations of the phrase “fuel poverty” are indisputably British, the phenomenon itself is certainly not limited to the UK; the British research in the area is extremely useful in identifying and alleviating fuel poverty, but the focus and consequent lexicon are not useful for the recognition and alleviation of fuel poverty worldwide.

As noted above (see §2.3), reports often confuse fuel poverty with energy poverty, using the terms interchangeably; there is also confusion around the related concepts of energy poverty and energy security. Although the UNDP report on Romania (2011) is guilty of this association, it also poses an interesting situational interplay between fuel poverty, energy poverty and energy security; the former is prioritised through building improvements because addressing energy poverty (as defined by the report; see §2.3) via substantial upgrades to DH systems would jeopardise energy security (UNDP 2011: 12). In other words, energy poverty is neglected in favour of fuel poverty alleviation for the sake of energy security.

This specificity is problematic to this dissertation, in that policies and strategies that have been identified as relevant to alleviating fuel poverty are potentially relevant to a distinct concept. Indeed, in the developing world relevant policy is written using a lexicon based around energy *access* rather than energy *poverty* (cf. Üрге-Vorsatz and Metz 2009: 92), representing a particularly narrow focus. However, terminological variations are unnecessary. Although certain countries choose to refer to “energy poverty”, the measures that they take are still

regarded as alleviatory action against fuel poverty by supranational and research bodies; for example, relevant French policy is discussed as a commitment to fuel poverty alleviation (e.g. Dubois 2012), despite the literal translation of its equivalent term being “energy poverty”.

Furthermore, although the choice to use “energy poverty” is often rooted in the state’s belief regarding its unique form of the issue, policy to alleviate this global phenomenon falls into the same categories worldwide. For example, although it is customary in the US to refer to “energy poverty”, this semantic distinction has not affected its relevant alleviatory policy: there is a similar focus on fuel affordability, especially to vulnerable customers, as found in countries that favour “fuel poverty”; it certainly could not be argued that the US focused more intently on measures of energy security and access, as may be expected by their terminological choice. This dissertation therefore argues that the lexical differences between discussions of the same root phenomenon have not led to particularly divergent policies worldwide. The only featured country that draws a clear distinction between the two terms both in terms of government strategy (e.g. UNDP 2011: 12) and academia (e.g. Fankhauser and Tepic 2007) is Romania, and even the British and Irish governments do not acknowledge both terms at the policy level. This terminological interplay further obfuscates the phenomenon as a distinct social issue worldwide.

The lexical prominence of “energy access” and “electrification” in the developing world is convergent with a policy focus on these particular issues; indeed, electrification is often the only alleviant for which the state takes responsibility, as

outlined in the policy review. One of the most pressing arguments for the development of a coherent global fuel poverty lexicon is that an holistic definition of the issue would have the potential to induce a more holistic policy approach. It is absolutely vital that a consensus on an umbrella term is reached, and that the term is defined globally.

## 6 Conclusion

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Following this terminological discussion, this dissertation concurs with the 2009 EPEE report in its recommendation of the importance of consistency through four actions “for preventing fuel poverty: A common definition, A legislative framework, A consistent diagnosis, A fuel poverty special interest group” (EPEE 2009: 10). The first and third of these are the most pressing, as the discussion and literature review indicate the extent to which semantic confusion and the lack of a global definition have hindered the recognition of fuel poverty as a distinct social issue.

Although drivers and effects vary in prominence worldwide, the literature and policy reviews have demonstrated that they fall into convergent categories, thus building a framework for creating a relevant global definition of the phenomenon. This dissertation has deliberately not imposed a distinct, quantifiable definition of fuel poverty on its research due to a determination not to exclude any relevant data on the basis of a potentially arbitrary definition. Having undertaken this research, it is now possible to recommend a global definition of the issue as follows:

A household is considered to be in fuel poverty if pricing, access and/or ecological factors render energy inaccessible through the most efficient and harmless channels.<sup>149</sup>

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<sup>149</sup> Cf. Foster et al. (2000: 2): “A household is considered to be in fuel poverty if its energy consumption does not meet basic energy needs”.

The specification of “the most efficient and harmless channels” is inspired theoretically by Sen’s (1987) ideas on the importance of choice and capabilities, and practically by the fact that although households (particularly in the developing world) can often access non-commercial fuels with relative ease, this access is often to the detriment of their health, social mobility, and financial mobility.

Admittedly, this definition does not provide a particularly strong foundation for a “consistent diagnosis” of fuel poverty: there are too many interpretable elements, and its necessary breadth is as much a shortcoming as it is an asset. Similarly to this entire dissertation, the definition is a superficial inaugural examination of a topic that requires much more research at the academic level; it is an attempt to understand the global fuel poverty situation, and a call for further attention. The issue must be recognised in order to allow a coherent global discussion of relevant policy to begin.

It has been recommended that the relatively advanced fuel poverty policies in the UK should be exported to other affected countries. Having analysed the applicability of welfare regime and linguistic frameworks to the existence and/or manner of policy relating to fuel poverty, it is difficult to establish a coherent ground on which to discuss the possibility of policy transfer. Fuel poverty is a particularly problematic issue for the application of transfer theory because relevant policy is often so diffuse and poorly-coordinated that it is difficult to identify a coherent policy set even in the UK, let alone identify the origins of that set (cf. EPEE 2009: 7).

Furthermore, since “fuel poverty” is not a fully-defined or even recognised umbrella term in most countries, policy transfer is difficult because no distinct reason for the necessity of policy *or* transfer has been solidified. Hulme (2005: 419), for example, defends the notion that when “change is required because of major systemic disruptions or crises [...] policy makers must respond intelligently by making use of knowledge transferred from other contexts”; since most countries do not recognise fuel poverty, change is not considered to be required. When applied to the oil crises of the 1970s, it is possible for analysts such as Ikenberry (1986) to organise affected countries into sets according to their responses;<sup>150</sup> regarding fuel poverty however, responses are spread across so many departments and areas that it is difficult to establish a context within which policy transfer could occur.

There are similarities between policy measures in certain countries, but these tend to share some ecological, social and political conditions. Although this dissertation has taken a broad cross-section across welfare regimes, the study of fuel poverty policy transfer may be better focused on several countries within the same regime: the UK and Ireland, for example, are fairly similar liberal welfare regime states facing extremely comparable levels of fuel poverty. Although they were initially “at two extremes in terms of their policy response to tackling the issue” (Healy 2003b: 92), a process of knowledge sharing and policy transfer have resulted in some level of convergence. This transfer process has not been studied in detail, and is a concerning gap in the literature; however, the lack of a coherent global

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<sup>150</sup> Ikenberry’s (1986) framework is, interestingly, not incompatible with Esping-Andersen’s regime framework; it essentially divides the corporatist countries into two sub-categories.

lexicon for the discussion of fuel poverty is a hindrance to both the discussion and the act of policy transfer in this case.

Furthermore, this dissertation argues that the minimum-standard, universal provisions currently available in the UK are often ineffective; the Green Deal has been criticised on a number of its vital shortcomings even before its official inauguration (e.g. REF 2012). Additionally, since the scheme essentially places responsibility for funding home energy improvement in the private sector, it would be unfeasible in countries with nationalised utilities due to the necessary state funding.

As an alternative to recommending policy transfer from the UK, then, this dissertation advocates a more passive form of lesson-drawing. The process of establishing and codifying a definition of fuel poverty nationally is ongoing, and projects such as the Hills (2012) report have entrenched the issue as distinct at both the local and national level. This attention to definition is a process which must be exported (cf. Probert 2012), in order that an international fuel poverty dialogue can be established. Lessons drawn from the UK's iterative research and development progress would not be confined only to liberal regimes, or even to OECD countries, but could be applied worldwide given adequate national and academic attention.

Furthermore, if fuel poverty alleviation is to develop, greater interdepartmental coordination is necessary at the national level. There are certainly lessons to draw from nations that have created a working group on fuel poverty (e.g. France, Romania), but the efficacy of these groups has yet to be confirmed; if a

coherent legislative framework cannot be established, then the groups cannot be considered successful. It is not the creation of a working group that is important, but the creations of that group. The potential for improving fuel poverty alleviation is vast, but only if the working group maximises its potential via greater coordination of all policies relating to fuel poverty, and better signposting to these through a coherent lexicon.

This dissertation underlines the fact that fuel poverty *must* be defined and codified as a distinct social issue worldwide in order for its alleviation to begin in earnest. Without this clarity, relevant policy will continue to be designed as additions to extant benefit systems. This is not an issue which can be solved by direct national or international policy transfer, since there are no clear policies which have achieved particular success in alleviating fuel poverty. The only exceptions are Norway's preventative building regulations, which are in the transfer process worldwide; however, the situation has developed beyond issues of housing, and these regulations alone will not be sufficient in less affluent countries. The global alleviation process must begin with a common definition and understanding, through which consequent policy must be formulated for each of the three fuel poverty drivers, and coordinated both nationally and internationally.

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