Defining Fuel Poverty in Northern Ireland: A preliminary review

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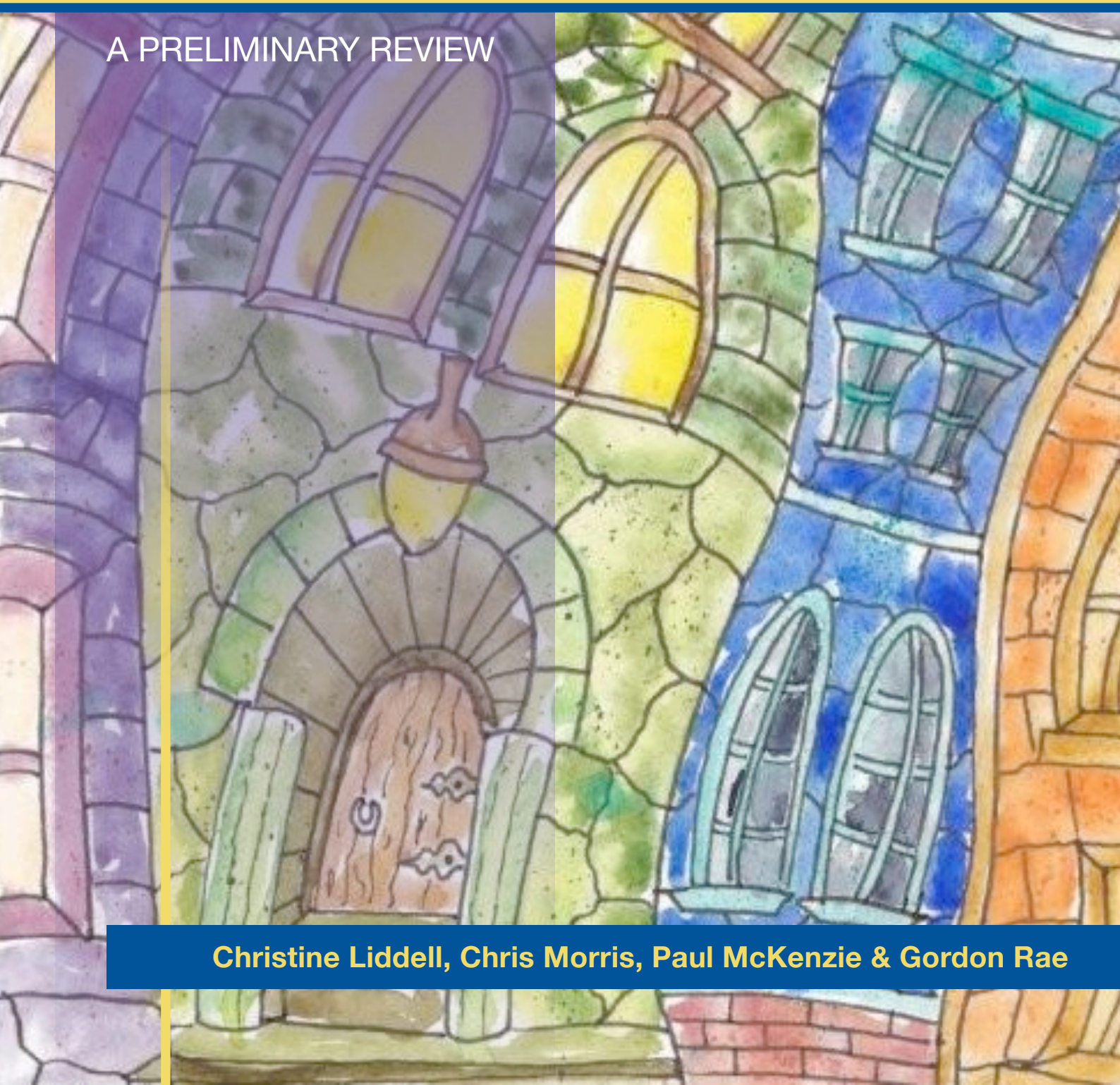
Defining Fuel Poverty in Northern Ireland

A PRELIMINARY REVIEW



Christine Liddell, Chris Morris, Paul McKenzie & Gordon Rae

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"Fuel Poverty... The definition is deceptively simple but actually acknowledges a wide range of components. Its usefulness as a policy tool therefore depends on the sophistication of understanding of the different elements that make it up.

- The income of the household
- The cost of fuel and ease or otherwise of fuel substituion
- The efficacy of the heating system, and the ability to do anything about it
- The energy efficiency of the building fabric, and the ability to do anything about it
- Under-occupancy (a particular problem leading to fuel poverty in the elderly)
- The ability of the householders to use energy efficiently...
- The attitude to energy use (though the fuel poor are often acutely (and dangerously) aware of the energy they use)
- The ability of the customer to respond to price and other signals
- The ability to adopt new technologies

Thus equating fuel poverty simply to the price of energy would lead to perverse policy decisions. However, as long as the mulitple components underlying the definition are understood, it has the advantage of having been stable since its adoption in the 1980s and giving a genuine if multi-faceted window on household energy."

(Institution of Engineering and Technology, 2010).

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Glossary of Terms

BEC	Benefits Entitlement Check
BRE	Building Research Establishment
CHS	Continuous Household Survey
DLA	Disability Living Allowance
EFP	Expenditure Fuel Poverty. *This is based on the ratio between actual household expenditure on domestics fuels and household income.*
EHCS	English House Condition Survey
EHS	English Housing Survey
EU-SILC	EU Statistics on Income and Living Conditions
FES	Family Expenditure Survey
FRS	Family Resources Survey
GB	Great Britain (the countries of England, Wales and Scotland)
HCS	House Condition Survey/s
IS	Income Support
LCS	Living Costs Survey
NEA NI	National Energy Action Northern Ireland
NIHCS	Northern Ireland House Condition Survey
SAP	Standard Assessment Procedure – a metric representing the energy efficiency of a building and its energy sources
SHCS	Scottish House Condition Survey

Executive Summary

This Preliminary Review **Defining Fuel Poverty in Northern Ireland**, was commissioned by the Department For Social Development Northern Ireland in August 2010. It comprises the first of three independent Reviews of Fuel Poverty being carried out in different parts of the UK.

Chapter 1 outlines the relationships which ideally pertain between Definition, Strategy, Policy, and Implementation Programmes, illustrating the extent to which they should all be embedded in a single framework. The Chapter then outlines the rationale for the UK's 2001 Fuel Poverty Strategy, and the rationale for the present round of reviews. Despite scepticism about these reviews, they are in fact long overdue given the debate that has surrounded Fuel Poverty since the Strategy's inception more than a decade ago. Regions of the UK have the greatest expertise and experience in working with Fuel Poverty, and the reviews have potential to inform both national and global debate.

Chapter 2 outlines the rationale for a review in Northern Ireland. The region experiences some of the coldest climatic conditions in the UK, as well as having the highest rates of fuel poverty. Whilst there are three classic causes of fuel poverty (energy efficiency of building fabric, income, and price of domestic fuels), fuel poverty in Northern Ireland has been driven prominently by the price of heating oil, and more recently by volatility in the price of gas. It is recommended that a Working Group on Domestic Heating Prices be set up at regional government level. It is also recommended that fuel poverty prevalence rates should be quoted separately for gas-fired and oil-fired households.

Chapter 3 begins a series of 6 chapters which examine contested aspects of the UK Fuel Poverty Definition. It concludes that WHO Guidelines for an adequate standard of warmth should be more fully complied with when advocating indoor temperatures for vulnerable people.

Chapter 4 examines the Strategy's claim that it opted for a definition which was "widely accepted". Whilst this was the case at the time the Strategy was written, it is no longer so. Other definitions are growing competitors at a global level. It is recommended that Northern Ireland maintain a watching brief on these alternative definitions, in particular

those that focus on the quality of energy as an aspect of fuel poverty. Given a heavy reliance on oil, issues of *fuel quality* are of particular relevance to this region. Chapter 4 also recommends that the technical definition of fuel poverty be augmented with a lay definition. A less technical form of words would make the concept more readily accessible to the public, planners, and local politicians alike.

Chapter 5 examines a vital aspect of the definition, namely "needs to spend". The phrase embodies both the letter and spirit of the UK Fuel Poverty Strategy. The Chapter concludes that needs to spend should remain central to how fuel poverty is defined in Northern Ireland, since it captures a large cohort of the fuel poor who would be excluded from a simpler *fuel expenditure-to-income* based metric. In addition, the new Northern Ireland Fuel Poverty Strategy (DSDNI, 2011) focuses on improving energy efficiency, monitoring of which requires a needs to spend metric.

Chapter 6 examines an equally important aspect of the definition, namely the decision to opt for "10% of income" as the threshold beyond which a household would be classified as fuel poor. The origins and implications of this threshold are explored. In 2008, twice-median need to spend on domestic fuels was 10% in England, but it was 18% in Northern Ireland. Treating fuel poverty as it was originally intended, namely as a relative concept, and recalibrating twice-median at regional baselines would alter the UK fuel poverty landscape substantially. In Northern Ireland, the regional twice-median returns a fuel poverty prevalence rate of 13% in 2009, compared with 44% when a 10% threshold is used. Even so, this represents more than 75,000 households. For parity with the rest of the UK it remains vital that a 10% prevalence rate is maintained (yielding 44% in fuel poverty), whilst at a local level, a local twice-median is better suited to monitoring progress in tackling it.

Chapter 6 goes on to examine the constraints imposed by the binary classification which a 10% threshold imposes. Over the past decade, the challenge of having to cross a 10% threshold in order to remove households from fuel poverty has made it difficult for Northern Ireland to reduce fuel poverty levels – much more-so than it has for England or Scotland. A continuous severity index at national level would help resolve this, and would allow more realistic assessments of the true impact of fuel poverty programmes. This index would help ensure that resources can almost always be targeted towards households who are fuel poor (a notable failure in all regional programmes to date).

Given difficulties in implementing multi-dimensional risk tables on the doorstep, it is recommended that an areas-based approach to severity-based targeting be initiated.

Chapter 7 examines income and the many metrics that have been used to assess it when analyzing fuel poverty. It concludes that there is a compelling need for a single metric, and that sufficient evidence exists for governments to agree on one. The decision may require some ring-fencing of funding to protect groups that will be marginalized once a single metric has been set.

Chapter 8 assesses whether "all household fuel use" should be replaced with a metric which measures heating demand only. It is difficult to disaggregate heating from other domestic energy demands, and the Chapter concludes that the status quo is more practical. However, information about householders' lifestyle choices, appliance purchases, and discretionary energy consumption should be incorporated into how household fuel demand is measured, since many recent studies have highlighted the significant savings (5-20% of expenditure) that can be made when households become focused on saving energy though behavioural and attitudinal change. Better resourcing of agencies and programs which support these aspects of public engagement is advocated.

Chapter 9 describes the health impacts of tackling fuel poverty, and the extent to which the Strategy has been responsible for programmes that are unusually cost-effective. In the midst of so much contestation and debate about missed targets and failed policies, these impacts are often forgotten. Whilst the Strategy was initially formulated as a means for protecting human health, the Chapter recommends that "health" be replaced with "health and well-being", given the predominance of positive impacts on mental health.

Chapter 10 seeks synergies between the recently published Northern Ireland Fuel Poverty Strategy (2011) and the Preliminary Review. It argues that an areas-based approach to delivering strategy will best fulfill the four key objectives namely targeting of resources, improving energy efficiency, affordable energy, and building strong partnerships. A mode for delivering this approach is then described.

Chapter 11 concludes the Preliminary Review. It returns to the concept first introduced in Chapter 1, namely the systemic relationships that should ideally exist between Definition, Strategy, Policies, and Implementation. It argues that, whilst the links between Definition and Strategy remain strong with only modest slippage between them over time, links

between Definition/Strategy on one side and Policies/Implementation on the other are extremely weak. This has rendered the system as a whole inherently unstable and is largely responsible for a variety of recent disappointments such as missed targets and misdirected resources. Whilst escalating energy prices have ultimately caused the Strategy to unravel, the loose association between Strategy and Implementation exposed an already weakened system to a formidable stressor.

The Preliminary Review expresses the view that

- the Definition remains strong despite a decade of contestation,
- the Strategy too remains sound, but
- the Policies and Implementation programmes that flow from the Strategy have shown remarkable slippage from original intent.

Fuel poverty is a multi-dimensional concept with several different causes, and many different impacts. The definition is multi-dimensional and multi-purpose. Consequently, a variety of indicators are likely to be required to do it justice. Issues surrounding the 10% threshold are acutely problematic for Northern Ireland. The Review advocates that a local threshold, reflecting local realities, is adopted to run in parallel to the UK's 10% threshold. Through combining:

- a local threshold
- a severity index and
- an affordability index

it will be possible to set goals and monitor progress on tackling fuel poverty more precisely, whilst maintaining a close watch on energy prices and issues related to Northern Ireland's reliance on oil for heating.

Based on an extensive evidence base, the Preliminary Review concludes that past and present approaches to tackling fuel poverty in Northern Ireland have delivered a highly cost-effective programme of housing regeneration. Returns from investment in Warm Homes and similar programmes include:

- substantial impacts on human health and well-being

- significant savings on energy bills for thousands of households
- measureable returns in terms of job creation
- a widening of opportunities for consolidating partnerships across the public and private sector.

When all of these gains are taken into account, it is likely that the Warm Homes Scheme and similar fuel poverty programmes are cost-neutral over a lifespan of 15 years. This is because the amount invested in tackling fuel poverty is fully returned through beneficial impacts on the NHS, household income and employment.

Despite this, there is still much to do. Survey data (NIHCS, 2009) indicates that more than 33,000 households in Northern Ireland need to spend more than a quarter of their income on heating and lighting for their home. Whilst efforts to tackle fuel poverty in the region have made measurable inroads – Nothern Ireland has been particularly successful in this regard - the severity of fuel poverty in Northern Ireland remains, for many households, profound.

The Preliminary Review ends with a list of References and Summary Tables of Recommendations.

Summary of Chapter Recommendations

CHAPTERS 2 TO 9

Text **in bold** could be considered priority recommendations

2.1. Fuel poverty is fast becoming a Europe-wide issue. Regional variations in climate and annual patterns of heating demand are likely to feature prominently in the European context. **Given the UK's own regional variations in climate and heating demand, more consideration should be given to local variations in climate when debating the landscape of fuel poverty.**

2.2. The price of heating oil appears to have been a disproportionate driver of Northern Ireland fuel poverty prevalence, although in more recent years gas prices have proved volatile, and the pricing landscape is complex. Variations in oil pricing within Northern Ireland are also of concern. **It is recommended that a Working Group on Domestic Heating Pricing is set up at regional government level.** This would investigate options for the delivery, distribution and payment methods made available to householders by energy suppliers, as well as explore issues related to price transparency.

2.3. Northern Ireland should adopt 2 fuel poverty headline estimates, one based on the prevalence of fuel poverty in homes heated by gas, the other in comparable homes heated by oil. This will permit more meaningful comparisons with other parts of the UK, and also help disentangle the different impacts of oil and gas prices on fuel poverty in Northern Ireland.

2.4. Regional perspectives on the causes of, and solutions for, fuel poverty should remain essential components of the review and reform process.

3.1. Recommended indoor temperatures for healthy adults in Northern Ireland should be retained, since these are in broad agreement with the original BRE and WHO Guidelines.

3.2. Failing evidence to the contrary, and given similarities in degree day heating demand, higher temperatures should be advised for vulnerable and elderly people in Northern Ireland, as they are in Scotland. However, a standard of 23°C for living

rooms and 20°C for all other occupied rooms is recommended, rather than the current Scottish standard. This would comply more closely with BRE and WHO Guidelines, and reduce the risk of vulnerable people moving from warm living rooms to colder kitchens and bathrooms. For unoccupied rooms, a standard of 18°C is recommended to prevent the growth of mould spores and damp.

4.1. A watching brief is kept on alternative definitions of fuel poverty.

4.2. A Northern Ireland EU-SILC metric, which was recently enabled, should be assigned a sample size that can generate reliable results.

4.3. Given a growing worldwide interest in issues of both quality and quantity of heating fuels, and local reliance on oil, Northern Ireland should lead UK debate on issues of fuel quality in the future.

4.4. **Given difficulties in public and expert understanding of the technical definition of fuel poverty, a lay definition should be adopted to supplement it; this could make the concept more readily accessible to the public and to politicians.**

5.1. "Needs to spend" embodies both the letter and spirit of the UK Fuel Poverty Strategy. Retaining "needs to spend" as part of a definition will ensure that those most vulnerable to the effects of fuel poverty remain central to it.

5.2. Throughout the UK "needs to spend" captures a large "should but doesn't" cohort.

5.3. Energy efficiency lies at the heart of Northern Ireland's 2011 fuel poverty strategy, which makes "needs to spend" even more apposite at local level.

5.4. Difficulties in implementing a BREDEM-12 model for calculating "needs to spend" make it imperative that a more elegant and easily administered metric be developed.

5.5. For the reasons listed above, **"needs to spend" should remain as part of the UK definition of fuel poverty, but alternative ways of assessing it should be sought.**

5.6. An alternative metric should also consider monitoring the energy efficiency of households, as a means of developing strategies that incorporate human behaviours into the fuel poverty mix. Better resourcing of agencies capable of leading new initiatives in this context is advocated.

5.7. The rollout of SMART meters should be explored as a vehicle for gathering data on a new metric, and as a means on engaging householders in taking up lifestyle changes.

5.8. Multi-dimensional approaches to understanding the geography and demography of fuel poverty should be expanded. These can assist all aspects of the Strategy, enhancing the accuracy of monitoring over time, guiding targeting, and providing benchmarks for implementation.

5.9. An EFP-based definition is becoming increasingly popular, but should not replace the existing definition with its emphasis on "needs to spend". It is useful as an international comparator, and as a supplementary *affordability index*, that can monitor rapid changes over time.

6.1. **Twice-median was the original metric for calculating a threshold for fuel poverty. It should be re-adopted, on the grounds that it remains an internationally favoured method for estimating relative income and expenditure.**

6.2. **The different regions of the UK should establish region-specific twice median values, at least for the purposes of their own regional planning, targeting, and resourcing.**

6.3. **Following Scottish practice, the twice-median threshold (which yields a binary classification of households either in or not in fuel poverty) should be supplemented with a severity index that can be adopted by all 4 regions.**

6.4. **Given difficulties that would arise from attempting to calculate a severity index at household level, an areas-based severity index should be developed. This should guide targeting, but not preclude assisting individual households most in need.**

6.5. To prevent the exponential increases in cost that a blanket areas-based approach would impose, multi-dimensional targeting tools should be used to identify those households in an area who are most likely to be low-income and low SAP. Areas-based intervention to tackle fuel poverty should be focused solely on these households.

6.6. To ensure that *other* households can still be assisted in the areas-based delivery system, a range of additional policies such as Green New Deal, stamp duty rebates, and rate rebates, could be developed to generate an integrated package of areas-based assistance.

7.1. **There is a pressing need for a UK-wide income metric.**

7.2. Whatever metric is adopted, the extent to which a particular metric marginalizes certain household types in Northern Ireland should be assessed.

7.3. **A ring-fenced budget or Scheme should be set aside to ensure an equitable inclusion of marginalized groups.**

7.4. Any development of an MIS metric should be meshed with work already being undertaken on MIS in other parts of the UK.

7.5. The MIS fuel metric should be refined first, and there is a need for validation among rural households.

7.6. **Schemes which reduce the price of energy (e.g. social tariffs) combined with schemes which boost income among households (e.g. benefit entitlement checks) still have significant untapped potential for reducing fuel poverty prevalence in Northern Ireland. Modelling the potential impacts of taking both approaches to scale in the region is strongly advocated.**

8.1. Given the difficulty of separating household expenditure on heating from expenditure on other forms of energy, the existing metric (all household fuel use) should be retained.

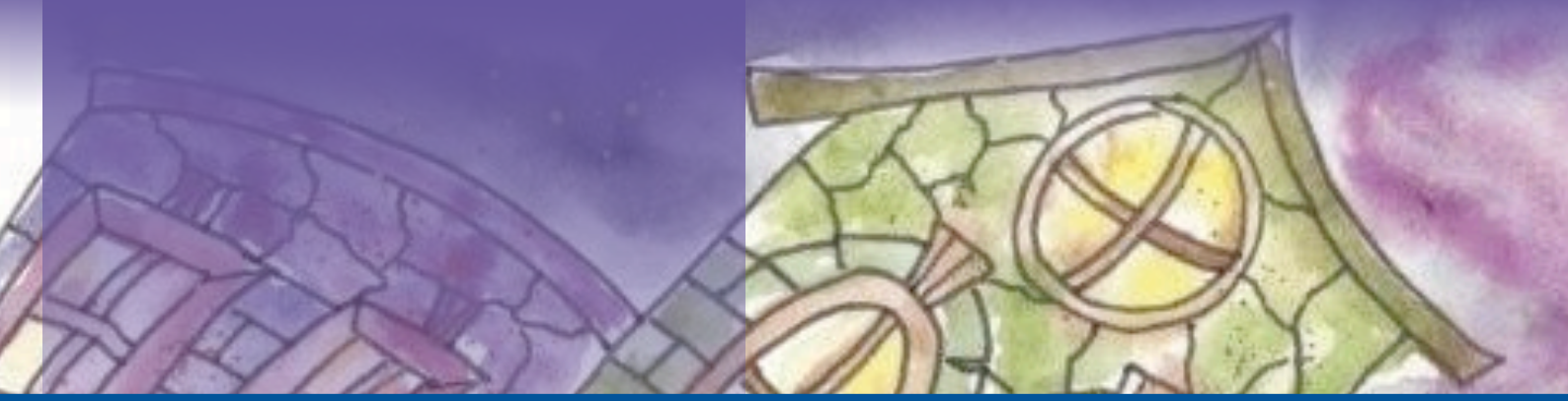
8.2. In tackling fuel poverty under an "all-energy" metric, more attention should be paid to the full spectrum of household energy consumption. Consequently, **the energy efficiency of household appliances, as well as household lifestyle and purchasing choices need to be incorporated into fuel poverty strategy, with implications for resourcing, planning, monitoring, and targeting.**

9.1. **Government reviews of Fuel Poverty Strategy, and the monitoring of impacts should take cognisance of the evidence-based benefits that accrue from**

the Strategy's impacts on health, local employment, and (where appropriate) household energy savings.

9.2. The Strategy's focus on health merits retaining, but should be rephrased. ***Health and well-being*** **more accurately encapsulates the documented impacts of the UK's Fuel Poverty Strategy.**

9.3. **Given manifest health and well-being impacts, greater efforts must be made to leverage funds into Fuel Poverty implementation programmes from NHS and other health and well-being budgets.**



Section 1

CONTEXT

Chapter One

DEFINITION AND REVIEW

1. Introduction

It is commonly agreed (e.g. Dubois, 2011) that a formal definition of fuel poverty should enable information to be collected in 3 different areas:

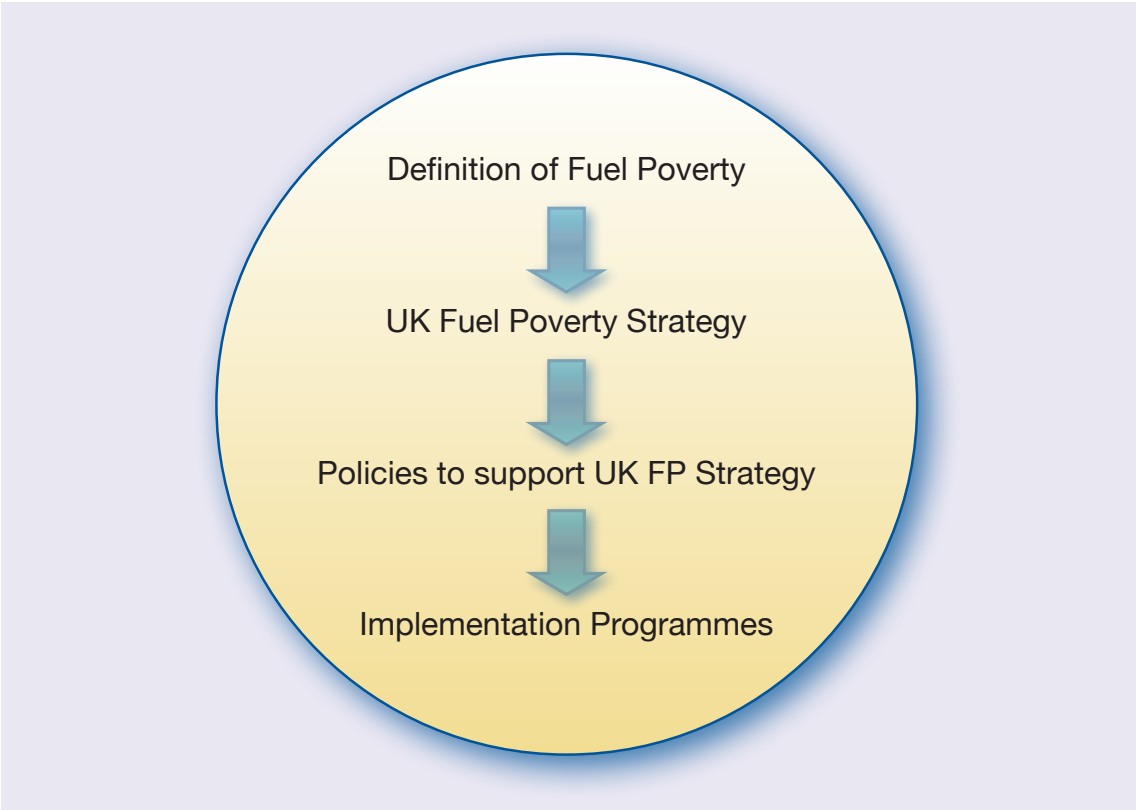
- **Extent.** A definition should provide a means by which the prevalence of fuel poverty can be quantified, and hence monitored over time.
- **Demography of risk.** A definition should provide a means of determining who the fuel poor are, according to criteria such as age, tenure, and household type.
- **Geography of risk.** A definition should help identify where the fuel poor are most likely to be located.

A Definition which provides information from these 3 areas can then be used to:

- Formulate a Strategy for tackling fuel poverty.
- Shape Policies that achieve the Strategy's objectives.
- Guide programmes that tackle the Strategy's objectives.

Hence the relationship between definition, strategy, policy and implementation is ideally one in which they form an integrated system (see Figure 1.1).

FIGURE 1.1 An integrated system: Definition, Strategy, Policies and Implementation Programmes.



1.1. Origins of the definition of fuel poverty

Isherwood and Hancock were among the first to define fuel poverty in 1978 (Osbaldeston, 1984). Fuel poverty appeared in the published literature only occasionally over the next decade (e.g. Lewis, 1982; Bradshaw & Hutton, 1983), each publication during that time making use of a different qualitative definition, for example:

"Individuals, families and groups in the population can be said to be in fuel poverty when they lack the resources to obtain the reasonably warm and well lit homes which are customary, or at least widely encouraged or approved in the societies to which they belong" (Bradshaw & Hutton, 1983).

The above definition was adapted from Townsend's (1979) classic definition of relative poverty, and is an early exemplar of the term being used to reflect a relative, rather than an absolute condition.

Eight years later, Boardman (1991) published elements of a definition which directly contributed to the definition adopted for the 2001 UK Fuel Poverty Strategy:

"[A fuel poor household is] unable to obtain an adequate level of energy services, particularly warmth, for 10 per cent of its income" (p. 207).

"A Programme for Affordable Warmth (PAW) is needed to bring all homes occupied by a low-income household up to a standard that allows them to have adequate energy services for 10 per cent of its income" (p. 277).

Ten years later, the UK Fuel Poverty Strategy drew heavily on Boardman's 1991 formulation:

UK Fuel Poverty Strategy (2001) definition of Fuel Poverty

"..a fuel poor household 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 – the temperatures recommended by the World Health Organisation" (DEFRA 2001).

As a consequence of its precision and explicitness, the Strategy's definition facilitated the collection of detailed and accurate information on fuel poverty prevalence. No effort has been spared in using it to ascertain:

- how many households are fuel poor (extent).
- who is fuel poor (demography of risk).
- where they are most likely to be found (geography of risk).

Fuel poverty is measured in increasingly more complex ways, currently relying on a vast algorithm (BREDEM-12) which requires specialist skills to implement. Fuel poverty has been systematically compared across regions for almost a decade, and has

provided information across tenure groups, household types, fuel types, and many other dimensions. Most importantly, it provided the basis on which the 2001 UK Fuel Poverty Strategy set 2010 and 2016 targets to eradicate fuel poverty as far as reasonably practical.

The explicitness of definition adopted in the Strategy, and the definition's relentless deployment as a metric, quickly became a double-edged sword. Whilst it has made monitoring, target-setting, and policy-making easier and more transparent, the definition has also shown up failures in the highest relief.

1.2. Looking back: Rationale for the UK Fuel Poverty Strategy (2001)

> *"In view of the [UK's] lengthy heating season, factors affecting heat loss should rank highly in the design of buildings for comfort and economy"* (Rudge, 2011).

The UK's climate is frequently described as mild or temperate (Rudge, 2011). Like many other parts of Europe with relatively mild winters, the need for homes to be thermally efficient during winter has long been disregarded.

Cold and damp living conditions are known to risk both human health and human life. As illustrated on Table 1.1, some of the world's highest rates of excess winter mortality (1988-1997) were to be found in Greece and Spain, even though these countries experience some of the mildest winter temperatures; more attention has commonly been paid to protecting residents from heat rather than cold in these countries e.g. through high ceilings, tiled floors, and large window expanses. These contribute to short but acute periods of cold exposure during winter, which in turn impact upon health and mortality risks.

Ireland and the UK had the third- and fourth-highest incidence of excess winter mortality respectively. They are probably more accurately characterised as having housing stocks which are adapted to neither heat nor cold, being thermally inefficient at all times of the year.

TABLE 1.1 Coefficient of seasonal variation (CSVM)* in mortality (highest to lowest).

Country	CSVM
Portugal	0.28
Spain	0.21
Ireland	0.21
UK	0.18
Greece	0.18
Italy	0.16
Austria	0.14
Belgium	0.13
France	0.13
Luxembourg	0.12
Denmark	0.12
Netherlands	0.11
Germany	0.11
Mean	**0.16**

**A high coefficient denotes a higher rate of excess winter deaths.*

Source: Healy, 2003.

Other countries in Western Europe (e.g. Germany and Denmark) endure more severe winters, and for these countries thermal efficiency is essential for survival rather than being optional. This contributes to relatively low coefficients of seasonal variation. Yet, as indicated in the next table (Table 1.2) the annual need for heating in the UK is akin to that of Denmark, and so it is more readily comparable to countries where the thermal efficiency of homes has to be prioritised for reasons of climate.

Table 1.2 represents heating demand in degree days. This measure stipulates a baseline outdoor temperature below which it is assumed that indoor heating will be required to obtain a satisfactory level of heat within a home. The baseline used most often for comparative purposes is 15.5°C. If the outdoor temperature on Day 1 is 14.5°C, then one degree day of heating is required. On Day 2, a temperature of 10.5 requires 5 degree days of indoor heating.

TABLE 1.2 Need for heating (degree days) in 8 European countries – lowest to highest degree day demand

Country	Heating degree day demand
Spain	1856
France	2494
Belgium	2882
Netherlands	2905
Ireland	2916
United Kingdom	**3354**
Denmark	3479
Finland	5823

**Annual average 1980-2004.*

Source: Eurostat, 2011.

As a relatively exposed island, the UK's weather pattern is also changeable from one day to the next. People regulate indoor temperatures around what the weather has been like in the past few days (the *"running mean temperature"*) rather than around the current temperature out of doors (van der Linden, Boerstra, Raue & Kurvers, 2006). They also tend to anticipate average weather rather than extremes (Gascoigne, Morgan, Gross & Goodwin, 2009). In climates which are changeable, these characteristics may lead to frequent adjustments to heating and cooling regimes, so that homes are less often kept in a steady thermal state. This places additional loads on heating requirements, as homes are periodically heated up and then cooled down again.

The UK demand for heating is also widely spread across the year. For example, one-third of Great Britain's heating fuel consumption occurs during spring and summer (Smith & Bolton, 2011), which further distinguishes the UK's climate and heating demand from that experienced in most of Western Europe.

In conclusion, the climatic conditions of the UK mean:

- energy efficiency is not absolutely essential for survival, though close to that threshold.
- there is a high demand for heating within the housing stock.
- demand is spread across most of the year.

1.3. Looking forward: Rationale for a review of the definition

> *"The tone of the UK Fuel Poverty Strategy was open and relaxed, as if inviting collaboration. Subsequently, government documents have become more defensive and categoric, as if debate could not be envisioned"* (Boardman, 2010).

As the prevalence of fuel poverty in the UK has escalated, and both 2010 and 2016 targets seem likely to be missed, the definition itself has become increasingly more contested. What was initially thought to be a precise definition which could yield specific metrics has since been deconstructed almost to the point of obfuscation. The definition has fuelled at least 6 areas of debate, and how these are each settled will not only have consequences for national policy, but also different consequences for the 4 regions of the UK. This makes national and regional reviews equally important at this time.

There are other reasons for review being appropriate. In 2008, three separate Audit Office accounts were published, covering the regional fuel poverty strategies of England, Scotland and Northern Ireland respectively. For England's Warm Front scheme:

"This assessment highlighted the difficulty of precisely targeting the fuel-poor – a difficulty that is not unique to Warm Front. It was estimated that 57% of households in fuel poverty are not eligible for assistance under Warm Front, as they do not receive the welfare benefits that would qualify them. Of course, some of these households may be entitled to the qualifying benefits, but do not claim them for whatever reason – something that the system of BECs [Benefit Entitlement Checks] would reveal if these households could be referred to the scheme.

Conversely, the NAO assessment also revealed that almost 75% of households that would qualify for a Warm Front grant are not fuel-poor. Some of these households are likely to be close to fuel poverty, so their receipt of a Warm Front grant might be sufficient to prevent them from falling into fuel poverty. However, 37% of grant recipients in the period 2005-08 were receiving only non-means-tested benefits, so there is no reason to believe that these households were close to fuel poverty. Over the same time period, about 4% of the

grants paid under Warm Front were received by households whose dwellings were already relatively energy efficient. Regardless of whether these households were fuel-poor, this clearly represents an inefficient use of scheme funds."

The Audit reports for Scotland and Northern Ireland concurred. As Boardman (2010) has since pointed out, these and other problems have led to a majority portion of the investment Government has made in tackling fuel poverty being mis-spent.

Another reason that review is timely centres on the growing emergence of alternative definitions for fuel poverty e.g. *energy precariousness, energy affordability, energy poverty,* and *consensual fuel poverty*, each of which seeks to conceptualise and measure fuel poverty in a different way. Most alternatives are far removed from the letter and spirit of the UK's official definition, but they are nevertheless gaining ground in Europe and other parts of the world.

Some of these alternatives were recently compared in Ireland, along with the UK definition. The numbers in fuel poverty ranged from 117,264 under one of the alternative definitions to 2.4 times that number (396,947). Furthermore, depending on the definition selected, fuel poverty prevalence rates between 2004 and 2009 had either reduced by 1% or increased by as much as 73% (Indecon, 2010). As illustrated in this Preliminary Review, it is not merely Extent which differs substantially depending on the Definition adopted, but also the Demography and Geography of Fuel Poverty.

Finally, industrialised countries throughout the world are either contemplating or starting to implement fuel poverty strategies. The 2009 Directives of the European Commission called for *"all Member States to develop national action plans or other appropriate frameworks to tackle energy poverty"* (Moore, 2011). As Boardman (2010) remarks:

"Back in 1991, the UK was the best known example, with similar problems found in Ireland and New Zealand. Now, in Europe, it is the countries of the former Soviet Union where there is growing evidence of fuel poverty. As their planned economies change to liberalized energy markets and subsidies are removed, the cost of heating and energy are no longer negligible, but a major part of the weekly budget."

If measures to tackle fuel poverty extend across all EU-27 Member States, it is estimated that fuel poverty policies will apply to more than 20 million households (Poggi & Florio, 2010). Added to this, many industrializing countries such as India and China are grappling

with concepts akin to fuel poverty, and among these too, issues of definition and metrics have long been debated (e.g. Pachauri, Mueller, Kemmler & Spreng, 2004).

In the past, Ministers have argued that reviewing the UK Government definition of fuel poverty would distract from the more important task of *tackling* fuel poverty (Moore, 2011). However this argument is becoming untenable, given the failure to meet targets. In addition it runs counter to the Strategy's frequently declared intent to use annual monitoring to inform Strategy:

"…it should not be seen as the last word, but representing the start of the road to end fuel poverty in the UK….We will report on our progress annually and remain ready to review and revise policies in the light of practical experience" (DEFRA, 2001).

In fact, successive annual fuel poverty reports have never been used to amend the Strategy, which has therefore become something of a *"sacrosanct article"* (Boardman, 2010).

Nevertheless, there is public suspicion concerning the motives behind review taking place at the present time. It could offer an escape from failing targets; it might result in a downsizing of budgets and priorities around fuel poverty; it could lead to a reframing of the concept in a broader (and some would argue more important) agenda of climate change. The Reviews are not without risk.

In truth, it would be much more surprising if the current context of fuel poverty did not spur review. The Strategy has been in place for a decade, during which time the UK has led the field in implementing fuel poverty policies. Given long experience with the perils of measurement, monitoring, and target-setting, reviews in the UK will be timely at local level, as well as beneficial in many other parts of the world.

In summary, the UK has at its disposal the longest experience, the best evidence base, and the widest range of expert knowledge with which to carry out root and branch reviews of fuel poverty.

Three reviews are either planned or underway in the UK:

- The independent Hills Review of Fuel Poverty for England and Wales. The terms of reference are:

  "1. To consider fuel poverty from first principles: to determine the nature of the issues at its core, including the extent to which fuel poverty is distinct from poverty more generally, and the detriment it causes.

  2. As appropriate and subject to the findings under (1), to develop possible formulations for a future definition and any associated form of target, which would best contribute to:

    - *addressing the underlying causes identified*
    - *helping government focus its resources (which are set out in the Spending Review for the period to 2014-15) and policies on those who need most support*
    - *measuring the cost effectiveness of different interventions in contributing to progress towards any target, and*
    - *developing practical solutions, particularly around identification and targeting of households and measuring progress resulting from government action"* (DECC, 2011).

- The Scottish Fuel Poverty Forum *"intends to look further at the definition of fuel poverty (along with colleagues elsewhere in the UK); the priority has to be finding effective ways of helping those in the greatest difficulty. The Scottish Government will support the Forum in this review and consider its findings and the implication for the Government's Fuel Poverty Strategy." (SFPF, 2010a).* The review will *"consider how fuel poverty targets/objectives can become part of a holistic approach across the Scottish Government e.g. by integration with health, education and enterprise"* (SFPF, 2009).

- The present independent review for Northern Ireland, which was commissioned six months before the Hills Review, and covers 2 of the 3 areas that will be addressed by the Hills Review, namely the UK definition of fuel poverty, and targeting mechanisms. Its publication will precede the other reviews, and it will

not have the benefit of their deliberations. It is also more modest and informal, both in scale and budget. For these reasons it is a Preliminary Review.

Since 3 regions of the UK will undertake independent reviews simultaneously, there is scope for the development of both national and region-specific solutions. As this Preliminary Review will argue, this is particularly apposite given that fuel poverty is simultaneously both a national and a regionally diverse problem.

1.4. Conclusions

A review of the definition of fuel poverty is timely because of :

- the manifest complexity of the concept itself which has resulted in some 20 years of debate as to how it should be defined;
- the recent emergence of alternative definitions of fuel poverty at Europe-wide and worldwide levels;
- the proliferation of fuel poverty implementation programmes worldwide;
- the progressive failure of Government to target implementation programmes accurately, and the concomitant failure to meet strategic fuel poverty targets;
- ten years of UK experience in implementing fuel poverty strategies;
- the wealth of expertise that all of the above factors has generated.

Chapter Two

RATIONALE FOR A NORTHERN IRELAND REVIEW

In common with Scotland, Northern Ireland has a devolved responsibility for its fuel poverty strategy. This alone could provide a rationale for a regional review. However, fuel poverty has a variety of region-specific contexts and contributors in Northern Ireland, and these provide a more cogent rationale for an in-depth local analysis.

2.1. Northern Ireland as a leader in tackling fuel poverty

Northern Ireland has led the UK in many aspects of fuel poverty strategy, having for example:

- evaluated the first areas-based approach to targeting (Casson, Whittington and Devlin, 2002).
- published the first scientific evaluation of the Health Action Zone model (Shortt & Rugkåsa, 2007).
- piloted and evaluated an area-based community-led fuel poverty scheme ahead of CESP (Liddell, 2009); this scheme is now fully rolled out across Northern Ireland and has taken 4,000 referrals in the last 12 months.
- carried out the first cost-benefit analysis of regional fuel poverty strategy (Liddell, 2008a).
- launched the first SMART meter trial amongst customers vulnerable to fuel poverty (NIAUR, 2010).

2.2. Local climate and heating demand

As already illustrated, the UK has an average *national* degree day demand for heating akin to that experienced in Denmark. Being a long and thin island that extends over many

degrees latitude, geographic areas of the UK also show wide variation in heating demand. As can be seen on Table 2.1, heating degree days range between 2,144 degree days per annum in London to 3,183 degree days in North Scotland. Northern Ireland requires 83% of the degree days needed in the coldest area (North Scotland), making the region colder than most.

TABLE 2.1 Need for heating in regions of the UK – lowest to highest degree day demand.

Administrative region	Annual heating degree days*
London	2144
South West England	2304
South East England	2336
East of England	2401
West Midlands	2527
East Midlands	2550
Wales	2593
Northern Ireland	**2633**
North West England	2690
Yorkshire & The Humber	2717
West Scotland	2891
North East England	2933
East Scotland	3181
North Scotland	3183

**Annual average 1961-1990, using 15.50C as the baseline.*

Source: UK Met Office DCP09. Eurostat method generates higher figures than the UK Met Office (see comparison Table 1.1. and Table 2.1).

More detail of temperatures in Northern Ireland is contained in Table 2.2, from which it can be seen that heating demand in Northern Ireland is spread over all 12 months of the year. Even in the warmer months of July to September, there are is a total heating demand averaging 170 degree days.

TABLE 2.2 Heating degree days by month for Northern Ireland.

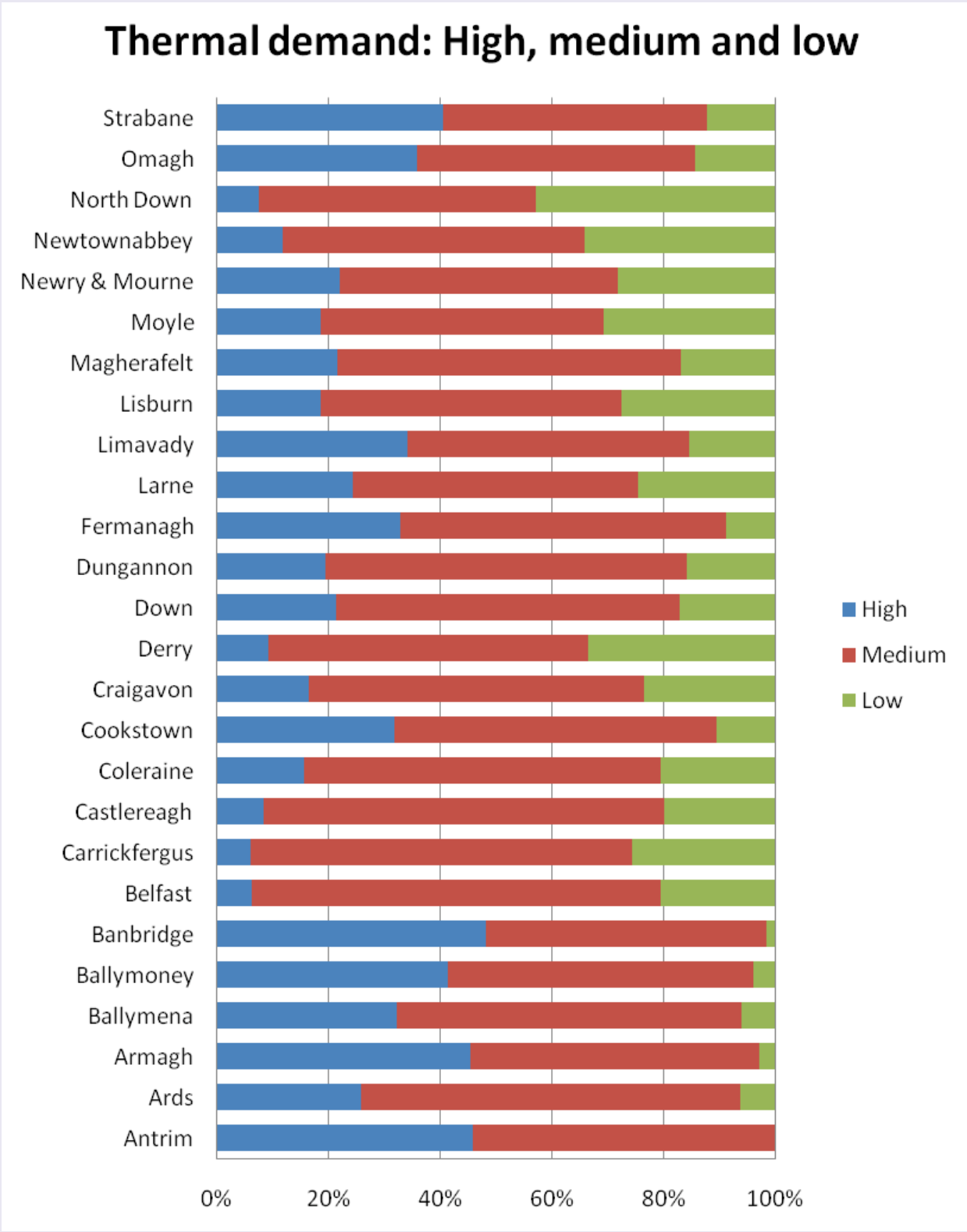
Month	Heating degree days
January	334
February	286
March	281
April	215
May	147
June	77
July	43
August	46
September	81
October	167
November	251
December	333
Annual	**2261***

**The annual total for Northern Ireland differs from that shown in Table 2.1, reflecting the number and location of observation points used within the region by different databases, as well as the method of combining the results for each observation point (e.g. area weighting, population weighting or non-weighting).*

Source: VESMA, 2011.

Despite Northern Ireland occupying a relatively small geographical area, heating demand also shows wide within-region disparities, largely owing to variations in altitude and distance from the sea. Figure 2.1 provides details. 45% of Antrim residents live in areas of high thermal demand, compared with 12% of Newtownabbey residents and only 6% of Carrickfergus residents. This means that Antrim residents inhabit an area of Northern Ireland which is significantly colder during an average year than Newtownabbey and Carrickfergus.

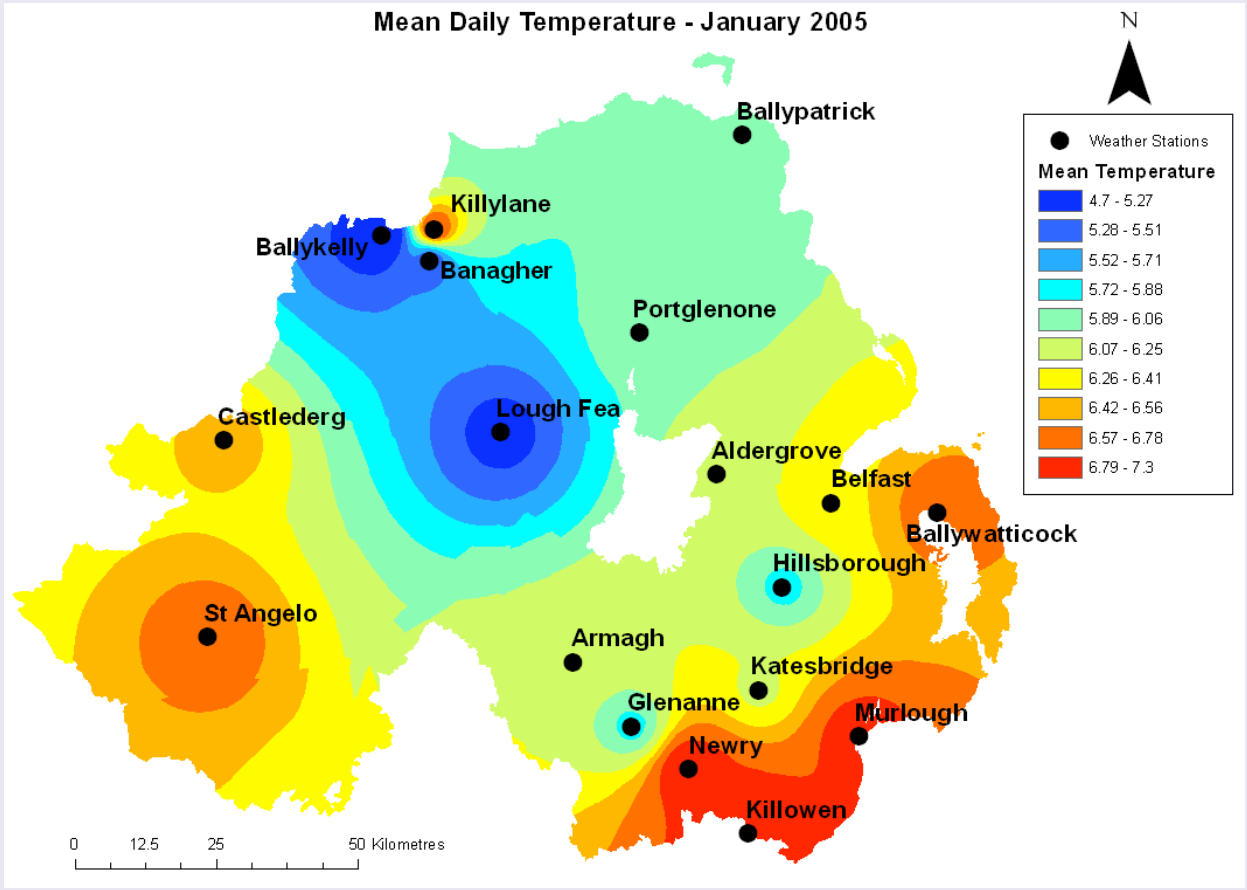
FIGURE 2.1 Thermal Demand by District in Northern Ireland 2003-2010.



Source: Authors' own estimate of degree-days at Census Output Area level, derived from 18 Northern Ireland weather stations (UK Met Office DCP09).

Figure 2.2. further illustrates this regional variation in temperature, indicating that in January 2005 mean daily temperatures in Northern Ireland ranged from 4.7°C to 7.3°C. In other words, average January temperatures in 2005 were more than 50% lower in some parts of Northern Ireland than in others.

FIGURE 2.2 Local variations in mean daily temperatures, Northern Ireland.



Source: UK Met Office DCP09.

2.3. Prevalence of fuel poverty in Northern Ireland

Table 2.3 provides details of fuel poverty prevalence for England, Wales, Scotland and Northern Ireland (2001 to 2008), based on the UK Fuel Poverty Strategy's definition of fuel poverty.

TABLE 2.3 Fuel Poverty in UK country - % estimated to be in fuel poverty.

Year	NI	Scotland	England	Wales
2001	27		7	
2003		13	6	
2004	23	15	6	11
2005		18	7	
2006	34	24	12	
2008		27	16	26
2009	44	33	18	

Source: Regional House Condition Surveys, Scottish Government 2010.

Fuel poverty has always been more prevalent in NI, although regional disparity has shrunk over time. Scotland, England and Wales experienced a doubling of fuel poverty rates between 2003 and 2008, whilst the increases in Northern Ireland have been more gradual, though from a higher baseline.

2.4. Causes of Fuel Poverty – regional disparities

It is widely agreed that the 3 core contributors to fuel poverty are income, energy prices, and the energy efficiency of people's homes (e.g. Boardman, 2010). For Northern Ireland, unlike other regions of the UK, only one of these lies at the heart of higher prevalence, namely energy prices.

2.4.1. Regional perspectives on income

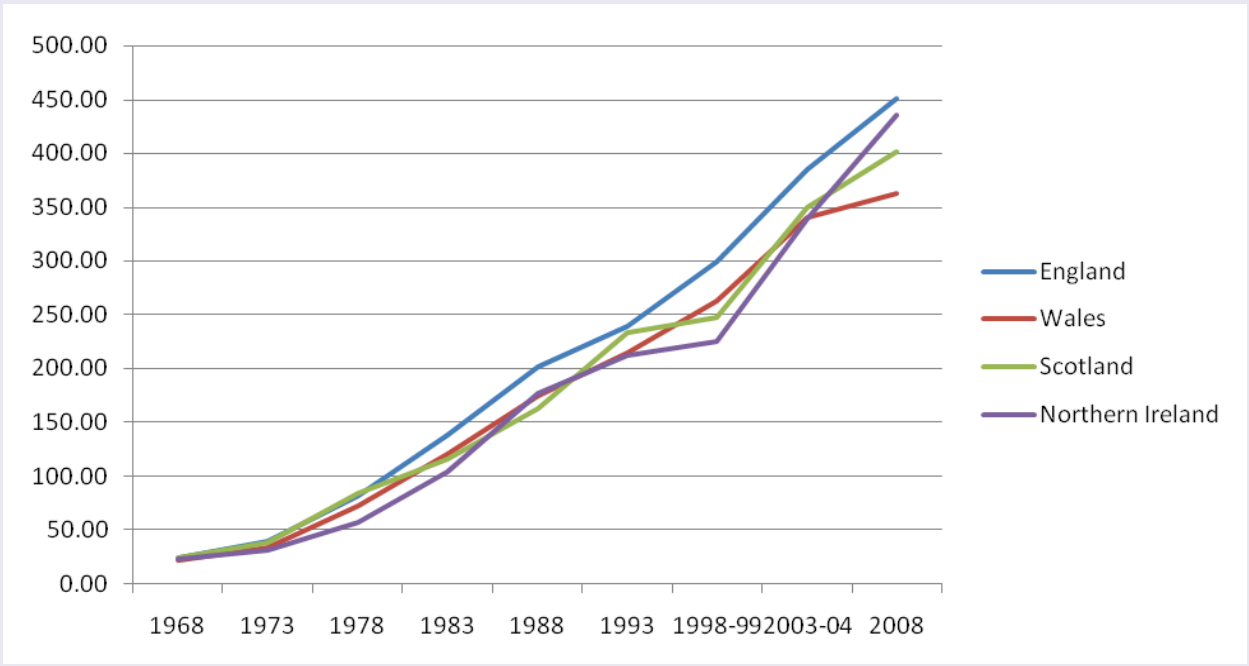
Table 2.4 and Figure 2.3 compare median disposable incomes across the countries of the UK. In 1968, Northern Ireland incomes were higher than those in Wales, but lower than England's or Scotland's. Forty years later, they were higher than those in both Scotland and Wales, and were within 4% of incomes in England. The increase in disposable income between 1968 and 2008 was greatest for Northern Ireland.

TABLE 2.4 Median disposable weekly household income (£) by country.

Year	England	Wales	Scotland	NI
1968	24.03	21.61	23.51	22.32
1973	38.79	33.47	37.50	31.02
1978	81.09	72.17	82.90	56.76
1983	137.82	120.34	115.33	103.58
1988	201.24	174.17	161.91	176.56
1993	239.73	215.01	233.16	211.81
1998-99	298.98	263.32	247.08	224.46
2003-04	385.02	340.88	349.22	339.10
2008	450.93	362.88	400.94	435.99
% change 1968-2008	**+1776.5**	**+1579.2**	**+1605.4**	**+1853.3**

Source: FES, EFS, LCS.

FIGURE 2.3 Median weekly household income by country 1968-2008.



Note: *The data are not indexed to a 1968 baseline. The similarity in regional data at 1968 is, therefore, actual.*

Source: FES, EFS, LCS.

During the period of most intense energy price rises in the UK (2004-2008), Figure 2 also illustrates that the steepest gain in median weekly income was in Northern Ireland. This may help account for the fact that rises in fuel poverty prevalence were more modest in Northern Ireland between 2004 and 2008 than they were in other UK countries such as Scotland and Wales.

Further analysis of incomes in the different UK countries indicates that Northern Ireland relies somewhat more on State support than do England or Scotland (see Table 2.5). However, from Table 2.6 it can be seen that there is relatively little difference in the distribution of incomes between the 4 countries, although there are more households clustered at the mid-point of the distribution for Northern Ireland.

TABLE 2.5 Benefit units by country (2008-9).

					Percentage of benefit units
State support received	**England**	**Wales**	**Scotland**	**NI**	**UK**
On any income related benefit	18	21	20	21	**19**
On any non-income related benefit	57	62	56	59	**57**
All in receipt of benefit	60	66	59	62	**60**
All in receipt of tax credits	14	16	14	17	**14**
All not in receipt of state support	40	34	41	37	**40**

Source: FRS, 2010.

TABLE 2.6 Total weekly income by country (2008-9).

Country	Less than £100 a week	£100 and less than £200	£200 and less than £300	£300 and less than £400	£400 and less than £500	£500 and less than £600	£600 and less than £700	£700 and less than £800	£800 and less than £900	£900 and less than £1,000	£1,000 and above
England	2	9	15	13	10	8	8	6	5	4	20
Wales	2	11	16	12	11	8	8	6	5	5	15
Scotland	2	11	16	13	11	8	7	6	5	4	17
NI	3	12	14	13	9	11	7	6	5	5	15
UK	**2**	**10**	**15**	**13**	**10**	**8**	**7**	**6**	**5**	**4**	**19**

Source: FRS, 2010.

These data suggest that income is only marginally more prominent as a root cause of high fuel poverty prevalence in Northern Ireland than it is in England, and less prominent as a root cause than it is in Scotland and Wales.

2.4.2 Regional perspectives on energy efficiency

SAP is measured on a logarithmic scale, so comparison is only reasonable if the baseline points are similar. Table 2.7. indicates that this condition is satisfied when comparing SAPs for England and Northern Ireland using 2001 as a baseline. Northern Ireland homes were of similar SAP status to England's in 2001, but have shown more improvement. By 2009, the average thermal efficiency of homes in Northern Ireland was 4 SAP points higher than in England. At least some of this difference will be accounted for by Northern Ireland's Warm Homes programme, which has increased SAP scores to higher levels than has England's Warm Front. A review of more than a quarter of a million homes that received Warm Front indicated that the average household SAP improvement was 16 points, from 40 to 56 (Warm Front team Annual Report 2006/7). SAP gains in Northern Ireland at about the same time (2005/6) averaged 20 points. This greater gain in Northern Ireland is particularly notable in that SAP scores incorporate fuel costs; SAP gains in

Northern Ireland should have been less, rather than more likely given significantly higher fuel costs in the region. In addition, average gains in Northern Ireland moved homes across the SAP 65 threshold (from 49 to 69) i.e. across the original target threshold for "fuel poverty proofing" a property (NIAO, 2008). This was less often the case in England (NAO, 2009). (That being said, more recent estimates of what constitutes fuel poverty proofing has moved from SAP 65 to SAP 81 (Boardman, 2010)). In addition to Warm Homes, the heating programme led by the Northern Ireland Housing Executive will have contributed substantively to SAP improvements, since these have replaced solid fuel fires with central heating systems in more than 90,000 homes.

TABLE 2.7 SAP05 results in England and Northern Ireland.

Year	England	Northern Ireland
1996	42.1	*
2001	45.7	45.5
2003	46.6	*
2004	47.4	*
2005	48.1	*
2006	48.7	52.4
2007	49.8	*
2008	51.4	*
2009	53.1	57.0

**Data not readily accessible.*

Source: House Conditions Surveys.

These data suggest that energy efficiency is no more a root cause of fuel poverty prevalence in Northern Ireland than it is in England.

2.4.3 Regional perspectives on energy costs and prices

Table 2.8 illustrates considerable regional variation in the proportion of income devoted to fuel in the 2007-2009 period, which cannot be satisfactorily explained solely on the basis of degree days heating demand. Overall, 3.3% of disposable income is spent on fuel in England, but this varies from 2.4% in London to 3.9% in Yorks/Humber. Scotland (though much further north) has the same expenditure level as West Midlands. Whilst not the coldest region in the UK, Northern Ireland is the highest spender in the whole of the UK (4.9%) and by a considerable margin.

TABLE 2.8 Regional average fuel expenditure a proportion of income 2007-2009.

	Average **weekly** expenditure on electricity, gas and other fuels £	Average **annual** expenditure on electricity, gas and other fuels £	Annual fuel bill as a % of disposable income
UK	19.1	993.2	3.40%
North East	17.7	920.4	3.80%
North West	18.5	962.0	3.70%
Yoks/Humber	18.4	956.8	3.90%
East Midlands	18.6	967.2	3.60%
West Midlands	19.7	1024.4	3.80%
East	19.1	993.2	3.20%
London	18.0	936.0	2.40%
South East	19.0	988.0	3.00%
South West	19.4	1008.8	3.60%
England	18.7	972.4	3.30%
Wales	20.4	1060.8	4.2%
Scotland	20.0	1040.0	3.80%
N.Ireland	**25.7**	**1336.4**	**4.90%**

Source: ONS, 2011.

Table 2.9 and Figure 2.4 compare energy expenditure for the 4 UK territories over a longer period of time, and indicate that:

- in **1968**, residents of Northern Ireland and Scotland were spending **15%** more on fuel than England;
- just prior to the current energy crisis (i.e. in **2003-04**) Northern Ireland was spending **40%** more on fuel than England;
- by **2008** this had risen to **60%** more.
- over the period of 40 years, residents of Northern Ireland have seen a 43% greater increase in their weekly median expenditure on fuel than have English residents.

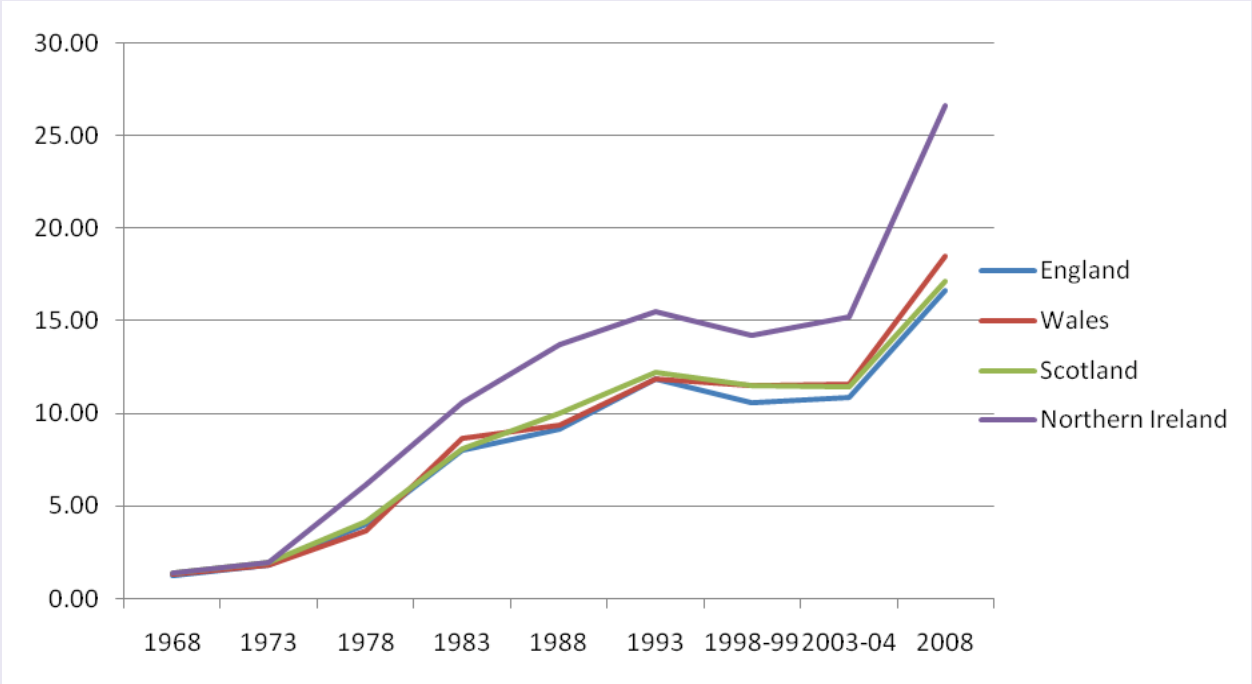
TABLE 2.9 Median weekly household fuel expenditure (£) by country.*

Year	England	Wales	Scotland	NI
1968	1.23	1.33	1.41	1.41
1973	1.78	1.84	1.99	1.99
1978	4.03	3.70	4.19	6.21
1983	8.01	8.66	8.08	10.60
1988	9.11	9.37	10.00	13.73
1993	11.85	11.85	12.25	15.53
1998-99	10.57	11.50	11.50	14.23
2003-04	10.85	11.54	11.43	15.23
2008	16.62	18.46	17.12	26.59
% change 1968-2008	**+1251.2**	**+1288.0**	**+1114.2**	**+1785.8**

** computed as (Median 2008 – Median 1968)/Median 1968 x 100*

Source: FES, EFS, LCS.

FIGURE 2.4 Median Weekly Household Fuel Expenditure by Country 1968-2008.



Note: *The data are not indexed to a 1968 baseline. The similarity in regional data at 1968 is, therefore, actual.*

Source: FES, EFS, LCS.

Figure 2.4 above illustrates the extent to which the present energy crisis has differentially affected expenditure for households in Northern Ireland, when compared with the 3 other UK territories. Since 1968, Northern Ireland has experienced the steepest rise.

Between 1968 and 2008, Northern Ireland experienced a greater rise in disposable income and better SAP improvements than England. Yet in 2008, the regional disparity in fuel expenditure was greater than it had ever been.

As seen on Table 2.10 80% of Northern Ireland homes use oil-burning central heating in their homes, compared with 4% in England, and 8% and 14% in Scotland and Wales respectively. By contrast, only 11% of Northern Ireland households use gas-fired central heating, compared with the majority of households in the countries of Great Britain.

From Tables 2.8 and 2.9 Northern Ireland's reliance on oil as a heating fuel, and the costs associated with this, are manifestly apparent.

TABLE 2.10 Access to gas and oil-fired central-heating 2008.

	England	Wales	Scotland	NI
Gas central heating	81.8%	67.9%	74.8%	11.0%
Central heating allowing oil burn	4.4%	14.3%	8.0%	80.3%
Other central heating	8.7%	12.8%	14.0%	7.0%
No central heating	5.1%	4.9%	3.2%	1.7%

Source: LCS, 2008.

A high spend on oil in Northern Ireland cannot be attributed to the unit price of oil being substantially higher. This is evident from Table 2.11 which compares the price of gas, oil, and electricity for the 4 regions between 2006 and 2010. In 2010 the average price of oil per kWh in Northern Ireland can be estimated at almost one-third cheaper than it was in England. However, it must also be noted that the increase in unit price has been steeper in Northern Ireland – 72% in the last 4 years.

TABLE 2.11 Average price per kWh for fuels.

	Electricity			Gas			Oil*		
	England Wales	Scot.	NI	England Wales	Scot.	NI	England Wales	Scot.	NI
2006	0.0989	0.1070	0.1072	0.0251	0.0248	-	-	-	-
2007	-	-	-	-	-	-	-	-	-
2008	0.1189	0.1182	0.1178	0.0307	0.0295	0.0350	0.0440	0.0371	0.0290
2009	0.1323	0.1379	0.1597	0.0378	0.0375	-	0.0462	0.0389	0.0305
2010	0.1257	0.1328	0.1451	0.0365	0.0359	-	0.07	0.06	0.05
% change	**+27.1**	**+24.1**	**+35.4**	**+45.4**	**+44.8**	**-**	**+59%**	**+62%**	**+72%**

Source: LCS, 2008.

Some caveats should be borne in mind when interpreting this Table. Oil prices are difficult to monitor, since the market is more open than for gas and electricity, and the price is volatile. Although gas returned to Northern Ireland in 1996, its price has not been monitored by the Department For Energy and Climate Change in its publications. In general, oil is more expensive than gas in Great Britain, but may perhaps be comparable in price in Northern Ireland. In the absence of robust directly collected data, it is difficult to be sure.

More recent data (2 June, 2011) on Table 2.12 compares oil and gas prices per therm of heat produced, and indicates that oil is currently approximately 44% more expensive per therm than gas in Northern Ireland. However, as illustrated later on in this chapter, the price comparison of these two primary domestic fuels has been extremely volatile for some time.

TABLE 2.12 Price per litre and per therm for oil and gas in Northern Ireland, 2 June 2011.

Source	Price per kWh	Price per therm
OIL		
900 litres	£0.56	£1.82
500 litres	£0.58	£1.89
300 litres	£0.62	£2.04
Average for oil	**£0.59**	**£1.92**
GAS		
Phoenix	£0.0476	£1.3945
Firmus energy (Belfast)	£0.0319	£0.9350
Firmus energy (10 towns)	£0.0319	£0.9347
Average for gas	**£0.0371**	**£1.0881**

Source: Consumer Council Northern Ireland.

Table 2.13 provides details of expenditure by type of fuel used for households in England, Scotland, Wales and Northern Ireland. The “Non-Electricity” column gives a rough estimate of likely expenditure on heating. Northern Ireland spends approximately two-thirds more on heating fuel than does England, and approximately 50% more than either Scotland or Wales.

TABLE 2.13 Estimated household spend (£) per annum by fuel type (2007 energy consumption pattern, 2008 expenditure levels).

	England	Wales	Scotland	NI
Electricity	476.91	504.81	506.55	524.83
Gas	453.96	420.31	450.74	97.69
Oil	35.54	72.02	34.67	504.70
Solid	8.66	66.57	50.90	212.85
Non-electricity (i.e. gas + oil + solid)	**498.16**	**558.91**	**536.31**	**815.24**

Source: DECC Quaterly Energy Statistics, 2011.

Spend on electricity is also higher in Northern Ireland than in the other regions. Some of this can be accounted for by the fact that hot water usually has to be heated via electricity when oil-fired boilers are not in use (i.e. during the warmer summer months). Historically, there have been few options for discounted electricity tariffs in Northern Ireland, and even where these are available (e.g. through Powershift, a time of use tariff available to Keypad customers), uptake has been low. Consequently most electricity consumption in Northern Ireland is charged at a standard tariff rate.

In summary, a primary reason for high levels of energy expenditure in Northern Ireland is the prominence of oil as a source of domestic heating fuel. Whilst the unit price of oil is lower in Northern Ireland (when compared with the other 3 UK territories), it is a more expensive source of heating than gas, on which the other 3 UK territories rely. The predominance of oil as a central heating source has an overwhelming impact on current heating expenditure. Put another way, at winter 2010-11 prices, the cost of 17,395 kWh of energy (the average oil consumption in Northern Ireland) supplied as kerosene cost £993, whereas in England and Wales, a similar quantity of energy supplied as gas would have cost £635. The extent to which domestic heating price impacts on fuel poverty prevalence is made clear from statistics derived from the NIHCS 2006; if energy costs alone had been used to calculate fuel poverty prevalence in Northern Ireland at that time, the prevalence rate would have been 66%. Adding income as a contributor reduced the rate to 54%; going on to add SAP-related indicators reduced prevalence to 34% i.e. the actual prevalence rate quoted for that year (NIHCS, 2006).

Oil has the added disadvantage of having to be bought in advance of being used. This places an extra burden on low income households, for whom a single oil purchase may comprise more than a month's disposable income. Families experiencing fuel poverty are increasingly reliant on purchases of small quantities of fuel at inflated prices, which further increases expenditure relative to income. In spring 2011, fuel oil bought in 20 litre containers cost 75p per litre, as compared to 60p per litre paid for a bulk purchase, a difference of 25% (Ormeau Fuels, 4th April 2011).

Nor is oil a standard price in Northern Ireland. Figure 2.5a indicates the entry ports where oil is delivered in Northern Ireland, and Figures 2.5b and 2.5c illustrate the range of prices being charged for a 300 litre delivery of oil in different regions of Northern Ireland, (2008 and 2011). Prices varied by as much as 19% in January 2008, and 7% in January 2011. A comparison between the two figures also illustrates how the geographic distribution of variability has changed over time, for reasons that are difficult to fathom.

FIGURE 2.5a Ports of entry for oil into Northern Ireland.

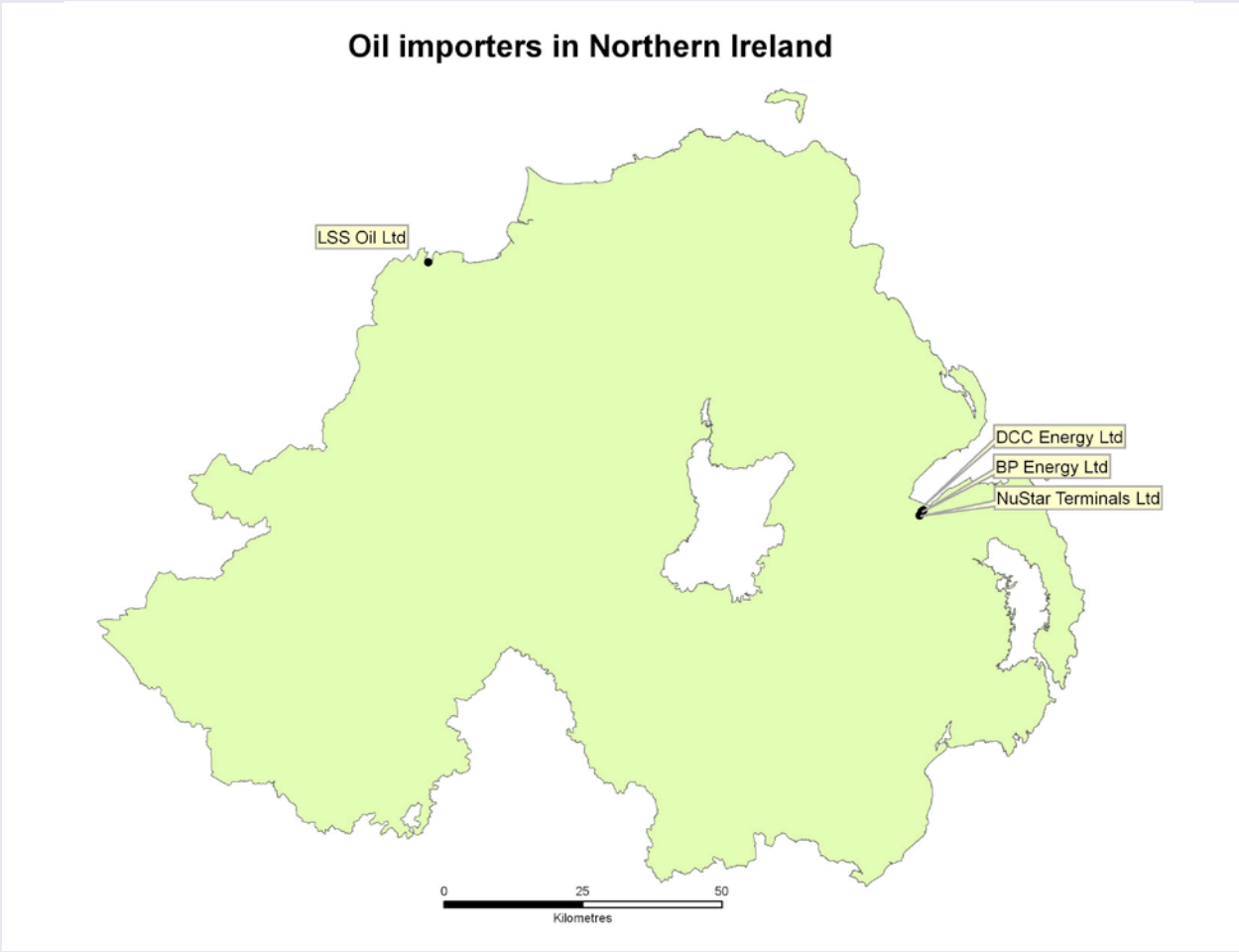
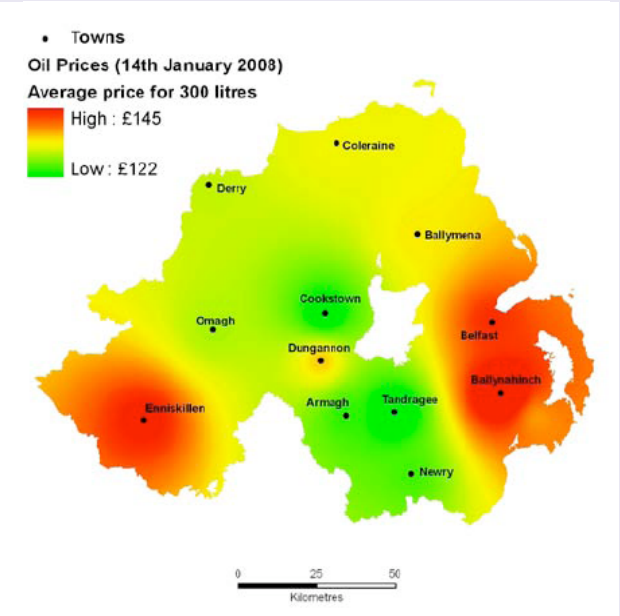


FIGURE 2.5b and 2.5c Prices for a 300 litre delivery of oil 2008 (2.5b) and 2011 (2.5c).



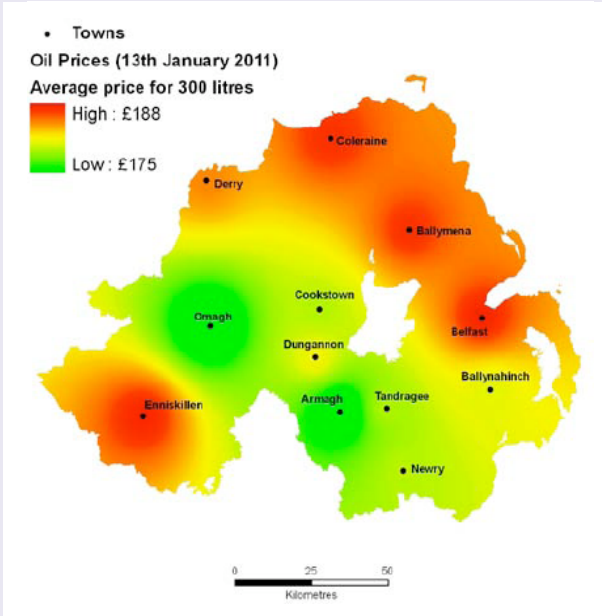
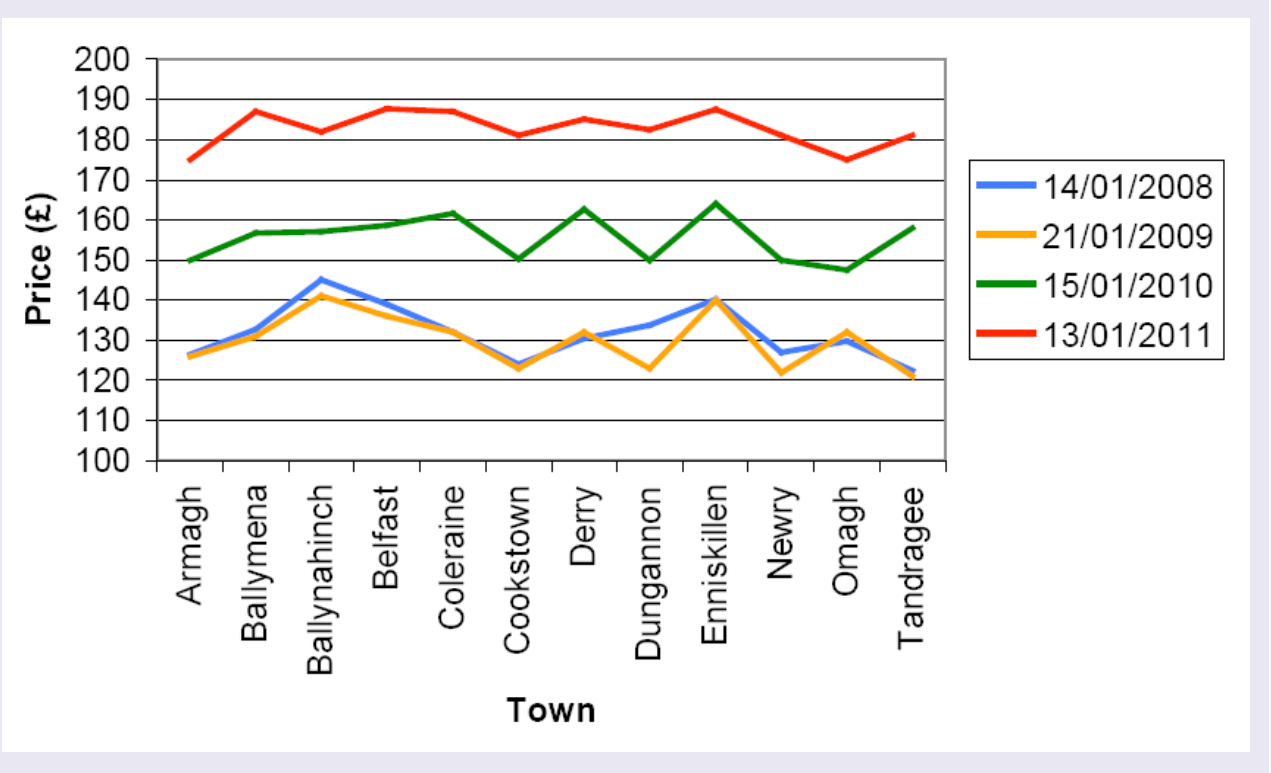


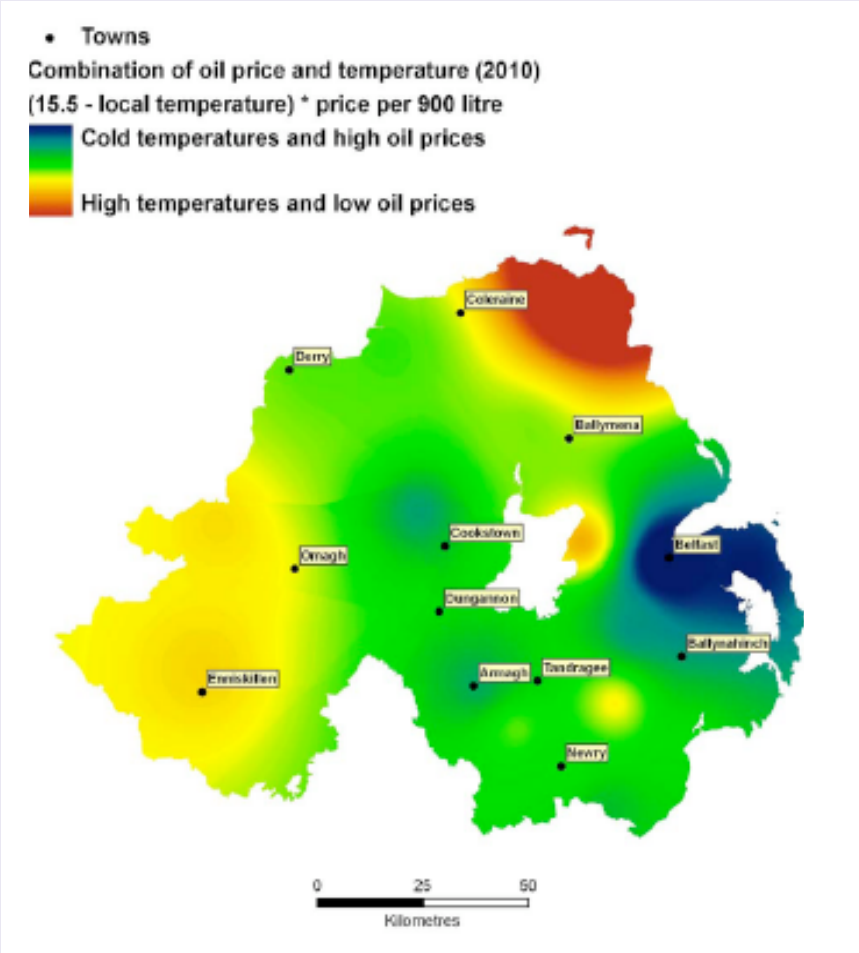
Figure 2.6 shows oil price fluctuations for key towns in Northern Ireland, and confirms a relative smoothing of regional oil prices in recent years.

FIGURE 2.6 Oil prices in key towns of Northern Ireland.



Finally, Figure 2.7 illustrates where the combination of oil price and climate generates a distinct geography of risk for fuel poverty, in which Belfast is particularly disadvantaged. Most oil deliveries to Northern Ireland are made through Belfast harbour, and therefore incur the lowest transport costs from harbour to home; there are also significant economies of scale for distributors when delivering oil in a densely populated city like Belfast. Hence it is difficult to construct a logical rationale for some of the highest oil prices being clustered in and around the Belfast area in 2010.

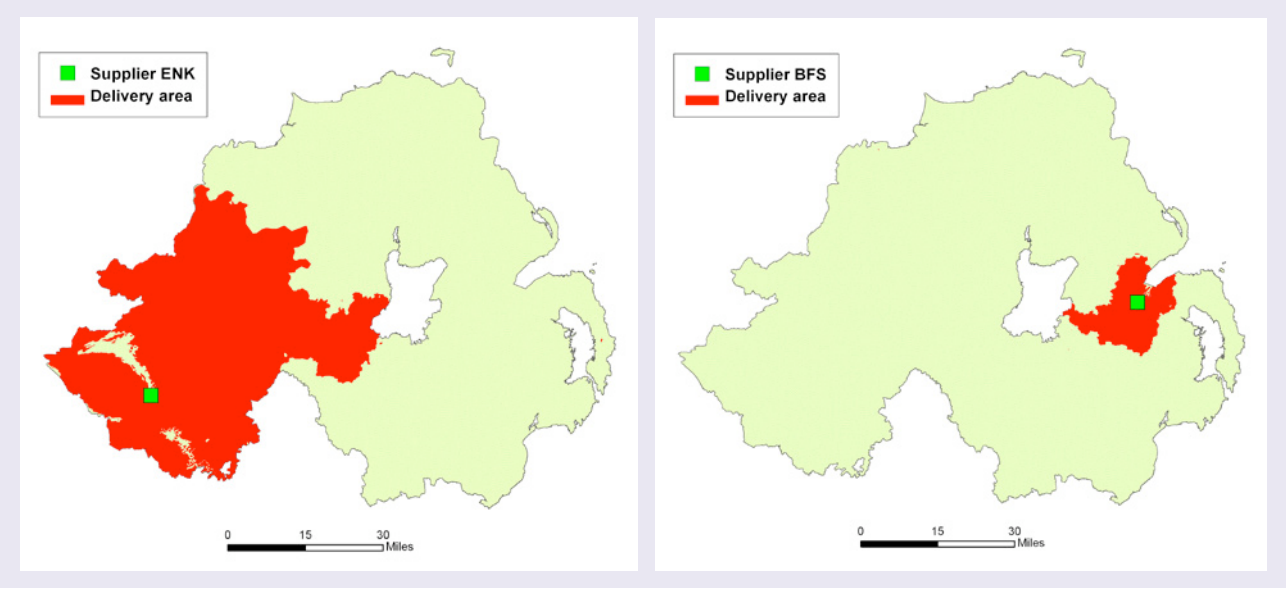
FIGURE 2.7 Mean local temperatures and average prices of oil, 2010 Northern Ireland.



A comparison of two actual oil distributors highlights further some of the inconsistencies in oil price variations. Supplier 1 (ENK) is situated in Enniskillen, which is comparatively remote from ports of entry. Supplier 1 delivers to 13 postcodes, as shown in figure 2.7a. The company has a supply area of 4548.05 square kilometers. The furthest postcode is 61 miles and approximately 75 minutes from the depot. Supplier 2 (BFS) is based in Belfast, close to central heating oil supply sources. It delivers to 24 postcodes, as shown on Figure 2.7b. The company has a supply area of 514.12 square km. The furthest postcode from Supplier 2 is 18 miles and approximately 24 minutes from the depot. (These estimates do not include the amount of time taken to visit each property in the catchment or the time taken to deliver a quantity of oil to each property).

It is noteworthy that these 2 suppliers quoted the same price for a delivery of 300 litres on 9th May 2011.

Figure 2.7a and 2.7b: Supplier 1 and 2 distribution areas



Whilst there may be ready explanations for such price equivalence (for example office rental costs and other overheads may be higher in Belfast than in Enniskillen, offsetting haulage savings), a thorough review of local oil pricing mechanisms seems to be indicated based on this preliminary analysis. There are currently at least 175 registered heating oil distributors in Northern Ireland, a vast network for such as small region, with obvious potential for competition and enhanced consumer service and support.

2.4.4 Finding the root causes of heating oil's impacts in Northern Ireland

At this preliminary stage, of the three contributors to FP (when treated independently – which they usually are), neither SAP nor income appear as strong contenders for high fuel poverty prevalence rates in Northern Ireland. Whilst the cost of oil emerges almost by default, there may be confounding variables at work which make heating oil appear more central to Northern Ireland's fuel poverty prevalence than it is. For example, gas-heated homes are often more recently built and less likely to be under-occupied. Oil suppliers deliver to remote rural locations where temperatures and incomes may be lower, and where gas suppliers do not operate for reasons of supply and maintenance costs. Hence, interactions between the 3 classic contributing factors (energy price, income, and energy efficiency of building) may reveal more than contributing factors taken separately; their

interaction with other variables such as tenure, age of housing, location etc. might also be useful in the mix of explanatory effects.

In recent years too, the oil-versus-gas pricing landscape has been unusually volatile, making patterns even more difficult to decipher. Table 2.14 compares the annual cost of using oil and gas to heat a "typical" home in Northern Ireland in May 2009 and April 2011. In 2009, oil was considerably cheaper than gas, although the opposite was true in 2011.

TABLE 2.14 Cost of heating a typical Northern Ireland home using oil or gas.

Heating Source	May 2009	April 2011	Difference
Oil Boiler	£1018	£1648	+62%
Oil Condensing Boiler	£837	£1347	+61%
Gas Boiler	£1329	£970	-27%
Gas Condensing Boiler	£1094	£800	-27%

Source: Sutherland Tables.

2.5. Conclusions

Northern Ireland illustrates the importance of local explanations for the geography of fuel poverty. Since data-collection began, Northern Ireland has had the highest levels of fuel poverty, but only 1 of the 3 classic contributors to fuel poverty appear to have contributed substantively to this, namely energy prices. Energy efficiency gains have been good relative to other UK territories, and relatively high increases in income in Northern Ireland (when compared with increases in the other UK territories) has helped cushion the effects of rising energy prices. Together, these factors are at least partly responsible for Northern Ireland having been spared a doubling of fuel poverty rates in recent years – an experience which other territories were not spared.

Viewed over time, the principal driver of fuel poverty prevalence in Northern Ireland seems to have been a disproportionate reliance on oil as a heating fuel. That being said, there are wide within-country variations in the price of heating oil for households, and for reasons that are not associated with delivery costs or economies of scale. In addition, the volatility of gas prices when compared with oil, and the potential role of confounding variables, muddy our understanding.

However, these conclusions shed local light on notes from the Fuel Poverty Summit in 2008 :

"Fuel poverty is part of a wider problem of poverty and social exclusion caused by a combination of high energy prices, low incomes, and poor housing conditions. Given such wider causes, there will inevitably be a limit to the role that the regulator and industry can play in tackling fuel poverty. The main focus must be on raising incomes and improving housing, which are the responsibilities of Government."

And those of the Energy Retail Association a month later:

"…the fact cannot be ignored that the root of fuel poverty is, at its most simplistic, poverty, and although many stakeholders and the industry have a legitimate role to play, it is ultimately Government who is responsible for developing, delivering, and sustaining a financially inclusive, socially conscious society which provides help for those who require it most".

These assertions may or may not apply to countries of GB, but they have limited relevance to Northern Ireland. For tackling fuel poverty, the *"responsibilities of Government"* need to lie elsewhere in the region. These responsibilities centre on achieving a better understanding of the role energy prices play in Northern Ireland's fuel poverty landscape. A government-appointed Working Group on Domestic Heating Pricing is recommended. This would investigate options for the delivery, distribution and payment methods made available to householders by energy suppliers.

In the shorter term, comparisons between the 4 UK territories might have more meaning if they were confined to comparable households that are heated using gas, since this comprises a common denominator across all 4 regions. Within Northern Ireland, estimating 2 rather than one fuel poverty prevalence rate (one for gas-fired and one for oil-fired households), would be useful in helping disentangle the *different* pressures being created by gas and oil prices in Northern Ireland.

Whilst the above account provides explanations relevant to Northern Ireland, Scotland's high levels of fuel poverty have equally regional but very different explanations. First, Scotland adopts a different approach to under-occupancy in calculating how much a household needs to spend on fuel. A single Scottish pensioner who lives in her family home with 5 bedrooms is rated in terms of the heating demand that is required for the

total house. This increases the likelihood that under-occupied homes will be classified as fuel poor. In the other 3 regions of the UK, it is assumed that not all rooms in a home of this nature need to be heated for one person, thereby ameliorating the impacts of under-occupancy.

Second, Scotland has adopted higher thermal thresholds for safe indoor temperatures. For example, for older or disabled people, living room temperatures of up to 23°C are recommended, with consequences for how much needs to be spent to maintain higher temperatures.

These examples from Northern Ireland and Scotland illustrate that regional explanations for differences in prevalence rates are an essential component of the national framework . Reviews that seek to focus on England, or England and Wales, lose valuable elements of the national profile on fuel poverty, and risk simplifying both analysis and solutions.

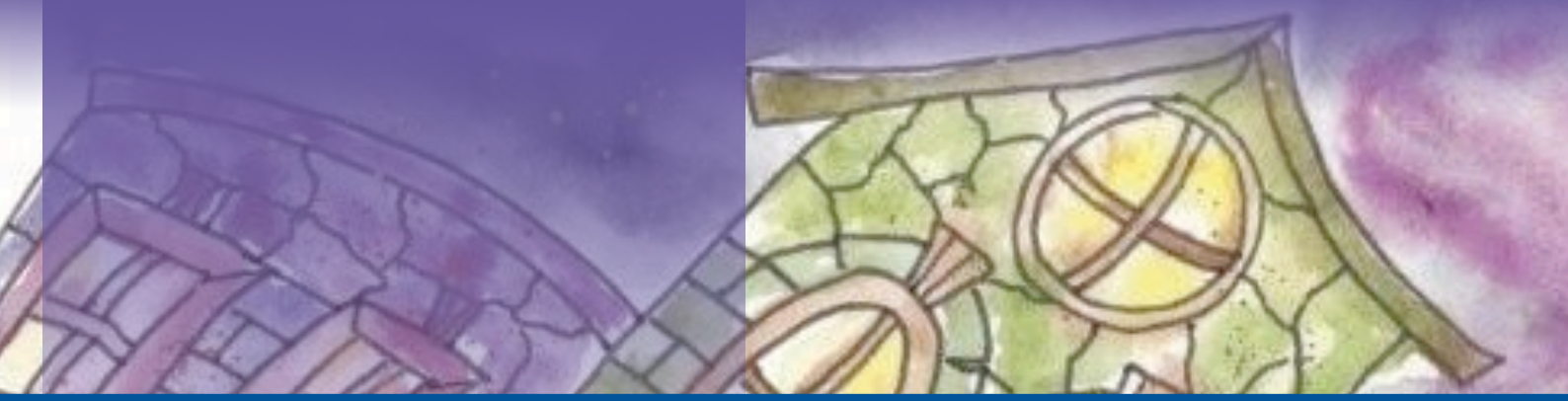
Chapter Recommendations

2.1. Fuel poverty is fast becoming a Europe-wide issue. Regional variations in climate and annual patterns of heating demand are likely to feature prominently in the European context. Given the UK's own regional variations in climate and heating demand, more consideration should be given to local variations in climate when debating the landscape of fuel poverty.

2.2. The price of heating oil appears to have been a disproportionate driver of Northern-Ireland fuel poverty prevalence, although in more recent years gas prices have proved volatile, and the pricing landscape is complex. Variations in oil pricing within Northern Ireland are also of concern. It is recommended that a Working Group on Domestic Heating Pricing is set up at regional government level. This would investigate options for the delivery, distribution and payment methods made available to householders by energy suppliers.

2.3. Northern Ireland should adopt 2 fuel poverty headline estimates, one based on the prevalence of fuel poverty in homes heated by gas, the other in comparable homes heated by oil. This will permit more meaningful comparisons with other parts of the UK, and also help disentangle the different impacts of oil and gas prices on fuel poverty in Northern Ireland.

2.4. Regional perspectives on the causes of, and solutions for, fuel poverty should remain essential components of the review and reform process.



Section 2

CONTESTED ELEMENTS OF THE FUEL POVERTY DEFINITION

Chapter Three

CONTESTED ELEMENTS OF THE UK DEFINITION – ADEQUATE STANDARD OF WARMTH

UK Fuel Poverty Strategy (2001) definition of Fuel Poverty

"...a fuel poor household 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 – the temperatures recommended by the World Health Organisation."

3.1. Introduction

Words or phrases in the definition that that have been contested include:

- *adequate standard of warmth*
- *widely accepted definition*
- *needs to spend*
- *10%*
- *income*
- *all fuel use*

It is seldom acknowledged that Boardman (1991) was the first to point out many of the latent complexities embedded in these terms.

3.2. Adequate standard of warmth

The UK's original Fuel Poverty Strategy was predicated on evidence that cold homes constituted a health risk (e.g. Wilkinson et al., 2001). Recommended temperatures in the Strategy were 21°C in the living room and 18°C in all other occupied rooms. This range was defined in broad accordance with the BRE publication *Building Regulations and Health* (Mant & Muir Gray,1987) which had been commissioned by DOE for guidance on Building Regulations. A subsequent 2001 BRE report reads *"Indoor air temperatures of 18 - 24°C normally cause no real discomfort or threat to health. Outside this range, thermal stress increases progressively and defence mechanisms (e.g. shivering, sweating) come into play".*

The BRE origins of temperature guidelines have largely been forgotten, and more frequently mentioned are the WHO Guidelines on indoor temperatures which were first published some time before that. In fact, WHO initially stipulated a wide range of safe temperatures - between 15°C and 25°C. In 1984, the WHO revised the range to 18°C and 24°C. This was subsequently upheld at 2 later meetings (1987 and 1990). The rationale for changing from 15°C-25°C to 18°C-24°C has never been made explicit (Ormandy & Ezratty, 2011). The 1990 WHO meeting also recommended that, for infants and people over 65, temperatures of at least 20°C should be maintained throughout the home. In the UK, Scotland recommends that elderly or infirm people maintain temperatures of 23°C in living rooms, although they still recommend temperatures of 18°C in bedrooms. This seems rather a wide variation between different rooms in the homes of elderly and infirm people.

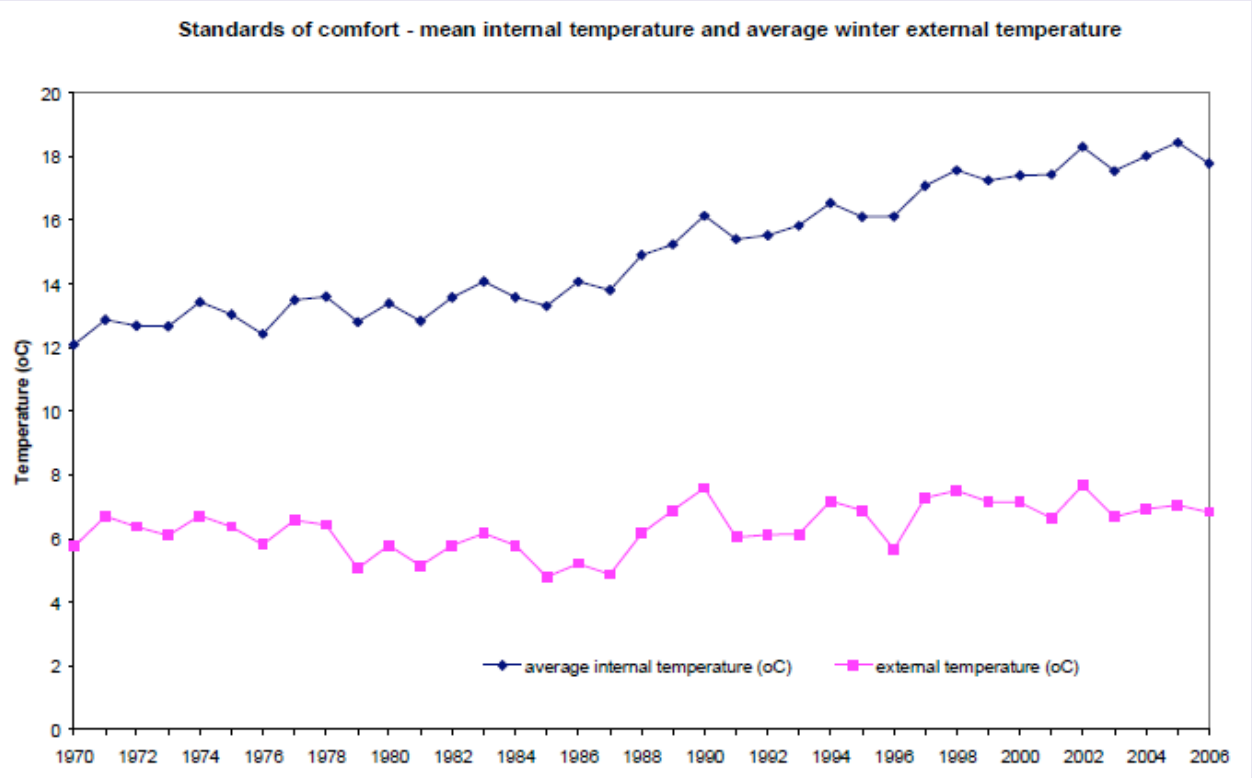
A more recent metric for setting ideal temperature standards assesses *perceived thermal comfort*, which measures residents' perception of the temperatures that prevail inside their home. For reasons to do with cost and time, most large-scale housing surveys use this measure, although there is as yet no standardised protocol for measuring perceived thermal comfort. Studies broadly support the acceptability of temperatures between 18°C and 24°C, although perceptions of thermal comfort tend to have a greater range with a lower limit closer to 16°C (Hong, Gilbertson, Oreszczyn, Green, & Ridley, 2008).

Cultural differences are evident for both objective and subjective measures. There are, for example, regional differences in mortality minima i.e. the temperature at which fewest cold-related deaths occur. In Athens, cold-related deaths begin to occur at temperatures

below 23°C (Toulomi, Pocock, Katsouyanni & Trichopoulos, 1994). Further north in Holland, the minima is 17°C (Huynen, Martens, Schram, Weijenberg & Kunst, 2001), and still further north in Stockholm, it is 12°C (Rocklöv, Forsberg & Meister, 2009).

Changes in indoor temperatures have also been noted over time, as illustrated on Figure 3.1. In 1971, the average temperature inside a home during winter (GB) was 13°C. In 1989, with similar outdoor winter temperatures prevailing, this had risen to 15°C. By 2006, similar winter temperatures were associated with indoor temperatures of 17.5°C. These changes are thought to be associated at least in part with the installation of more efficient and extensive heating and insulation (Uttley & Shorrock, 2008). Even so, whilst average indoor temperatures rose from 12°C in 1970 to 18°C in 2006, this (at best) attains the WHO guideline temperature for bedrooms.

FIGURE 3.1 Changing standards of comfort in Great Britain - mean internal temperature and average winter external temperature over time.



Source: Uttley & Shorrock, 2008.

In fact, it is seldom clear why people elect a particular indoor temperature. It is most likely to reflect a mixture of thermal comfort, capability of heating sources to deliver higher temperatures, and the cost of heating. Research in low energy passive housing suggests a temperature of 22°C may be more optimal when heat capacity is high and costs are low (Uttley & Shorrock, 2008). This is supported by results from the UK's Warm Front evaluation; prior to retrofit householders maintained daytime temperatures of around 19°C and 17°C in living rooms and bedrooms respectively. After retrofit, temperatures increased to 21°C and 20°C in living rooms and bedrooms respectively. Even so, post-retrofit temperatures lower than 16°C prevailed in 21% of living rooms and almost 50% of bedrooms (Oreszczyn, et al., 2006). Variability remains the order of the day.

This variability is of interest to policymakers because a 1°C reduction in temperature could reduce UK energy bills by 10% for homes heated by gas or electricity (BRE, 2003 in McManus, Gaterell & Coates, 2010). Lower heating regimes would make significant inroads into the ratio of energy costs to income, and so reduce the prevalence of fuel poverty.

Carbon savings also seem an obvious benefactor, although the fuel poor can be expected to contribute only modestly to carbon savings. The Fuel Poverty Strategy aims to ensure that fuel poor people are able to use more, rather than less heat should they need it, albeit in a more energy efficient home. Studies indicate that fuel poor households allocate between 40% and 100% of the savings they make post-retrofit to increased warmth (e.g. Milne & Boardman, 2000; Heyman, Harrington & Heyman, 2011).

This choice between taking improved energy efficiency as either savings or warmth reflects the fact that energy use is "elastic", meaning that most households have some flexibility in how much energy they routinely consume, and will therefore be able to cut back if funds are short. But among older people in England, a recent study indicated that elasticity had an altogether different meaning for many, who turned their heating off when it was cold in order to save money (Anderson, Anderson & Probert, 2009). As the authors note *"energy costs…are perceived to be a variable, discretionary household expenditure that people have some control over. People adjust their energy consumption according to what they feel they can afford to accommodate other purchases..and balance their budgets".* In circumstances such as these, it would be difficult to advocate lowering temperatures.

At the other end of the spectrum, there is some evidence to support higher indoor temperatures for elderly people, which are currently recommended in Scotland. The effects of age on sensitivity to cold are variable. In some, ageing is associated with increased sensitivity to cold, commonly attributed to a lower metabolic rate and increased level of vasoconstriction; in others a blunting of sensitivity means that older people can be at greater risk of thermal shock (e.g. Schellen, 2010; Ormandy & Ezratty, 2011). A higher temperature regime could help protect both groups. Given that WHO Guidelines in fact advocate temperatures of between 18 and 24°C, rather than 18 and 21°C, extending the recommended range upwards to 23°C for vulnerable people (as in Scotland) seems advisable. However, it seems equally advisable to adopt the remainder of the WHO Guideline for elderly and infirm people, namely that no occupied room in their homes is heated below 20°C. Without this, there remains the prospect of elderly people moving between a warm living room and a kitchen or bathroom which is 5°C cooler. Rooms that are not occupied would still require heating, given the cold and damp climate and the risk of mould growth, but these could be heated to 18°C. Whether these temperature guidelines are formally adopted into Strategy, or restricted to advice given by public health agencies, would then become a matter for further and careful consideration.

Chapter Recommendations

3.1. Recommended indoor temperatures for healthy adults in Northern Ireland should be retained, since these are in broad agreement with the original BRE and WHO Guidelines.

3.2. Failing evidence to the contrary, and given similarities in degree day heating demand, higher temperatures should be advised for vulnerable and elderly people in Northern Ireland, as they are in Scotland. However, a standard of 23°C for living rooms and 20°C for all other occupied rooms is recommended, rather than the current Scottish standard. This would comply more closely with BRE and WHO Guidelines, and reduce the risk of vulnerable people moving from warm living rooms to colder kitchens and bathrooms. For unoccupied rooms, a standard of 18°C is recommended to prevent the growth of mould spores and damp.

Chapter Four

CONTESTED ASPECTS OF THE UK DEFINITION OF FUEL POVERTY – WIDELY ACCEPTED DEFINITION

At the time the UK definition was set, the only definition of fuel poverty available was the original term coined by Isherwood and Hancock in 1978, and revised by Boardman in 1991. Since that time, many other definitions have emerged.

4.1. EU-SILC definition

Comparisons of fuel poverty across European countries use a metric derived from the European Union Survey of Living Conditions (EU-SILC). This is a subjective metric, based on self-report. In 2007, some of the targeted questions were:

- Has the household had to go without heating in the last 12 months?
- Has the household been unable to afford to keep the house adequately warm in the last 12 months?
- Has the household been in arrears with energy bills in the last 12 months?

The first of these is somewhat ambiguous, since the situation can arise where a household goes without heating on account of a breakdown in heating system or energy distribution system (or water system for many types of heating), or to a failure to order further supplies of fuel in a timely manner (which is particularly so for homes reliant on oil-fired heating). Although an answer of 'Yes' could be the result of inadequate funds, it may not be. The second and third questions are also ambiguous, since each reflects a possible strategy for coping with problems of energy cost. Even when taken together, they do not reflect all possible options. A household may elect to cut back on other areas of expenditure in order to allow the necessary expenditure on fuel. There is also little or no indication of the severity of difficulty in heating the home when questions are essentially categorical in nature. Nevertheless, the EU-SILC definition allows a modest opportunity to explore energy circumstances among households in the European Union; in the absence

of robust and continuous data on household expenditure and income it remains a useful source of information.

Whilst EU-SILC data are gathered in Northern Ireland, they are not published because the annual sample size (n = 200) is too small to obtain robust results. Given the increasing reliance on EU-SILC as a comparative metric, it is recommended that the sample size used in Northern Ireland be increased to obtain reliable regional data.

4.2. Comparing EU-SILC with the EFP model of fuel poverty

Unfortunately the level of agreement between objective and subjective measures is low, a finding first noted in Ireland, where results from an EU-SILC approach were compared with an *actual expenditure as a proportion of income* definition (Scott, Lyons, Keane, McCarthy& Tol 2008). Whilst the measures yield a similar overall number of households in fuel poverty, the distribution across household types is different. EU-SILC returns more families with children and more households with a female chief economic supporter (CES); conversely it returns fewer households with a lone CES, fewer of high socioeconomic status, and fewer where the CES has a University degree. Pensioners are least likely to declare difficulties with energy bills, probably resulting in an underestimate of prevalence in this group.

Other studies comparing objective and subjective measures related to fuel poverty have returned similarly disparate results. For example, using data from the English House Condition Survey DEFRA (2008) compared known fuel poverty status with householder's perceptions of whether their home was adequately warm or not; 7% of those interviewed said it was not, although only 1 in 9 of these were classified as fuel poor by the conventional definition (Jenkins 2010).

Waddams, Wang and Brazier (2011) highlight the fact that a subjective assessment of fuel poverty has a place in social policy since:

"Many people who will not be targeted through the Government's drive to eliminate … fuel poverty will nevertheless remain feeling unable to afford adequate heating. Such subjective feelings …may have an important effect on policies both for alleviating poverty and for reducing emissions. The Government might wish to develop and monitor such

a subjective measure to inform its energy policy and manage the challenging interaction between environmental and social policy".

4.3. Energy insecurity

This term originated in the United States of America, and has subsequently drifted more towards the domain of climate change than fuel poverty. Elements of the definition with most relevance to fuel poverty are:

"an energy insecure household lacks consistent access to the energy needed for a healthy and safe lifestyle. Energy insecure families have experienced

- *threatened utility cut-off*
- *actual utility cut-off*
- *unheated/uncooled days because of nonpayment*
- *heating the residence with a cooking stove."* (Childrens Health Watch, 2011).

4.4. Energy precariousness

This concept originated in France *(precarité énergétique)* and is defined in French legislation as *"anyone who meets, in its housing, particular difficulties to have the necessary energy to meet its basic energy needs because of the inadequacy of its resources or of its housing conditions"* (Dubois, 2011). Whilst vague, this definition resembles the UK definition in that it seeks to combine energy, expenditure, and the thermal efficiency of the home.

4.5. Energy poverty

In a European context, this term is sometimes synonymous with fuel poverty (e.g. Buzar, 2007). However it is more frequently associated with fuel poverty as it is experienced in industrializing countries such as India and sub-Saharan Africa. In urban India 28% of

people were estimated to be energy poor, compared with 20% who were income poor (Khandker, Barnes & Samad, 2010), illustrating (not surprisingly) a similar distinction between income and energy poverty in industrialising as in post-industrialised countries.

Energy poverty is concerned with lack of access to utilities such as heating and electricity, as well as with broader aspects of cost. It also seeks to monitor the quality of energy that societies have access to (e.g. efficiency and carbon load). This particular aspect of energy poverty is rarely addressed in the UK fuel poverty portfolio, where the linkage between drivers of fuel poverty and reliance on renewables remains relatively low on the agenda for debate. For Northern Ireland, this linkage is particularly germane given the heavy reliance on oil for heating.

4.6. A demand-based metric

A demand-based metric seeks to set an energy poverty line. This line is the threshold point at which energy consumption begins to rise with an increased income. At or below the threshold point, households are consuming a bare minimum and can be considered energy poor. This approach is "data-intensive" (Pollitt, 2009), and has been primarily trialled in industrialising countries. However, in stipulating that "the role of energy use in household welfare should be examined from the demand for energy services and not from expenditure on energy alone", the demand-based metric is consistent with the UK "needs to spend" definition of fuel poverty.

4.7. A supplementary lay definition of fuel poverty?

As will become clear in Chapter 5, the definition of fuel poverty that was adopted in the 2001 Fuel Poverty Strategy is often misquoted, even by scholars and experts. It is a technical definition which contributes little if at all to the public understanding of fuel poverty. A supplementary lay definition of fuel poverty might assist in generating public interest, and would almost certainly help local politicians and councilors grapple with what is, by all accounts, a complex concept in theory but a seemingly simple and easily-observed one on the doorstep. As a consequence, it is recommended that debate be

stimulated around the development of a meaningful lay definition of fuel poverty that will make the concept more readily accessible to people in the broader community.

A lay definition of fuel poverty

In order to protect health and well-being, all households require a minimum standard of heating and electricity in their home.

The cost of this varies from country to country, but in Northern Ireland households should ideally need no more than 15% of their income to achieve this minimum standard.

Households that are in fuel poverty are unable to afford this minimum standard.

Consequently:

- many go without heat and electricity because they cannot afford it
- others go without essentials such as food in order to pay for heat and light.

People on low incomes are most likely to experience fuel poverty, especially if they live in homes which have poor quality insulation and heating. However, when energy prices are high, fuel poverty can become widespread throughout a region.

Chapter recommendations

4.1. A watching brief is kept on alternative definitions of fuel poverty.

4.2. A Northern Ireland EU-SILC metric, which was recently enabled, should be assigned a sample size that can generate reliable results.

4.3. Given a growing worldwide interest in issues of both quality and quantity of heating fuels, and local reliance on oil, Northern Ireland should lead UK debate on issues of fuel quality in the future.

4.4. Given difficulties in public and expert understanding of the technical definition of fuel poverty, a lay definition should be adopted to supplement it; this could make the concept more readily accessible to the public and policymakers.

Chapter Five

CONTESTED ASPECTS OF THE UK DEFINITION OF FUEL POVERTY – NEEDS TO SPEND

> *"It is more meaningful…to measure fuel poverty with reference to the fuel costs required to maintain adequate thermal comfort, safeguard health and cover other normal fuel usage, irrespective of actual fuel spending".* (Moore, 2011)

5.1. Measuring needs to spend

To calculate "needs to spend" the Building Research Establishment (BRE) applies an algorithm known as BREDEM-12. This estimates the cost of heating a property to World Health Organisation standards, taking into account factors like:

- property size
- solar gain
- insulation and heating systems
- fuel prices
- climate
- lifestyle

These calculations are made by BRE and published as part of the regional House Condition Surveys.

5.2. The importance of "needs to spend"

"Needs to spend" rather than actual spend was first used in the 1996 EHCS. Households that can be effectively captured through "needs to spend" are those who *should* be

spending more than 10% of their income on heating and light, but are not (a *"should, but doesn't"* cohort). The cohort is likely to include many of those most likely to need assistance in coping with cold and damp homes. Adopting needs to spend reflected a concern (first expressed by Boardman in her 1991 book) that households most vulnerable to fuel poverty and its effects should not be marginalised from the definition.

For Northern Ireland, there is indirect but convincing evidence that this cohort is large. According to the 2006 Northern Ireland House Condition Survey, 34% of households were in fuel poverty; this rose to 44% in 2009. On the assumption of a linear increase, 40% would have been in fuel poverty in 2008. However, as is evident in Table 5.1, the proportion of households *actually* spending over 10% of their income on fuel expenditure in 2008 was only 24%.

TABLE 5.1 Fuel Poverty on basis of actual spend and "need to spend", 2008.

	England	Wales	Scotland	NI
Actual spend	9.6%	18.5%	13.2%	24.0%
Need to spend	16%	24%	27%	44%
Ratio of actual: need	0.6	0.8	0.5	0.6

Source: HCS and LCS.

Even allowing for differences in the way income is estimated between the sources (HCS and LCS), this differential:

- suggests that under-heating is a very common practice throughout the UK
- provides a rough indication of the extent to which a fuel poverty metric based on actual expenditure would deflate fuel poverty statistics. At 2008, an actual expenditure model would have reduced the rate of fuel poverty in Northern Ireland by an estimated 20% (from 44% to 24%). In relative terms, that is a 46% reduction in the proportion.

"Needs to spend" also allows the definition of fuel poverty to represent all 3 designated contributors to fuel poverty, namely income, expenditure, and the energy efficiency of the home. In Northern Ireland, improvements in energy efficiency have provided some of

the more positive achievements in tackling fuel poverty, since Northern Ireland has made greater gains in SAP ratings than the other 3 regions of the UK. Furthermore, the 2011 Fuel Poverty Strategy for Northern Ireland designates energy efficiency as the primary focus of the region's Fuel Poverty Strategy for the next four years (DSDNI, 2011):

"This strategy must take account of the three factors contributing to fuel poverty and proposes actions that will reduce energy inefficiency, increase incomes and lessen the impacts of fluctuating domestic energy prices while working within available resources. However, this strategy must also recognise some constraints of the Department for Social Development's aim of tackling what are in reality three very different causes of fuel poverty. Consequently, it will focus directly on the one core contributor where it can make inroads (namely energy efficiency), whilst fostering partnerships that can enhance activities elsewhere, in order to tackle the other two contributors at the same time".

To monitor energy efficiency gains accurately, "needs to spend" is an essential component of the definition.

Whilst "needs to spend" is embedded in the UK's official definition, the phrase is often omitted when authors define fuel poverty. In a random selection of 25 peer-reviewed scientific articles on fuel poverty (2010 and 2011), "needs to spend" was omitted from more than half of them (n = 13). These errors of omission are surprising, since other classic definitions (particularly ones which have been adopted into government policy), are seldom misrepresented in this manner.

Part of the explanation could lie in the difficulty authors experience accessing source materials from the late 1980's to the mid 1990's, since it is in these that the rationale for many aspects of the definition are (or should have been) documented. For example, Boardman's original book has been out of print for many years and can be obtained only from sellers of rare books. Yet the book remains a principal source for how the current UK definition of fuel poverty is constructed and why. (It is also the most forensic account of the concept ever written). Difficulty in accessing original source material may have contributed to a benign but viral process of misquotation.

5.3. The future of "needs to spend"

A more deliberate replacement of "needs to spend" with an expenditure-based metric (EFP or Expenditure Fuel Poverty) is also taking place, and for several reasons. It is both difficult and expensive to assess the energy efficiency of homes in the UK using the current BREDEM-12 algorithm. Since no other countries in Europe use BREDEM-12 (and none look likely to adopt it), it has limited value for Europe-wide comparison. The complexity of specialised data gathering and analysis required for BREDEM-12 also means that, although House Condition Survey data are published frequently, the data are usually 2 years old before they become available.

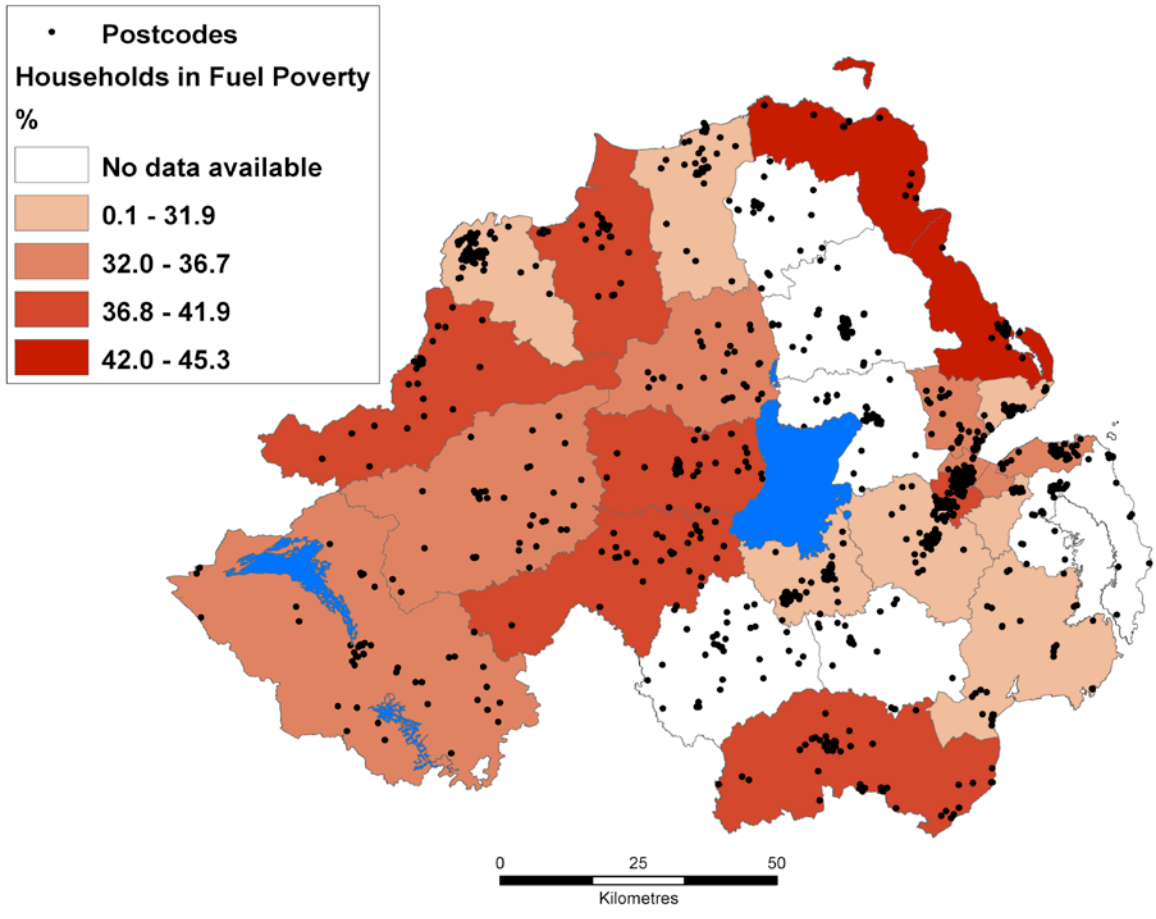
There are also shortcomings associated with the BREDEM-12 algorithm, many of which were pointed out and many remedied several years ago in a comprehensive review (Sefton and Chesshire, 2005). These have been compounded by more recent difficulties associated with factoring in efficiency gains from renewable installations (SGSR, 2009), which in Northern Ireland have yielded SAP scores that are worse after than before a retrofit (Livingstone, 2011, pers. comm.). Researchers also find it difficult to interrogate the BREDEM-12 algorithm. In short, there have long been concerns about BREDEM-12 as a measure of energy efficiency and (until such time as a universal metric of energy efficiency can be founded) the UK seems to be joining most of the rest of Europe in using an expenditure-based metric that does not rely on BREDEM-12.

Even if BREDEM-12 were to be revised, other developments in gathering data for the House Condition Surveys impose additional problems. Plans are in place to reduce sample size throughout the UK, and have already been initiated in Northern Ireland (sample size was reduced in the 2009 HCS). Nation-wide, this will reduce the extent to which data can be sub-divided into smaller and more meaningful sub-groups for the purposes of targeting and monitoring. This is being resolved by combining data from consecutive years (the EHS uses 2 years of data per Survey, and the SHCS uses 3), although this helps little in the current period of volatility.

In Northern Ireland, the reduction in sample size means that it is no longer possible to compare fuel poverty across Northern Ireland's 26 Borough and District Councils. This is problematic, since the implementation of Fuel Poverty Strategy in Northern Ireland has historically been the responsibility of Council-led teams. These vary in commitment and efficiency, and Council-based comparisons have constituted an important tool for setting more rigorous targets over time.

Fig 5.1 provides an example of how previous NIHCS data has been used to monitor targeting across Council areas. Darker areas represent District and Borough Councils which have a higher proportion of households in fuel poverty, according to the most recent NIHCS data. Each dot represents postcodes which received a retrofitted heating and insulation system in 2009/10 as part of the NI Fuel Poverty Strategy. Figures such as these offer vital opportunities for sharpening targets and setting meaningful benchmarks at local government level.

FIGURE 5.1 District and Borough Council areas by fuel poverty prevalence, showing where combined heating and insulation installations were delivered under the NI Fuel Poverty Strategy 2009/2010.



Source: DSDNI, 2011.

Table 5.2 offers a similar perspective on installations and targeting.

TABLE 5.2 Actual and expected installations in Council areas, ranked by fuel poverty prevalence

Council area	Fuel poverty prevalence	Number of installations	Expected installations	Installed within 10% of expected?
% Owner-occupied				
HIGH FUEL POVERTY				
Moyle	45%	11	12	Yes
Larne	43%	26	16	More
Cookstown	41%	40	21	More
Strabane	41%	25	24	Yes
Limavady	40%	27	69	Fewer
Ards	40%	44	53	More
Newry & Mourne	39%	58	60	Yes
Belfast	39%	124	156	Fewer
Dungannon	39%	32	34	Yes
Armagh	37%	36	35	Yes
Fermanagh	36%	49	21	More
Ballymoney	35%	22	20	Yes
Ballymena	35%	59	38	More
Median split line LOWER FUEL POVERTY				
Magherafelt	34%	29	24	More
Omagh	34%	40	26	More
North Down	34%	51	56	Yes
Craigavon	32%	58	51	More
Banbridge	31%	23	31	Fewer
Carrickfergus	31%	39	28	More
Coleraine	31%	38	38	Yes
Down	31%	33	33	Yes
Derry	30%	88	50	More
Lisburn	29%	56	55	Yes
Castlereagh	27%	9	52	Fewer
Newtownabbey	26%	34	58	Fewer
Antrim	24%	39	31	Fewer

Source: NIHCS, 2006.

The table compares the number of installations that have taken place in different Council areas, relative to the number of homes in each Council which are owner-occupied or have private tenants (i.e. were eligible for assistance from the Warm Homes scheme). If targeting is being successful in reaching areas of highest fuel poverty, then it would be expected that more "over-installation" (i.e. more installations than would be expected) would be found in Councils with higher fuel poverty prevalence. This is not the case. The same number of Councils in both high and low fuel poverty areas had over-installed (n = 5). In terms of under-installers, Limavady and Belfast are of particular note, combining high fuel poverty prevalence and substantial under-installation. Newtownabbey and Antrim are now targeting harder to reach properties following several years of effective targeting.

Crosstabs such as these (e.g. FP Prevalence X Installation Numbers) illustrate the value of being able to disaggregate data. Unfortunately the fuel poverty statistics that are published after each Northern Ireland House Condition Survey are one-dimensional: fuel poverty tables illustrate prevalence by "age", then by "tenure", then by "income" etc. After a decade of experience in delivering fuel poverty strategy, these have outlived their usefulness for the purposes of targeting. For example, the *combination* of income and SAP provides a much more powerful and accurate metric than either measure on its own, as Table 5.3 illustrates.

TABLE 5.3 Proportion of households that are in fuel poverty by income and SAP.

Income	SAP<20	SAP 20-39	SAP 40-59	SAP 60-79	SAP 80 plus*
<£7,000	5.1%	18.9%	37.7%	36.4%	1.8%
£7,000 - £29,999	5.7%	12.8%	39.0%	41.8%	0.7%
£30,000 plus	4.9%	12.3%	42.0%	40.8%	0.0%

** SAP 80+ data are based on a small sample, and may not be reliable*

Source: NIHCS, 2006.

The shaded area represents households with the greatest likelihood of being in fuel poverty. Boardman's (2010) analysis of a similar table for England estimates high targeting accuracy if fuel poverty is targeted exclusively within the shaded area. In total, the shaded areas contained an estimated 36,132 households in Northern Ireland in 2006, and they represent a natural starting point for more accurate target-setting. In addition, a table of

this sort helps sharpen understanding of whether income or SAP is the more useful metric for policy in Northern Ireland. What the table indicates is the stronger influence of SAP, since low SAP housing is evenly distributed across the 3 income bands. This supports Northern Ireland's recent decision to designate energy efficiency as the key driver of new initiatives (NI Fuel Poverty Strategy, 2011). In England, by contrast, the greater proportion of low SAP homes are concentrated in households with low income.

Reductions in sample size in the House Condition Survey will make some crosstabs (e.g. Fuel Poverty prevalence X **SAP** X **Income**) unreliable, and many three-dimensional tables (e.g. Fuel Poverty Prevalence by **SAP** X **Income** X **Tenure**) impossible.

At the same time as these sample size reductions are being made in the HCS, changes are underway with both the Continuous Household Survey (CHS) and the Living Costs Survey (LCS) in Northern Ireland. The sample size to be used in the region's LCS has been reduced, and data are no longer sufficiently robust to produce annual results. Additionally, the long-established series of data on energy related issues derived from questions included in the Northern Ireland CHS has been broken, as the questions have been dropped.

> At a time when the accumulation of knowledge and experience makes multivariate targeting and monitoring more useful than ever in Northern Ireland, it is regrettable that there will be less scope for it going forward.

It is three years since the Northern Ireland Audit Office remarked that:

"The Department relies on the data from the NIHCS to derive its estimates of the extent of fuel poverty and consequently monitor the achievement of its targets ...As the NIHCS is carried out every five years, with an interim survey between, the Department does not have an effective mechanism to continuously monitor progress. Without this it is difficult for the Department to react swiftly to changing demands for resources or to emerging risks" (NIAO, 2008).

In the ensuing three years, decisions to reduce the sample size of the NIHCS and remove energy items from the CHS and LCS have collectively made this problem worse.

5.4. Expenditure Fuel Poverty (EFP) as a supplementary metric

Using actual spend rather than "needs to spend" generates a metric more akin to an affordability index than a fuel poverty measure (Hinton & Redclift, 2009), though even as an affordability index it is primitive (Florence School of Regulation, 2008). Nevertheless, it has the advantage of being update-able annually, which is especially useful during periods of volatile energy prices. It is also the metric which many other European countries use to monitor and compare fuel poverty, energy precariousness, and other variants (Dubois, 2011).

For reasons such as these, "needs to spend" runs the risk of being marginalised because of:

- the gradual introduction of an EFP metric, both in Europe and in other parts of the world
- errors in quoting the official UK definition which almost invariably involve omitting "needs to spend"
- problems inherent in the BREDEM-12 algorithm
- problems in implementing BREDEM-12 on a sufficiently regular basis
- (for Northern Ireland) reductions in sample size or item deletions in the NI House Condition Survey, the Living Costs Survey, and the Continuous Household Survey.

Table 5.1 compared the prevalence of fuel poverty using a "needs to spend" definition with that based on an EFP model for Northern Ireland. Under an EFP model, fuel poverty prevalence rates would be lower across all regions. However, regional disparities would be substantially altered. For example, on a *needs to spend* metric, Northern Ireland households are 4.1 times more likely to be in fuel poverty than English households. On an *actual spend* metric, they are 3.0 times more likely to be in fuel poverty than English households. Hence opting for an *actual spend* metric will not only downsize the real extent of fuel poverty in all regions of the UK, it will disguise real regional disparities. Losing "needs to spend" from the definition will reduce fuel poverty rates in Scotland and Northern Ireland substantially more than in England and Wales.

There seems little doubt that the current UK definition, based on “needs to spend” is the best one currently available, since it defines energy need for a household and estimates the fuel expenditure required to deliver that need. This prevents marginalisation of a “should but doesn’t” cohort, which appears to be a significant proportion of those in fuel poverty for all the UK territories. A recent comprehensive review of definitions of fuel poverty undertaken in Ireland reached the same conclusion (Indecon, 2010).

5.5. An alternative to BREDEM-12

The lack of transparency in BREDEM-12, the dependence on BRE to run and interrogate BREDEM-12, and the infrequency of the Surveys undertaken with it, are practical obstacles for continuing to rely on “needs to spend”. At local level, recent reductions in the Northern Ireland sample size also damage its usefulness, at least with respect to informing policy and targeting at an advanced level. At European level too, BREDEM-12 is becoming an anachronism, at least for the foreseeable future

For all of these reasons, exploring possibilities for a new metric is recommended. Within Northern Ireland, there is scope for founding a new metric. This could initially draw on a combination of available data (e.g., Land and Property Services, and the rapidly-growing HEED database which is being populated by energy efficiency agencies who are completing Energy Performance Certificates (EPC’s)); both of these could usefully supplement the NI House Condition Survey database. In addition to monitoring the energy efficiency of the housing stock, it will be necessary to devise adjustments to take account of the effects of fuel price variations and climate (as the Sutherland Tables do). The database could be augmented as time went on. For example, Northern Ireland publishes a Quarterly House Price Index based on data gathered from more than 100 estate agents; this Survey could be augmented with basic energy efficiency data, provided estate agents were trained to make assessments (in the same way as energy agency staff are trained to do so before issuing EPC’s). The roll-out of SMART meters during the next decade in Northern Ireland would offer an opportunity to supplement the database through the completion of the same EPC-like inhouse surveys carried out at the time of meter installation.

In addition to the energy efficiency of building fabric, these inhouse surveys could also incorporate data on the energy consumption habits of households, for example lifestyle

choices that impinge on energy use, appliance purchasing, investment in renewable sources, etc. Fuel poverty policies implemented in the UK and Europe have never emphasized the importance of household energy efficiency in the mix of provision, nor has investment been sufficient for ensuring that retrofits under the Fuel Poverty Strategy remain operating at efficient levels once installers have left. A recent study found that 77% of residents who had received upgraded heating systems were not using them efficiently (McManus, Gaterell & Coates, 2010).

Estimates of the savings on energy expenditure which could accrue from an additional focus on household appliance and lifestyle choices vary from 5 to 20% (e.g. Boardman & Darby, 2000). Ensuring that, as far as practically possible, households adopt energy efficient practices has a vital role to play in tackling fuel poverty going forward. New innovations such as in-house displays, energy monitors, SMART meters, and energy-saving appliances all provide important tools for households that are able to make savings through positive action and informed choice. Better resourcing of agencies which support these aspects of public engagement and which provide energy advice is advocated. For example, NEA Northern Ireland provide energy awareness training leading to a City and Guilds qualification for this purpose.

In this context, the anticipated rollout of SMART meters across the UK (and the time-of-use tariffs that will accompany them) offer a joint opportunity for:

- the gathering of data using a new energy efficiency metric since every house will be visited as part of the installation process; such a metric would need to be suitable for use by personnel with relatively little training in energy efficiency;

- the roll-out of tailored customer energy-saving packages, using inhouse displays and feedback-laden billing systems;

- the introduction of measures which can support households wishing to commit to energy savings through changes in their purchase choices, lifestyles, and everyday energy consumption routines. Market-segmentation, such as has already been reported on by DEFRA (2006) could inform the development of these packages;

- the development of special support and feedback packages which can assist fuel poor households in engaging in this process, as exemplified in an ongoing trial of

SMART meters amongst customers vulnerable to fuel poverty in Northern Ireland (NIAUR, 2010).

Recent developments in statistical modeling mean that surveys using a new metric need not be undertaken annually, but could instead take place every 3-4 years. Tools such as the Fuel Poverty Nowcast model and Improvement Prophet could be used to model interim data (see Preston, Bridgeman & Moore, 2010).

Chapter Recommendations

5.1. "Needs to spend" embodies both the letter and spirit of the UK Fuel Poverty Strategy. Retaining "needs to spend" as part of a definition will ensure that those most vulnerable to the effects of fuel poverty remain central to it.

5.2. Throughout the UK "needs to spend" captures a large "should but doesn't" cohort.

5.3. Energy efficiency lies at the heart of Northern Ireland's 2011 fuel poverty strategy, which makes "needs to spend" even more apposite at local level.

5.4. Difficulties in implementing a BREDEM-12 model for calculating "needs to spend" make it imperative that a more elegant and easily administered metric be developed.

5.5. For the reasons listed above, "needs to spend" should remain as part of the UK definition of fuel poverty, but alternative ways of assessing it should be sought.

5.6. An alternative metric should also consider monitoring the energy efficiency of households, as a means of developing strategies that incorporate human behaviours into the fuel poverty mix. Better resourcing of agencies capable of leading new initiatives in this context is advocated.

5.7. The rollout of SMART meters should be explored as a vehicle for gathering data on a new metric, and as a means on engaging householders in taking up lifestyle changes.

5.8. Multi-dimensional approaches to understanding the geography and demography of fuel poverty should be expanded. These can assist all aspects of the Strategy, enhancing the accuracy of monitoring over time, guiding targeting, and providing benchmarks for implementation.

5.9. An EFP-based definition is becoming increasingly popular, but should not replace the existing definition with its emphasis on “needs to spend”. It is useful as an international comparator, and as a supplementary *affordability index*, that can monitor rapid changes over time.

Chapter Six

CONTESTED ASPECTS OF THE UK DEFINITION OF FUEL POVERTY – 10%

6.1. Origins of the 10% threshold

According to Osbaldeston (1984, p. 368), Isherwood and Hancock were among the first to *"have attempted to define victims of fuel poverty"*. They defined *"households with high fuel expenditure as those spending more than twice the median (i.e. 12%) on fuel, light and power"*. The median quoted by Isherwood and Hancock was based on the 1977 Family Expenditure Survey. Twice median was in fact 11%, but they chose *"12% rather than 11%... in order to correspond with other analyses which have used this figure"* (Isherwood & Hancock, 1979, p.11). In other parts of the document, the criterion that Isherwood and Hancock refer to (and others prior to them) was *"between 12 and 24% of total expenditure being spent on fuel, light and power"*. This corresponds to a range of twice- to four-times the median. The upper limit of four-times median was adopted to exclude households that may have just settled a particularly large fuel bill, and to cope with *"other statistical oddities"*.

The choice of twice median expenditure (rather than mean expenditure, for example) reflected interest in the concept of relative poverty which was popular at that time. Medians are more helpful in representing relative concepts than are means because they are able to smooth out the effects which extreme scores have on means.

Boardman's book *Fuel Poverty* (1991), is the first to refer to a 10% threshold. Her figure of 10% is based on the 1988 Family Expenditure Survey for UK households. At that time, 30% of households with the lowest incomes were spending a *mean* of 10% on fuel. Although Boardman (1991) worked with mean expenditure not median expenditure, the figure of 10% approximated what Isherwood and Hancock (1979) had quoted as being twice median some time before (11%). Since median expenditure is more useful in defining relative poverty than is mean expenditure, and since Boardman was herself primarily concerned with issues of relative poverty and social justice, she opted for 10% as a figure which broadly represented twice the median for all UK households (Boardman, 2011, pers. comm.).

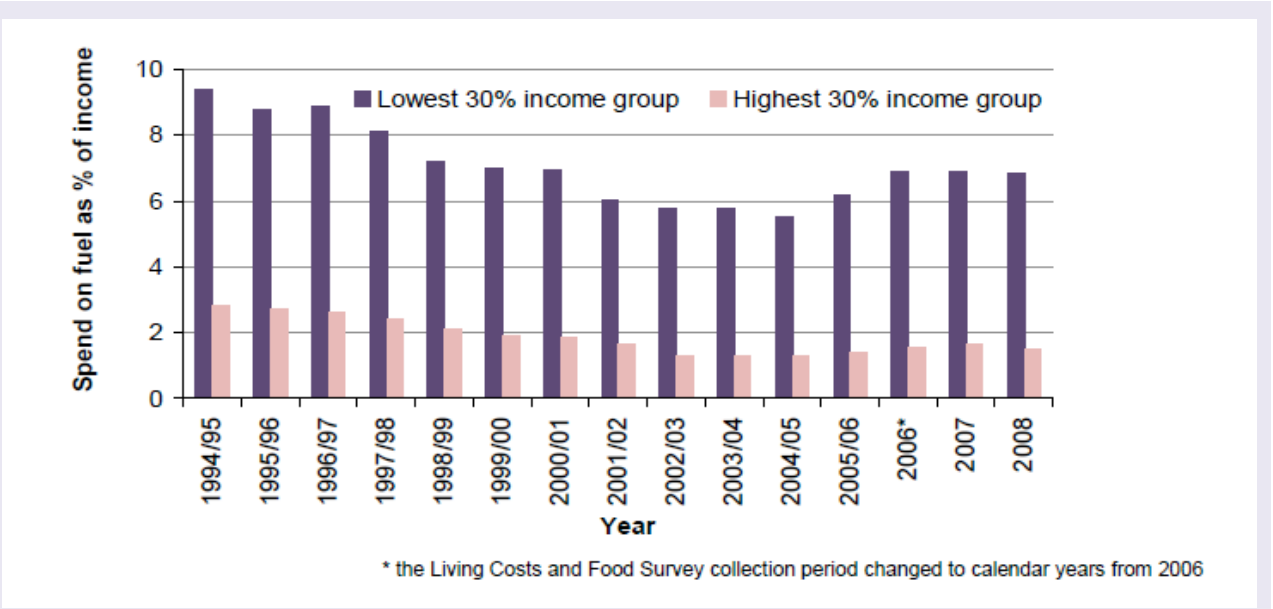
According to the UK Fuel Poverty Strategy (2001), which adopted a "10% cut off point":

"The 10% cut off point has been used for many years now. The 1988 Family Expenditure Survey (FES) showed that households in the lower three income deciles spent, on average, 10% of their income (not including Housing Benefit or ISMI as part of their income) on fuel for all household uses. It was assumed by researchers in the fuel poverty field that this could be taken as representing the amount that low-income households could reasonably be expected to spend on fuel."

It is unclear why a threshold based on 1988 data was adopted for the 2001 Strategy, since current data were also available at the time.

Figure 6.1 provides details of actual UK expenditure on fuel for the lowest (and highest) three income deciles between 1994/5 and 2008. During that time, actual UK spend was always below 10%.

FIGURE 6.1 Fuel expenditure as a proportion of income for the lowest and highest 30% of income bands (UK).

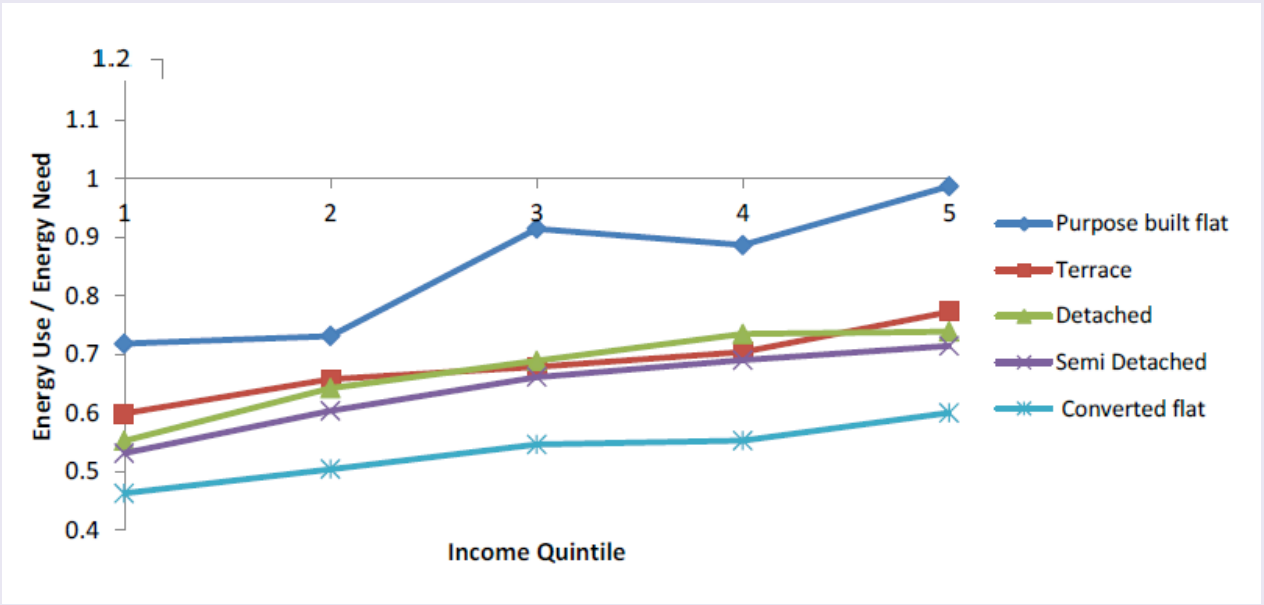


Source: DECC, 2011.

Of course, Figure 6.1. illustrates actual spend rather than "needs to spend", so some upward adjustment is merited. As can be seen in Figure 6.2. Guertler (2011) shows that

the ratio of the two metrics (actual/need) for the lowest income quintile is on average about .55. In this case, the prevalence rates being returned using a 10% threshold are probably acceptable (6.5%/.55 = 11.8%), probably by coincidence not design.

FIGURE 6.2 Ratio of energy use to energy need by income quintile



Source: Guerler, 2011.

However, the issue does not rest there. Table 6.1 provides information on the extent to which a 10% threshold may have differentially affected the 4 regions of the UK.

TABLE 6.1 Average fuel expenditure of the lowest three income deciles in the 4 regions, 2008.

Region	% of income - actual spend	Guertler-based estimated need to spend
England	9.5%	12.4%
Wales	16.3%	21.2%
Scotland	10.9%	14.2%
Northern Ireland	13.5%	17.6%

Source: LCS, 2008.

At the present time, the 10% threshold for all households is probably reasonably accurate for England. For Scotland, the 10% threshold probably returns a more significant over-estimate of fuel-poverty prevalence. For Wales and Northern Ireland, however, the over-estimate of fuel poverty is more serious. In Wales the estimated need to spend on domestic fuel for the lowest 3 income deciles is more than twice the 10% threshold currently being applied to provide headline data on fuel poverty prevalence.

6.1. Fuel poverty as an absolute or a relative concept?

The UK Fuel Poverty Strategy (2001) silently reframed fuel poverty from a relative to an absolute concept. This was contrary to how all previous experts (from Isherwood and Hancock in 1979 to Boardman in 1991) had conceptualised the term. At the present time, there is growing interest in returning to treating fuel poverty as a relative (twice-median) concept. There are several reasons for this:

- It is internationally favoured as a metric for representing distributions related to income and expenditure, since these are seldom normally distributed.
- The majority of recent studies investigating income and/or expenditure quote median statistics in preference to means or any other metric (e.g. Hills et al., 2010).
- It is particularly suitable as a metric for comparing fuel poverty across European countries, since it absorbs real variations in the amounts which residents of different countries customarily pay for heat and light.
- For regions focusing explicitly on improving energy efficiency (as is the case in most of Europe, New Zealand, Canada, and beyond) changes in twice-median over periods of several years more clearly reflect the impacts of policy; this is because a twice-median metric is not confounded by changes in income or energy prices over time.

What would the implications be of a return to a twice-median approach? Firstly, it would mean reframing what is needed to *"eradicate fuel poverty as far as practically possible"*. It would require most households to need somewhere below 2X median of their income for

adequate domestic energy. As many households as practically possible would need to be located below twice median. Additionally (in order to tackle energy prices and costs), the goals of Fuel Poverty Strategies would need reconfiguring around applying continuous downward pressure on median *needs to spend*. In the 4 regions of the UK this median would be different.

However, it would not resolve the issue of regional disparities in over-estimation. In 2008, twice-median needs to spend for England was 10% (Moore, 2011). For Northern Ireland, on the other hand, as indicated in Table 6.2, the median needs to spend on domestic fuel (2009) was 9.0%, making twice median 18%. Under the customary 10% threshold, the NIHCS in 2009 estimated that 44% of households in Northern Ireland were in fuel poverty. Using the regional twice median, prevalence drops to 13%. Coincidentally, this is quite close to the fuel poverty prevalence that the EHS estimated for England in 2008 (16%), a region where twice median is in fact much closer to the 10% cut-off point.

TABLE 6.2 Median needs to spend on domestic fuel for Northern Ireland, (2009).

Region		Total fuel costs (£/year)	SAP Rating	Percent Fuel Expend
CH Gas	Median	1390	67	9.0
	N	106329	113625	106329
CH Oil plus dual	Median	1538	59	8.8
	N	523102	550506	523102
CH others (SF, Electric, Others)	Median	1456	46	11.8
	N	59042	68360	59042
Non CH *	Median	2871	13	38.9
	N	2986	7454	2986
TOTAL NI	Median	1505	60	9.0
	N	691460	739945	691460

**Cell sizes may be too small to generate reliable results.*

Source: NIHCS, 2009.

The 10% threshold which must be crossed in order for households to move out of fuel poverty makes the alleviation of FP in NI almost impossible, since it requires moving households who are around the current twice-median of 18% all the way back to 10% in order to reduce fuel poverty prevalence. The task has become nigh impossible using a 10% threshold. If meeting targets are to be a priority, the fuel poverty lobby would find it difficult to avoid ignoring some of the most severely fuel poor in order for targets to be achieved. Consequently, the Preliminary Review recommends that NI (and other regions of the UK) establish region-specific twice median values *at least for the purposes of their own regional planning, targeting, and resourcing*. Benchmarking now, at region-specific medians, will allow progress to be monitored more accurately. It should not preclude retaining a 10% threshold for UK-wide comparison purposes.

Hence, this Preliminary Review recommends that:

- Headline prevalence data continue to be published in accordance with the UK-wide "10% needs to spend" criterion; this will allow comparisons with other parts of the UK
- If the Hills Review adopts a new percentage threshold, then Northern Ireland should follow suit
- In the mean time, the current twice median figure of 18% is adopted in Northern Ireland for the purposes of local budgets, benchmarking and monitoring. Within Northern Ireland, the current twice median should become the default statistic on which local planning, financing, and monitoring is based
- Since twice-median does not reflect changes in energy prices, a simple affordability index is also quoted alongside the UK and NI twice-median statistics; this would represent a ratio of expenditure on *domestic fuel: income*, and could be updated annually.

The UK Fuel Poverty Strategy (2001) set a threshold of 10% to separate households that were in or out of fuel poverty. The threshold was based on data from 1988.

Some 25 years later, there are strong grounds to reassess this threshold. At the present time, a 10% threshold is probably a modest approximation of twice-median spend in England. It bears little resemblance to actual twice-median for Northern Ireland, and the same may apply to other regions.

Regardless of whether fuel poverty is calculated using an absolute or a twice-median threshold, there is strong evidence to support:

a) re-calibrating the threshold for fuel poverty to current levels

b) monitoring changes in the threshold on a more regular basis

c) permitting the different regions of the UK to use region-specific thresholds, at least for the purposes of planning, targeting, and resourcing

d) supplementing a threshold metric with an affordability index that can monitor changes in the other core causes of fuel poverty, especially energy prices.

In summary, at least three indicators are required for Northern Ireland:

1. A national fuel poverty prevalence rate, based on a national twice-median, is vital for ensuring parity across the regions.
2. A local fuel poverty prevalence rate, based on the Northern Ireland twice-median, is equally vital for the purposes of equity within the region, and for monitoring impacts. This requires updating annually, and should decrease over time if fuel poverty programmes are making the impacts that are expected of them.
3. A supplementary affordability index that is annually updated; this will reflect the extent to which the ratio of fuel expenditure to income changes over time. Whilst this ratio may increase over time (i.e. households in Northern Ireland may continue to need more and more of their income for heating and lighting), this would not preclude the local fuel poverty prevalence rate (2) from decreasing if programmes to tackle it are achieving their targets.

6.3. The *threshold* of 10%: households are either *in* or *out* of fuel poverty

The binary nature of a 10% threshold has also raised debate. Brinkley and Less (2010) argue that the 10% cut-off has led to a focus on finding income supplements rather than longer-term solutions to fuel poverty. Nevertheless, attempts to increase income have been notably successful. For example, during 2008/9 in England, more than 78,000 Benefit Entitlement Checks were completed and resulted in a potential new or additional benefit in 45% of cases. The average weekly household income that would have been gained (assuming applicants made a claim and were successful) was £31 per applicant (Parliamentary Written Answers and Statements, 2009). In Northern Ireland, actual follow-up of clients indicated that a new or additional benefit was in fact awarded in 56% of cases, with an average weekly gain of £47 per applicant (2009/2010 data). This returned an estimated £1.48M in income to Northern Ireland residents, which equates to 16% of the budget allocated to NI's Fuel Poverty Strategy in the same year (Bryson Energy, 2010).

The increased income was sufficient to pay for all annual heating costs, with 40% of the increase left over.

Nevertheless, Brinkley and Less have some justification in criticising income supplements as a means of tackling fuel poverty, since it leaves most households either still fuel poor, or vulnerable to being fuel poor when energy prices increase. To illustrate this, and using Northern Ireland data from Tables 2.4 and 2.6:

- an average household spends £25.70 a week on domestic fuels from an average weekly income of £435.99 (actual spend of 5.90% of income on domestic fuels);
- if £30 were added to their income through benefit maximization, they would spend 5.5% of income on domestic fuels, a reduction of only 0.4%.

However in England at least income maximization has probably made substantial inroads around the 10% threshold by virtue of the fact that the greatest number of households may be clustered around the 10% threshold.

6.3.1. Severity of *household* fuel poverty

Apart from prioritization of cases of extreme need, the UK has classed all households in fuel poverty equally. There is no severity index by which households with highest need to spend are treated first. There has been Ministerial support for this view:

"Every customer of Warm Front is a vulnerable householder because of their eligibility. They are either exceptionally poor or they are exceptionally disabled and in need of support, and so it gets quite invidious to say "You are even more in need because of your poverty" or "You are even more in need because of your disability than your neighbour who applied before you did". It is quite difficult to say to people that we can do that prioritizing" (Kidney, 2010).

Whilst there is merit in this view, an alternative perspective can be found in:

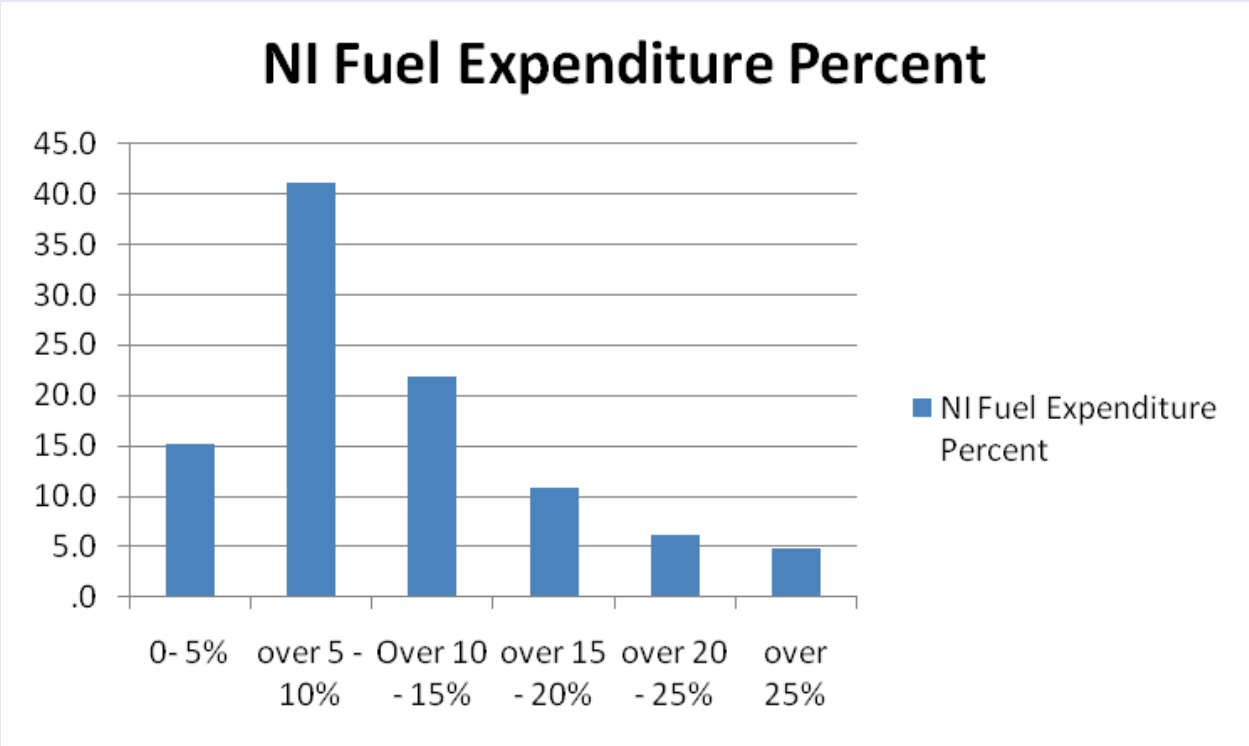
"There were households in 2005 in the lowest income decile…who were spending 20% of their income on energy. Energy price rises since 2005 may mean that such a household would now be spending about a third of their income on energy…Taking such a household

out of fuel poverty must surely be a higher social priority than helping someone in the sixth income decile who is paying 10% of their income on energy. However, policies that are led by simple statistical targets do not distinguish such cases. Policymakers should not lose sight of the fact that their priority is to make the greatest welfare gain possible with the resources available, not make the largest improvement to simple statistics." (Thomas, 2008).

In fact, as is evident in Scotland, there is nothing which deters governments from supplementing a binary category with a severity index. Although only slightly more graded, Scotland calculates prevalence in terms of numbers *in fuel poverty* (10-20% of expenditure), and in *extreme fuel poverty* (>20%). There is no evidence that this classification has been used for targeting purposes in Scotland. However, Northern Ireland's 2011 Fuel Poverty Strategy does express an interest in a severity index for the purposes of targeting funding to those most in need (DSDNI, 2011).

Figure 6.3 gives details of median needs to spend on heat and light, as does Table 6.3. From these it is evident that 22% of households in Northern Ireland need to spend between 10.1% and 15% on heat and light, with a further 11% needing to spend between 15% and 20%. An additional 11% need more than 20% of their income for heat and light, of whom almost half (5%) require more than a quarter of their income. Even if Northern Ireland targeted only the most severely fuel poor, this would mean identifying and assisting 33,499 homes, providing more than sufficient need for current budgets. The urgency of so doing needs no elaboration, since few of these 33,499 households can be considered as living in humane housing.

FIGURE 6.3 Median needs to spend fuel expenditure on heat and light.



Source: NIHCS, 2009.

TABLE 6.3 Median needs to spend on heat and light – number of households.

% needs to spend on heat and light	% of households in NI	Number of households in NI
0-5%	15.1	104646
over 5-10%	41.1	284499
over 10-15%	21.9	151703
over 15-20%	10.8	74594
over 20-25%	6.1	42518
over 25%	4.8	33499

Source: NIHCS, 2009.

Comparing severity of fuel poverty for England and Northern Ireland indicates that 36% of all fuel poor in England are in more severe fuel poverty (needing over 15% of their income for heat and light) (Moore, 2001); in Northern Ireland the proportion rises to 50%

of all fuel poor which means that a larger proportion of fuel poor households in Northern Ireland are located at the tail of the distribution, at a considerable distance from the twice-median threshold. As has already been argued this has crucial implications for using twice-median as a metric for deciding who is and who is not fuel poor. In order for fuel poverty prevalence estimates to improve over time, households have to be moved across the twice-median threshold. Since half of all fuel poor households in Northern Ireland may be located nearer the 2.5X or 3X median threshold, this requires a substantial shift in their domestic energy profiles. This makes it considerably more challenging to exert downward pressure on fuel poverty in regions like Northern Ireland than it does in England.

As matters stand it is reasonable to predict that fuel poverty rates in Northern Ireland are unlikely to decrease notably in the coming years. This is not by virtue of local programmes such as Warm Homes being ineffective, but rather by virtue of the manner in which fuel poverty prevalence levels are calculated using the national formula. Shifting households from the local twice-median of 18% to the 10% threshold is an overwhelming challenge. Shifting households from 18% to 11% of income may well be happening routinely in NI, but none of these efforts will be reflected in a declining prevalence rate, since none will have crossed the 10% threshold.

To provide a more equitable assessment of how regional efforts are altering the fuel poverty landscape, it is therefore recommended that the twice-median threshold of 10% is augmented with additional points on the scale ranging from 2.5X to +4X median. It is possible that Northern Ireland's fuel poverty programmes have succeeded in moving many households from 4X to 2.5X the local median, none of which will have had a measurable impact on local prevalence levels, since none of these households crossed the UK-wide twice median threshold of 10%. Such a model begins to approximate a continuous severity index, which is discussed in the next section.

6.3.2. Severity of *area-based* fuel poverty

It is clear from regional audits of the Scottish, English, and Northern Ireland Fuel Poverty schemes that a significant proportion of homes which have received heating and insulation measures were not in fuel poverty; these household merely satisfied the eligibility criteria, which (it had been hoped) would be stringent enough to confine eligibility to the fuel poor. Hence, the National Audit Office review for England stated:

"…nearly 75 per cent of households who would qualify [for support under the Scheme] were not necessarily in fuel poverty...eighteen per cent of households that had received assistance under the Scheme between June 2005 and March 2008 already had a SAP rating above 65, meaning they were less likely to have been fuel poor…Conversely, many people who are fuel poor are not eligible for or do not claim the "passport" benefits which would allow them to access measures designed to assist those in fuel poverty. The NAO's analysis of the 2006 English House Condition Survey indicated the [Warm Front] Scheme is only available to approximately 43 per cent of vulnerable households (classified as families with children, the elderly or occupants in long-term ill health) in fuel poverty, and 35 per cent of all households in fuel poverty" (NAO, 2009).

Given that the same eligibility criteria are in place then as now in England, Wales and Northern Ireland, new options are needed to explore:

- a targeted approach which might help identify those who are not only eligible but also fuel poor
- a further refinement of targeting which will afford the option to direct funds (either preferentially or else exclusively) to those who need to spend 2.5X median or more of their income on domestic fuels.

It is abundantly clear that identifying the fuel poor on the doorstep has proved unreliable with the measures currently at the disposal of agencies delivering implementation programmes such as Warm Front and Warm Homes. Any attempt to further refine fuel poverty into bands of severity will fall even more foul of the difficulties already encountered. The ethos behind targeting individual households rather than areas at high risk of fuel poverty has always been one of containing costs. However, in regions where current estimates imply that almost half of households are currently fuel poor, the efficiencies of targeting individual households are beginning to be overtaken by greater efficiencies that can be gained from targeting whole areas at one time.

6.3.3. Implementing an areas-based approach

Many data fields in the UK census are available at Census Output Area (COA) and these could assist with developing an areas-based severity index. A COA represents the smallest level at which census data are available. Each COA consists of an average of 125 households. Hence, for example, Census 2005 contains information on the number of households in each COA which contain a pensioner receiving pension credit (a passport benefit giving eligibility for a Fuel Poverty scheme in the UK). Likewise there is information on the number of people in a COA who are claiming disability benefit, income support, etc. Furthermore, many other data sets publish results at COA level; in Northern Ireland, this includes data on *jobseekers allowance* (2007), and the *multiple deprivation index* (2010).

Geographical Information Systems (GIS) software allows geographers to represent these data on a COA map. Combinations of data elements can be mapped in the same way, yielding (for example) maps which represent the combination of pensioners, disability claimants, and people on income support at COA level. Any data which can be represented at COA level can be included in the GIS database, providing a multi-dimensional mapping tool.

This means that a combined risk index for fuel poverty can be calculated and mapped, using a wide variety of different risk indicators, either on their own, combined, or in some agreed form of weighted algorithm.

As an example, Figures 6.4 and 6.5 are GIS maps for Ards and Newry & Mourne. The maps depict a combined risk of fuel poverty by COA, estimated on the basis of number of people claiming

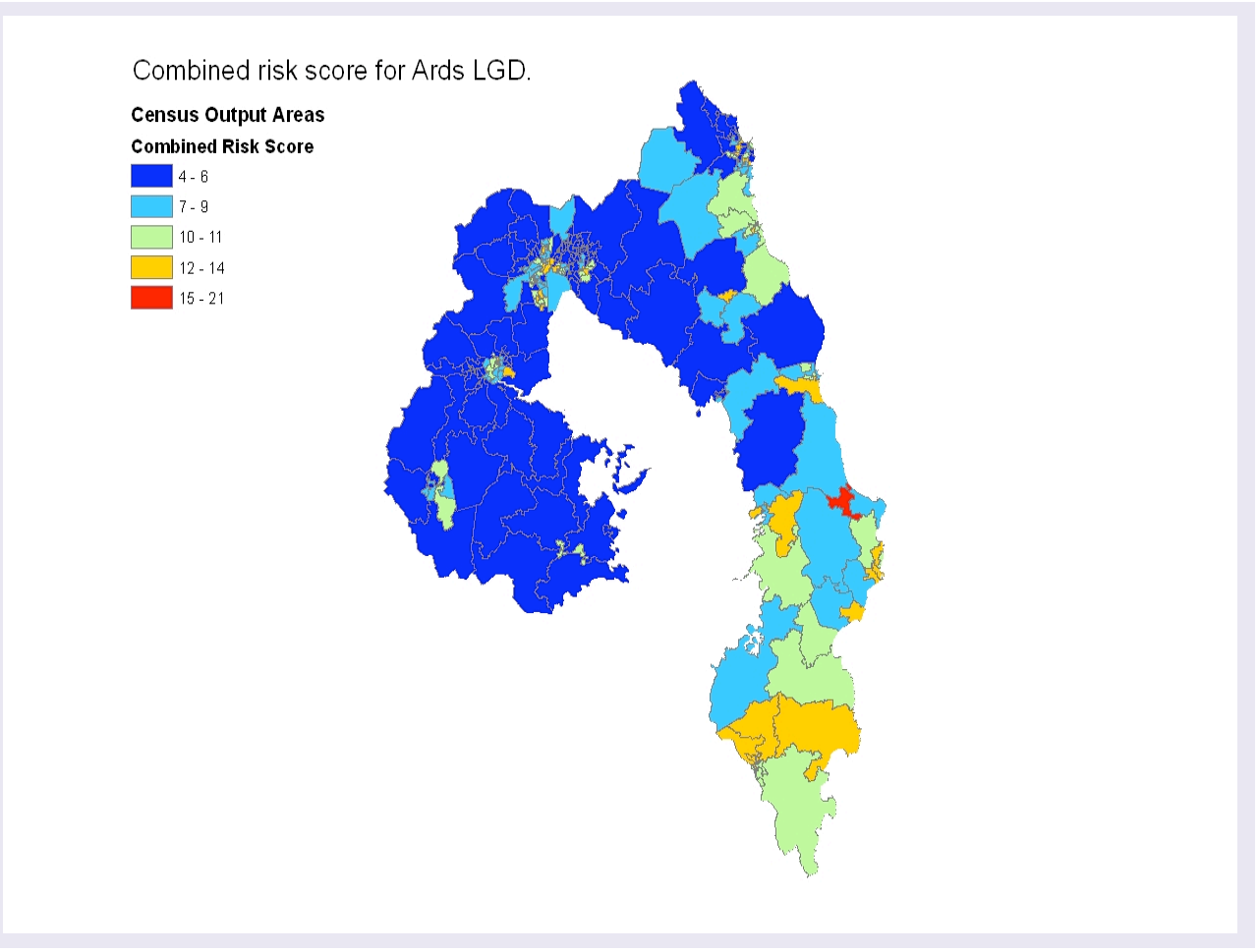
- pension credits
- DLA
- Job Seeker's Allowance (JSA)
- Income Support (IS)

The data are based on 2005 and 2007 sources. Each of the 4 contributors is given a weighting, to yield an overall multiple area risk score. In this case, pension credit status, JSA, IS and DLA were all given a weighting of 3, although differential weightings (e.g. favouring pensioners receiving pension credit) are optional and a matter for strategic decision-making.

In addition to these more common contributors, the averaged price of heating oil in each COA (at mid-January 2009) was also included. As has already been illustrated, heating oil price varies widely from one region of Northern Ireland to another, and since price of heating oil is a primary cause of fuel poverty in the region, it comprises an important additional element for GIS mapping.

For Ards (Figure 6.4) areas most likely to have a high fuel poverty risk are located in a few small but densely populated areas. By contrast, (Figure 6.4) Newry and Mourne have a more widespread distribution of high-risk areas, mostly located in rural areas.

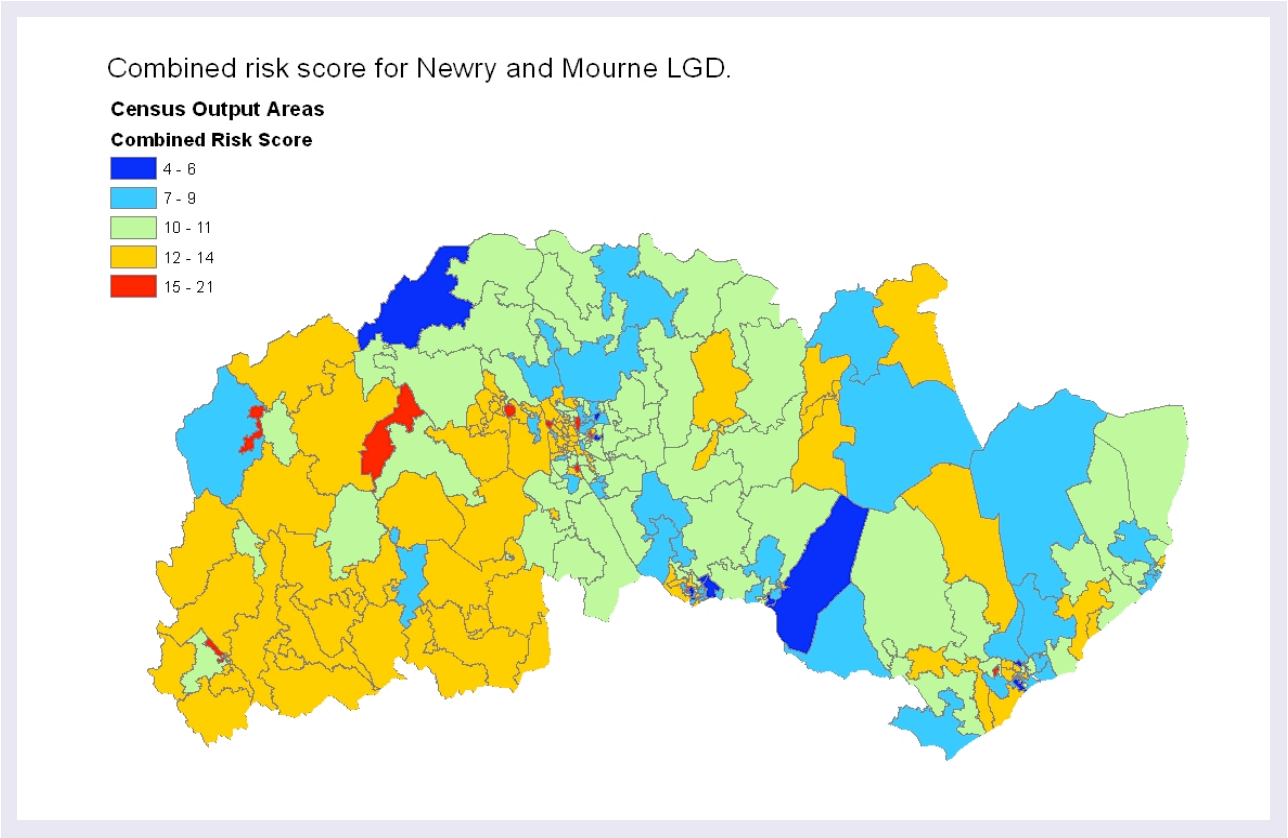
FIGURE 6.4 Ards COA's by fuel poverty risk using a weighted model that incorporated pension credit, JSA, DLA, IS, and variations in local oil prices.



Maps such as these allow a comparatively objective, multi-factorial approach to identifying areas most in need of targeting. Their interpretation is ideally made in collaboration with local fuel poverty delivery teams, who have more up to date information on whether high-risk COA's identified through mapping have, in fact, been targeted in more recent months

Whilst in this Northern Ireland example, heating oil price was included in the weighted algorithm, other regions might wish to generate either different weighted algorithms, or else assign different weights to the same elements, depending on local needs and local targeting interests.

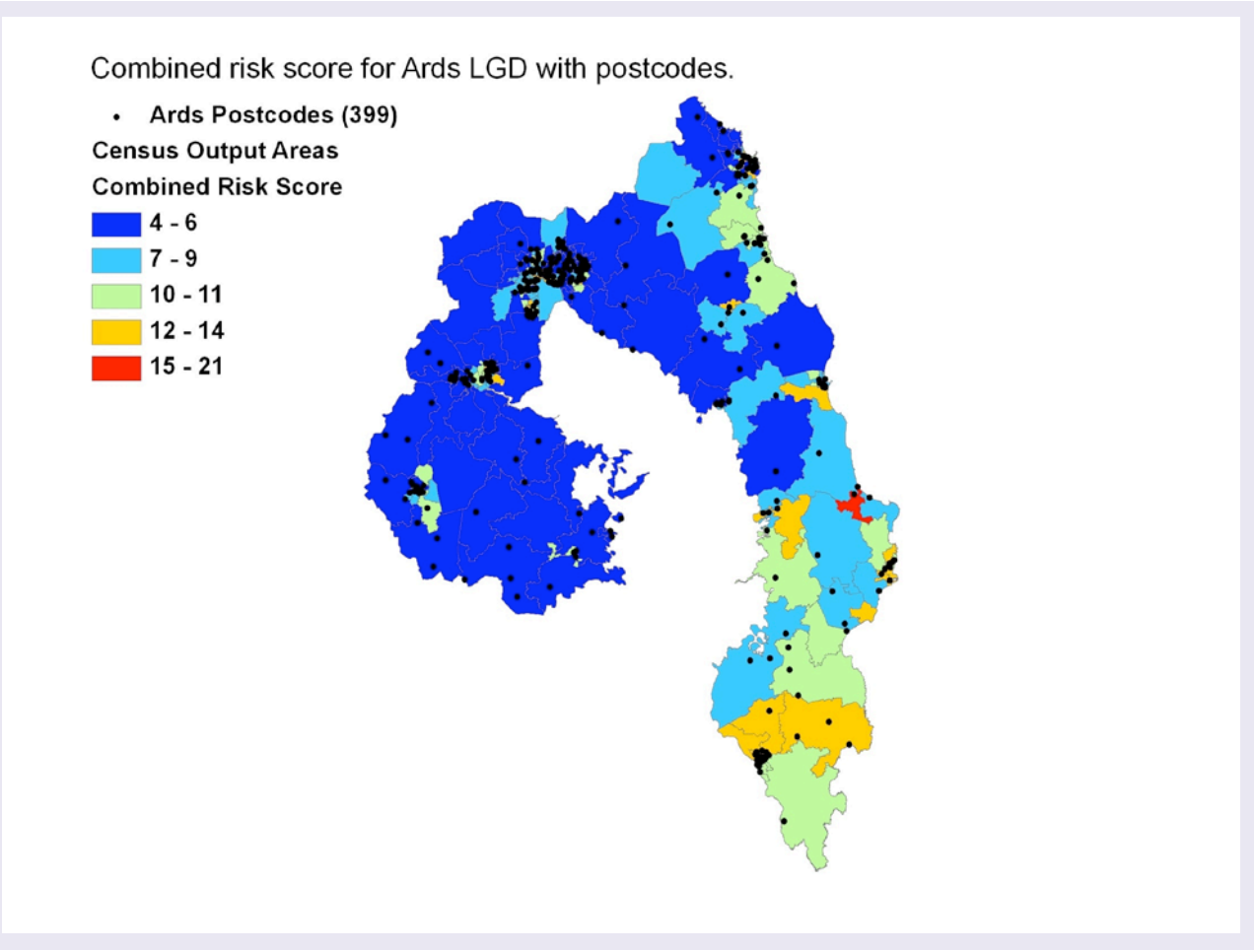
FIGURE 6.5 Newry and Mourne COA's by fuel poverty risk.



Maps of this kind can also be used to monitor targeting efficacy over time. Using Ards as an example, Figure 6.6 overlays the post-codes where full heating and insulation retrofits were carried out in 2009/10. The figure indicates scope for a more targeted areas-based approach. At best, installations were clustered around areas of greatest deprivation rather than in them.

In addition to enhancing accuracy of targeting, a GIS-based approach to targeting areas has other advantages over targeting based on proxy measures applied to individual households. For example, it disposes of the need to identify individual households as vulnerable, which has always risked stigmatizing people and may have prevented those most needy coming forward for assistance. Criteria associated with vulnerability could be maintained in an areas-based approach, in that prevalence of elderly, children, and long-term sick and disabled per COA could be entered into the algorithm, if desired. However, the explicitness and stigma of *vulnerable* in this context would be considerably diluted.

FIGURE 6.6 Distribution of insulation and heating installations (2009/2010) in Ards.



It must be noted that an areas-based approach inevitably leaves fuel-poor households that are located in low-risk areas with little hope of assistance in the medium term. This raises ethical and political difficulties for any regional government, not least of all Northern Ireland where areas-based issues are sensitive. Phasing in an areas-based approach until it reaches a point where it has parity with the current implementation programme is recommended. A two-track system of targeting, with individual- and areas-based approaches operating in parallel could maximise cost-effectiveness whilst protecting those most vulnerable to fuel poverty and its effects where-ever they are located in the region.

Kirklees Borough Council provides an English exemplar of areas-based targeting (Liddell, 2011b), as does the Beechmount scheme in Northern Ireland which targeted an area of 2,500 homes in West Belfast (Casson, Whittington & Devlin, 2002). The Warm Zones

model also deploys an areas-based approach and is being used extensively in Northern Ireland at present (Liddell, 2009). There is no need for further piloting of areas-based approaches before they are taken to scale, since they are fully tested and extensively implemented already.

Finding ways to contain costs when using an areas-based approach is, however, an area for further scrutiny. Kirklees and Warm Zones, used a blanket areas-based technique in which almost every home was audited for retrofitting (though not all required it). To prevent exponential increases in the budgets required to implement an areas-based approach, it is vital that only those homes who are in fuel poverty are assisted in chosen areas. Even in areas with extremely high prevlalence rates, not all homes will be in fuel poverty, and not all homes will be without the means to contribute to its alleviation. A combination of fuel poverty programmes and other programmes such as Northern Ireland's Green New Deal may be able to address issues related to cost containment. Using multiple criteria for identifying households most in need will also assist with this process. Table 6.4. illustrates how this could be achieved.

TABLE 6.4 Combining data on low-income and low-SAP to identify households in an area which might be most in need.

Risk factor for fuel poverty*	NI 2001	NI 2006	NI 2009
Neither low-SAP nor low income	68.5	66.7	76.4
Low-SAP	18.2	20.9	16.6
Low-Income	9.2	9.0	5.3
Both low-SAP and low income	3.4	3.3	1.8
Fuel poverty prevalence	24%	34%	44%

** Based on the number of households that are below 60% of the median SAP or median income for Northern Ireland 2001, 2006, and 2009.*

Source: NIHCS, 2001, 2006, 2009.

Based on conditions in 2009, such multi-dimensional targeting provides opportunity for maximizing the likelihood that interventions will reach those who are most in need; low SAP targeting on its own would require approximately 17% of homes to be assisted. Low-income alone would target 5% of homes, but the combination of both risk factors for fuel poverty reduces the target to 1.8%.

Equally noteworthy from Table 6.4 is the extent to which inroads have been made on fuel poverty prevalence between the 2006 and 2009 Surveys. Among low-income households, prevalence almost halved, as it did also in low-income/low-SAP households. (Despite this, fuel poverty increased from 24% to 44% between 2001 and 2009, which corroborates the overwhelming contribution which energy prices are making to changes in local fuel poverty prevalence rates).

Chapter Recommendations

6.1. Twice-median was the original metric for calculating a threshold for fuel poverty. It should be re-adopted, on the grounds that it remains an internationally favoured method for estimating relative income and expenditure.

6.2. The different regions of the UK should establish region-specific twice median values, for the purposes of their own regional planning, targeting, and resourcing. This would NOT replace a national twice-median from which fuel poverty prevalence rates would continue to be derived.

6.3. Following Scottish practice, the twice-median threshold (which yields a binary classification of households either *in* or *not in* fuel poverty) should be supplemented with a severity index that can be adopted by all 4 regions.

6.4. Given difficulties that would arise from attempting to calculate a severity index at household level, an areas-based severity index should be developed. This should guide targeting, but not preclude assisting individual households most in need.

6.5. To prevent the exponential increases in cost that a blanket areas-based approach would impose, multi-dimensional targeting tools should be used to identify those households in an area who are most likely to be low-income and low SAP. Areas-based intervention to tackle fuel poverty should be focused solely on these households.

6.6. To ensure that other households can still be assisted in the areas-based delivery system, a range of additional policies such as Green New Deal, stamp duty rebates, and rate rebates, could be developed to generate an integrated package of areas-based assistance.

Chapter Seven

CONTESTED ASPECTS OF THE UK DEFINITION OF FUEL POVERTY – INCOME

Most debate concerning the way in which fuel poverty is measured centres on income. This is because the choice of an income metric has significant impacts on the numbers of people who are in fuel poverty, as well as on the types of households most likely to be in fuel poverty. Hence the choice of metric has implications for budgets, policies, and targeting.

7.1. Full household income

The official UK Government definition of fuel poverty uses a full income metric. This however is interpreted in two different ways. In England, the income of all adults in the household is taken into account, whereas in Scotland and Northern Ireland, only the income of the two main adults is surveyed with an adjustment made by BRE to cover potential income from other occupants. This is likely to have a profound effect on the level of household income against which fuel expenditure is compared across different regions (according to the 2008 LCS, nearly 20% of Northern Ireland households have more than 2 adults).

Both definitions incorporate Housing Benefit, Income Support for Mortgage Interest, and Council Tax Benefit into household income. Council Tax payments are deducted from income. In Northern Ireland, the system operates in a different manner. Rates are computed on a relatively precise valuation of the individual property occupied, rather than identical amounts being levied on a limited number of property bands. There is no discount for single occupancy, and rates are paid directly by owner-occupiers and a limited number of tenants. For most tenanted properties, rates are paid by the landlord and the amount is indirectly covered through the rent set on the property (there is no direct link between the rates payable on Housing Executive properties, and the rent charged). Furthermore, rates in Northern Ireland subsume a contribution to the provision of water services that are separately charged in Great Britain as water rates. Given the

fact that not all households pay rates as a separate item and that the coverage of council tax and rates differs, there is a case for deducting all housing costs (council tax, rates, rates relief, water rates, rent, mortgage payments etc).

> A proper treatment of these regional differences in how income is calculated, and their impacts on regional prevalence rates, requires more detailed consideration. Are fuel poverty prevalence rates in Northern Ireland and Scotland inflated when compared with those in England and Wales by virtue of the fact that household income is calculated differently North and South? It is possible that English prevalence is lower, at least in part, because the English comparator income is higher.

7.2. Basic household income

This excludes Housing Benefit, Income Support for Mortgage Interest and Council Tax Benefit from income. Council Tax payments are also deducted from income. The purpose of using a basic household income measure is to take account of the fact that different regions of the UK (and different regions within each country of the UK) have different housing costs.

7.3. Equivalised household income

The current definition of fuel poverty requires information on household income rather than individual income. A pensioner living alone who relies entirely on a state pension will have less disposable income after all living costs have been deducted, than a pensioner couple who receive two state pensions and share some of their overheads. Hence, equivalised incomes are adjusted for household size and composition. Equivalisation has a notable impact on the composition of the fuel poor. Without an equivalised metric, many of those living on their own will be fuel poor. Most current equivalisation factors are at

best arbitrary but not unreasonable. Their application to incomes as a multiplier effectively destroys the ability to assess the relative purchasing power of households.

In summary, these 3 income metrics generate 4 common options for measuring income:

- Full income unequivalised
- Basic income unequivalised
- Full income equivalised
- Basic income equivalised

In terms of how they have been deployed:

- Only the first 2 are used for reporting official fuel poverty statistics in the UK.
- Targets for tackling fuel poverty at UK-wide level are set using full income unequivalised income. In general, the full income measure also yields lower estimates of the number of fuel poor (Thomas, 2008).
- The Scottish Government favours full income as the metric of choice, although recommends that both full and basic income data should be collected.
- Where only one variant is quoted in research reports and analyses, it is most often full income unequivalised.

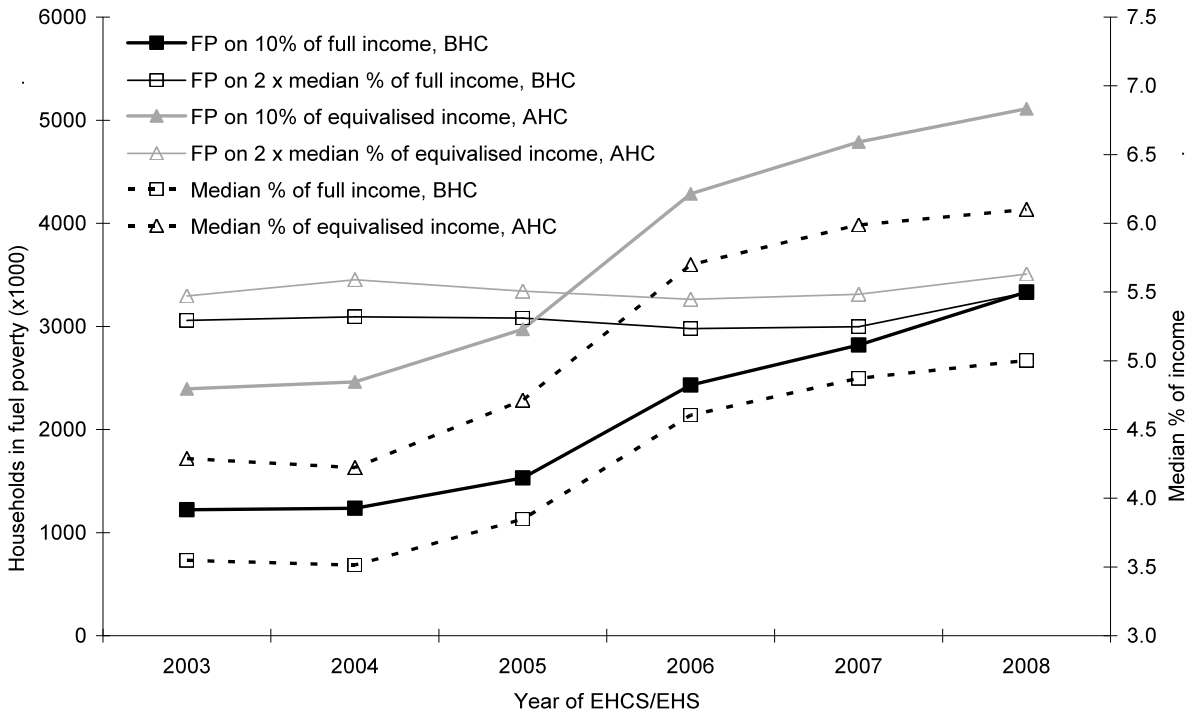
Full income unequivalised seems, therefore, to be the modal definition of income.

That being said, the use of equivalised incomes is standard practice in other types of Government survey work , e.g. the Family Resources Survey and the Expenditure and Food Survey. These too seek to monitor household rather than personal income.

Simply put, there are anomalies in the way income is treated for the purposes of measuring fuel poverty when compared with how income is treated for the wider portfolio of Government statistics on household income. Furthermore the choice of income metric has profound effects on fuel poverty statistics and who is most likely to be in fuel poverty.

For the purposes of establishing trends over time, evidence indicates that the different metrics mainly move in parallel with one another. This is illustrated on Figure 7.1.

FIGURE 7.1 Fuel poverty prevalence over time - England.



Source: Ace, Moore, et al., 2008. BHC = Before housing costs AHC = After housing costs

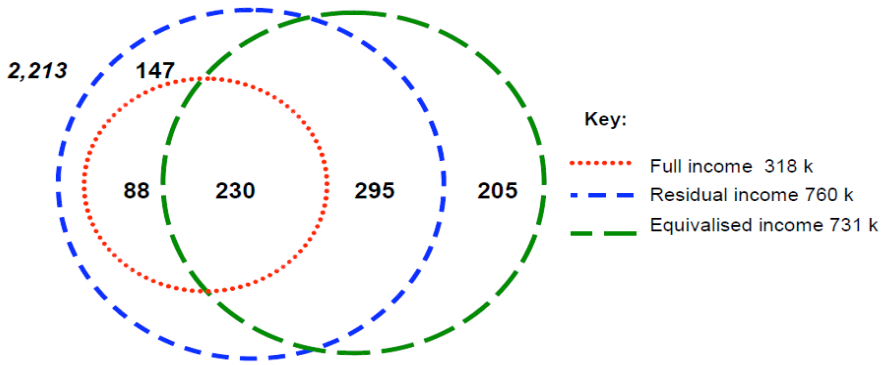
However for the purposes of:

- resourcing
- targeting
- budgeting and
- understanding who and how many need to be included in Strategy

these 4 metrics deliver very different results. As can be seen on Figure 7.1. the numbers in fuel poverty in England at 2008 are estimated at approximately 2.5M under one metric (median % of full income before housing costs) and 5M under another (10% of equivalised income after housing costs).

In Figure 7.2, Moore (2008) compares results from using three different income metrics for London.

FIGURE 7.2 Number (thousands) of fuel poor in London by income metric.



Source: Ace, Moore, et al., 2008.

In addition, the type of households most likely to be in fuel poverty varies depending on whether a full or basic income model is used, with or without equivalisation. As already mentioned, non-equivalised definitions of fuel poverty (whether basic or full income) tend to emphasise single, single pensioner and under-occupied households. By contrast, equivalised definitions of fuel poverty tend to emphasise large and overcrowded households. As Moore (2011) points out, the current definition of income (full unequivalised income) is biased.

First it is *"biased towards elderly households, particularly the single elderly, in two ways:*

- *by including housing costs in income, it is based towards households who own their own homes outright, well over two thirds of whom are single or elderly couples by making no attempt to equivalise incomes.*
- *it is also biased towards single persons, the majority of whom are aged 60 years or older.*

Second it is *"biased against larger, low-income families with small children, renting or purchasing their home with a mortgage."*

As Moore points out, the ability of the household to afford fuel costs depends on their disposable income after their essential costs have been paid for. It is less clear, however, why housing costs should be regarded as uniquely "essential", since food, clothing and indeed fuel itself are also essential. Consequently, basic income might be a more appropriate metric if it took account of all essentials. Efforts to achieve this have recently been initiated (see next section).

7.4. New developments in the measurement of income - minimum income standard

A minimum income standard (MIS) is defined as the:

"income required for a specified household type to reach a socially acceptable minimum living standard. It is based on research on what members of the public, informed by experts where appropriate, think is needed to achieve this minimum living standard… In contrast to poverty measures based on arbitrary percentages of average income, the minimum income standard is calculated based on a requisite basket of actual goods and services, as decided by members of the public and selected experts." (Smith, Phung, Davis & Hirsch, 2009).

In a succinct summary of MIS, Pett (2009) states:

"The MIS covers 11 types of household, which represent 79% of households in Britain. The minimum incomes are derived from a consultation process which established a necessary minimum budget for each type of household for essential goods and services, i.e. food, clothing, fuel, council tax & water rates, household goods & services, personal goods and services, transport, social and cultural participation, other. These are totalled to give a total less rent (housing costs) and then totalled again to give the MIS in £ per week. These MISs were compared with the average spending for these items and those receiving various benefits, according to the Household Spending Survey, and against the median incomes for the various household groups…The research team suggest that MISs provide a useful tool for policy makers and practitioners to reflect on poverty measurement including thresholds and equivalence measurements, to provide an index of need, and to provide a test of affordability" (Bradshaw 2008).

"Fuel" is included in the basket of goods, and is defined as *"heating, hot water and electricity"* i.e. in the same way as it is measured for deriving fuel poverty statistics.

MIS was first explored in Great Britain 3 years ago (Bradshaw et al., 2008). A year later, it was extended to include Northern Ireland (Smith, Phung, Davis & Hirsch, 2009). In both studies, *urban* households were the sole focus of research. Results suggest that it may be feasible to develop a UK-wide MIS approach to measuring income for urban households. Hence:

- a single person of working age in Northern Ireland required less than 1% more as a minimum budget than a single person of working age in GB;
- for a pensioner couple, it was 3% less in Northern Ireland;
- for a couple with 2 young children it was also 3% less in Northern Ireland;
- for a lone parent with 2 children it was 5% more.

Provided regional estimates are within 5% of each other, broad equivalence across regions was assumed by Smith and colleagues, from which they concluded that there is equivalence between GB and Northern Ireland for this metric.

Using MIS:

"A household is in MIS based fuel poverty if:

Fuel costs (data derived from EHS) > Net household income (EHS) – housing costs (EHS) – minimum living costs (MIS)" (Moore, 2011).

Whilst this approach has promise, greater attention needs to be paid to how costs associated with "fuel" are calculated before MIS can be taken further as a method for exploring fuel poverty. Smith, Phung, Davis and Hirsch (2009) describe how the fuel measure was calculated:

"As in MIS Great Britain, a heating engineer calculated how much fuel would be needed for the requisite property types in Omagh. All property dimensions and heating system data were taken from house types surveyed by the Northern Ireland Housing Executive in 2009 in the Omagh area. While heating costs in the Great Britain MIS were based on natural gas, there is limited mainline gas supply in Northern Ireland outside Belfast and Derry, and oil is the most common household fuel. Prices in Omagh for oil were taken from

oil comparison websites and electricity was priced at Northern Ireland Electricity (April 2009). The keypad meter used in Northern Ireland is a kind of prepay meter that gives a better price than for quarterly billing. All the properties in the study (one-bed flat, two-bed flat and three-bed house) were assumed to have efficient oil-fired heating with good controls and a secondary electric fire in the living area."

On the one hand, the MIS metric for fuel reflects an element of "needs to spend", in that the heating fuel requirement of a property is taken into account by the engineer making a calculation. On the other, homes in each region are assumed to have heating equipment of equal (and optimal) energy efficiency. Since this does not reflect the current status quo between regions of the UK, preliminary results based on MIS may underestimate regional inequities that are embedded in differences in the cost of heating a home (the authors of the original MIS reports fully acknowledge this, see Pett, 2009).

That being said, the extent to which household fuel costs dominate Northern Ireland household budgets is still clearly evident (see Table 7.3). The Table indicates that when compared with what people in GB require to cover their fuel costs:

- Pensioner couples in NI need 30% more to cover their household fuel costs
- Single pensioners in NI need 27% more
- Single adults of working age need 23% more
- Couples with 2 young children need 29% more
- Single parents with 2 children need 17% more.

Hence, although a pensioner couple in Northern Ireland require 3% less of their income to cover *all* their basic necessities from food to social participation than a pensioner couple in GB, they require almost a third more for their heating, lighting and electrical appliance needs. The commodities which absorb or cushion the burden of domestic fuel costs are primarily rates, insurance, and social/cultural participation.

A couple with young children in Northern Ireland also requires 3% less income to cover all basic necessities, even though they too require almost a third more for domestic fuel. For this group, their domestic fuel burden is offset by an even lower cost associated with social/cultural participation than that required for pensioners.

TABLE 7.3 Northern Ireland and Great Britain MIS Budgets by Commodity Categories for Different Household Types (excluding housing and childcare costs) £ per week.

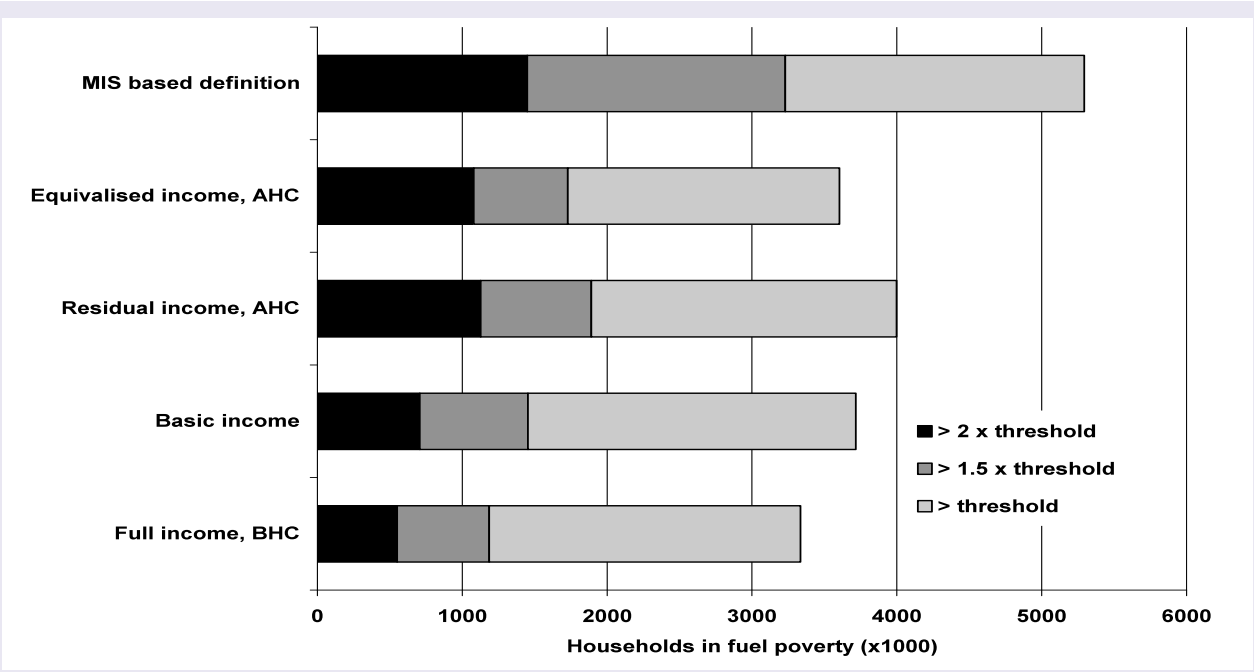
	Couple Pensioner		Male Single Pensioner		Female Single Pensioner		Male Single Working-Age Adult		Female Single Working-Age Adult		Couple Parents + 2 (Infant and Preschool-Aged Child)		Lone Parent + 2 (Primary School-Aged Child and Secondary School-Aged Child)	
	GB	NI	GB	NI	GB	NI	GB	NI	GB	NI	GB	NI	GB	NI
Food	62.56	65.85	37.65	38.39	46.36	47.43	47.81	48.21	43.50	43.92	99.82	104.24	85.14	90.10
Alcohol	8.22	8.72	3.06	3.41	2.95	3.33	5.06	5.06	4.00	4.00	6.58	6.58	3.98	3.98
Clothes	10.28	10.40	4.01	4.01	6.18	6.27	6.61	6.71	9.09	9.26	28.13	29.07	32.58	34.28
Council tax/ domestic rates	18.30	6.42	13.73	5.97	13.73	5.97	13.73	5.97	13.73	5.97	21.35	9.07	16.01	9.07
Household insurances	1.80	1.23	1.86	1.13	1.86	1.13	1.86	1.30	1.86	1.30	2.67	1.80	2.42	1.80
Fuel	**12.24**	**15.87**	**11.07**	**14.00**	**11.07**	**14.00**	**10.31**	**12.71**	**10.31**	**12.71**	**21.67**	**27.90**	**21.67**	**25.31**
Other housing costs	3.75	3.75	2.99	2.96	2.99	2.96	2.38	2.38	2.38	2.38	7.54	7.54	1.94	1.94
Household goods	11.61	12.09	10.19	9.90	10.19	9.89	9.81	9.75	9.81	9.75	21.20	21.43	20.65	21.64
Household services	9.57	9.00	5.30	8.37	5.30	8.37	10.22	7.66	10.22	7.66	13.62	17.00	20.35	17.11
Personal goods and services	24.46	25.78	9.75	10.68	12.44	20.03	6.20	7.68	11.20	14.56	33.28	38.15	20.08	29.33
Transport	4.97	4.65	4.93	4.65	4.93	4.65	17.70	24.93	17.66	24.91	31.17	39.23	37.20	35.65
Social and cultural participation	45.32	42.69	26.94	26.69	26.94	26.67	30.84	30.06	30.75	29.97	83.56	57.58	91.04	98.15
TOTAL	213.08	206.43	131.47	130.17	144.93	150.71	162.51	162.42	164.52	166.40	370.59	359.59	353.06	368.35

The Minimum Income Standards metric is in its infancy, but shows potential. It is noteworthy that the approach harks back to one of the earliest attempts to define fuel poverty, in which "customary" standards were invoked as a means of deciding who had high fuel expenditure (Bradshaw & Hutton, 1983).

Furthermore, what an MIS approach taken on its own seems particularly helpful for is understanding more about the impacts of fuel poverty. For example, if heating is a third more costly for households in Northern Ireland, how do people cope with that burden? MIS data suggest some of household income in NI shifts out of social and cultural participation and into energy bills. The potential that this "balancing act" may have on quality of life and well-being in Northern Ireland are self-evident, and may be of particular concern given the region's high levels of mental health morbidity (Wilson & Daly, 2007).

Inevitably, calculating fuel poverty prevalence using a combination of MIS, HCS and LCS data will yield still more variation in estimates of both the number of households in fuel poverty and the type of households, at a time when the debate needs settling instead of re-kindling. A combined MIS-based approach will also generate substantially more households in fuel poverty than other metric, as demonstrated by Moore's (2011) analyses in Figure 7.3.

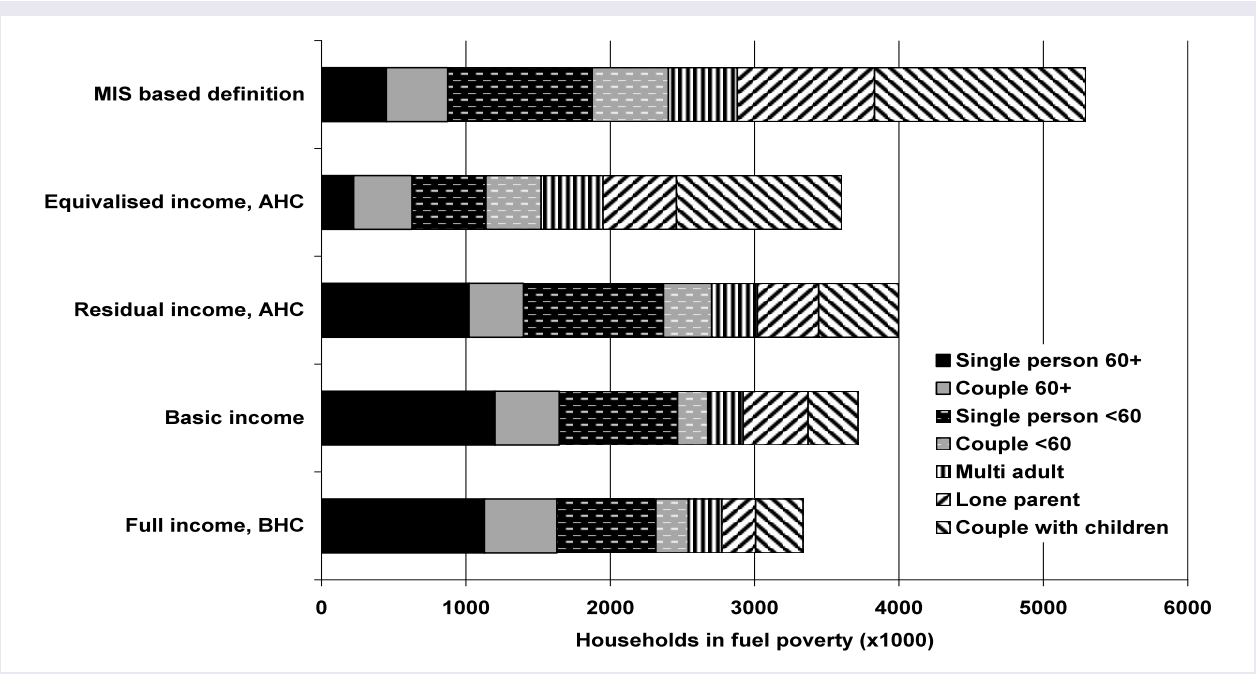
FIGURE 7.3 Households in fuel poverty (x1000) (England 2008).



Source: Moore, 2001. BHC = Before housing costs AHC = After housing costs

Types of households most likely to be in fuel poverty also vary too, as illustrated in Figure 7.4. In terms of "Who is in fuel poverty?" the principle remains similar to that found in applying other income variants: compared with the customary (full income non-equivalised) metric, pensioners will shrink in prevalence whilst children will predominate. In fact, using MIS, families with children comprise approximately half of the fuel poor, trebling the number calculated using the customary UK income metric.

FIGURE 7.4 Households in fuel poverty (x1000) by household type (England 2008).



Source: Moore, 2011. BHC = Before housing costs AHC = After housing costs

Debates around income metrics have fuelled tension between lobbies representing older people on the one hand, and families on the other. This is taking place in the context of a more general re-positioning of age cohorts in UK society. For example, Hamza & Gilroy (2011) illustrate the increasing wealth diversity of retired people in the UK, concluding that *"the baby boomer cohort that retired in 2010 [will be]... a high spending generation".* There may be scope for some shifting of balance in the allocation of resources between young and old, and a choice of single metric may offer an opportunity to achieve greater equity in this respect.

To find compromise, a change in the age banding that defines both young and old could be considered. Currently, the UK Fuel Poverty Strategy stipulates that childhood lasts from birth to 16 years old and pension-hood commences at 60. As will be seen in a later Chapter, there is consistent evidence that the impacts of fuel poverty on children's health are greatest when children are younger than 5 years old i.e. when their physical health

is most vulnerable and when they are more likely to be at home all day. For pensioners impacts on mortality increase after 65-70 years old and are most notable after 70 years old (Morris & Liddell, 2011). Some shrinkage of eligible age bands could be achieved using an evidence-based approach, to deliver more focused targeting at both ends of the age spectrum. If vulnerable groups continue to be targeted in Fuel Poverty Strategy going forward, it is recommended that a more in-depth analysis justifying age bands, and based on health risks to both young and old, is carried out.

7.5. Winter Fuel Allowance and cold weather payments

The Winter Fuel Allowance was introduced in 1997 at £20. By 2009/10 the payment was more than twelve times greater (£250 for over 60's and £400 for over 80's), making central government expenditure on winter fuel allowances the main source of assistance for people in fuel poverty. In 2008/9, for example, the winter fuel allowance budget was £2.7 billion, compared with £395M for Warm Front (House of Commons Debates, 2009).

At present, Winter Fuel Payments are tax free lump sum payments, which are not set against energy expenditure. However, based on 2008 data, setting these payments against energy bills would have reduced full income fuel poverty by 0.7M (from 3.3M to 2.6M) (Moore, 2011). It is estimated that this could "free up" £200M per annum (Thomas, 2008).

It would be helpful if Northern Ireland were to explore the potential impacts of this for regional fuel poverty prevalence. NI has relatively fewer older people and it is marginally poorer than England, so on both counts the UK estimate of impacts on prevalence is probably proportionately too high. On a conservative estimate of 2-2.5% of the target group in Northern Ireland, the financial returns from this change could approximate £4-5 million. This is equivalent to half Northern Ireland's Warm Homes budget 2009/2010.

One of the criticisms of UK-wide winter fuel allowance payments is that they are made before winter (and also before Christmas), which means payments are (allegedly) less likely to be spent on heat. Even assuming this were so (and there is no evidence for it) , the reliance on oil for heating purposes in Northern Ireland requires most households to bulk purchase fuel in advance, which means that payments in fact arrive at a time when they are most likely to be needed.

Cold Weather Payments are paid by UK Government when the average temperature is recorded as, or forecast to be, 0°C or below over 7 consecutive days during the period 1 November to 31 March. Each 7-day period triggers a payment of £25 and a restricted number of people are eligible for it. In most winters, people in more northerly regions (which are also less densely populated) experience weather that triggers at least one Payment. Hence Cold Weather Payments have greater potential for altering the income-energy expenditure ratio in regions like Northern Ireland than in most other parts of the UK. It would, therefore, be similarly helpful if Northern Ireland were to explore how deducting these payments from energy expenditure would alter regional fuel poverty prevalence.

The "added-value" of deducting Winter Fuel and Cold Weather Payments from energy expenditure (for households that receive it) can be illustrated by extending a previous example:

- an average household spends £25.70 a week on domestic fuels from an average weekly income of £435.99 (5.9% of income on domestic fuels);
- if £30 were added to their income through benefit maximization, they would spend 5.5% of income on domestic fuels, a reduction of only 0.4%;
- if a vulnerable household on the same weekly income with the same weekly energy expenditure also receives £250 a year in Winter Fuel Allowance, and one Cold Weather payment of £25, these payments will offset their weekly energy expenditure by £5.28. This is a twelve times greater reduction (5%) in their weekly expenditure on domestic fuels.

Any measures which reduce energy expenditure rather than increase income will have a substantially greater effect on fuel poverty prevalence, by virtue of the improvement being added to the smaller part of the energy : expenditure ratio. This makes particularly valuable the many options for reducing energy expenditure that could stem from energy rebates, social tariffs, rising block tariffs, and similar measures that could be initiated by suppliers in Northern Ireland.

7.6. Conclusions

Differences between the 4 conventional approaches to income (Full, Basic, Full-Equivalised and Basic-Equivalised) are now comprehensively understood in terms of what groups are marginalized depending on which income measure is selected. The consequences are broadly similar for the 4 countries of the UK, and no further work appears to be needed before a decision can be taken on adopting a single common metric. The choice of metric is now an evidence-based political decision. Thereafter, whatever metric is adopted, the extent to which it marginalizes certain household types will become readily apparent, and measures should be put in place to prevent marginalization. This might be achievable through ring-fencing and/or a separate fund (e.g. a Children's Warm Homes).

Given that the MIS approach to measuring income returns similar results for Northern Ireland as GB, there is feasibility in developing this metric further, with early attention being paid to the fuel measure, and also to whether it extends satisfactorily to rural households.

Chapter Recommendations

7.1. There is a pressing need for a UK-wide income metric.

7.2. Whatever metric is adopted, the extent to which a particular metric marginalizes certain household types in Northern Ireland should be assessed.

7.3. A ring-fenced budget or Scheme should be set to ensure an equitable inclusion of marginalized groups.

7.4. Any development of an MIS metric should be meshed with work already being undertaken on MIS in other parts of the UK.

7.5. The MIS fuel metric should be refined first, and there is a need for validation among rural households.

7.6. Schemes which reduce the price of energy (e.g. social tariffs) combined with schemes which boost income among households (e.g. benefit entitlement checks) still have significant untapped potential for reducing fuel poverty prevalence in Northern Ireland. Modelling the potential impacts of taking both approaches to scale in the region is strongly advocated.

Chapter Eight

CONTESTED ASPECTS OF THE UK DEFINITION OF FUEL POVERTY – ALL HOUSEHOLD FUEL USE

There has been some debate regarding whether "all household fuel use" should be replaced with a measure confined to heating demand. Estimates for the UK indicate that this would reduce energy expenditure figures by an average of about one-third (BRE, 2003 in McManus, Gaterell & Coates, 2010). As illustrated in a previous chapter (Table 2.11) the cost of electricity in NI exceeds that for the rest of the UK. Hence the local saving could be less than the BRE figure. However, this will be offset by the greater proportion of NI fuel expenditure which is given over to heating. On balance, a reduction in fuel poverty of about one-third for Northern Ireland is reasonable to assume, were heat alone to become the metric.

However, if a twice-median approach is retained, the impact on prevalence would be negligible since a "needs to spend of 10% of income" would simply be replaced be a "needs to spend of 7% of income".

At least 3 issues arise from the current metric i.e. all household fuel use. The first concerns the rationale underpinning the UK's Fuel Poverty Strategy, which centres on the protection of human health from the measurable impacts of cold and damp homes. To fit fully within the Strategy's own rationale, a metric based on the cost of heating per se is self-evidently more appropriate.

Second, there is a steadily increasing demand for electrical goods in UK homes:

"In the UK, the Energy Saving Trust (2006) calculated that ownership and use of domestic appliances doubled between 1971 and 2002. A further 12% rise was predicted by 2010. Although the efficiency of refrigerators has improved by 30% and washing machines can be set at lower temperatures…the increase in the size and range of home appliances, and the shift from ..merely labour-saving devices to entertainment , is overwhelming any energy savings" (Hamza & Gilroy, 2011).

The proportion of all household energy use which is accounted for by non-heating requirements is, therefore, increasing. Evidence indicates that this increase is not smooth,

but is more concentrated among higher income groups (Papathansopoulou & Jackson, 2008); in this way, the inclusion of energy requirements associated with electrical goods introduces an additional (and growing) element of inequity in energy expenditure data.

Finally, different household types have different demands for hot water. Families with children have a greater demand than households containing only able-bodied adults under pensionable age. Children as a whole generate a greater demand for laundering, whilst infants and teenagers place additional demands on hot water for bathing and showering (although to somewhat different ends). Similarly children between the ages of 5 and 16 have a higher-than-average requirement for personal electrical goods including computers, electronic games, hairdryers, etc. *"All household fuel use"* is therefore a measure which may inflate energy consumption for some households more than others.

Despite these arguments in favour of a heating-only metric, the Scottish Fuel Poverty Advisory group recently concluded that *"no worthwhile distinction can be made between fuel used for heating and hot water and that used for other, equally essential purposes"* (SFPAG, 2002). Similarly, a recent European Commission Working Paper considers the most appropriate metric to be "energy products" rather than heating (EU, 2011).

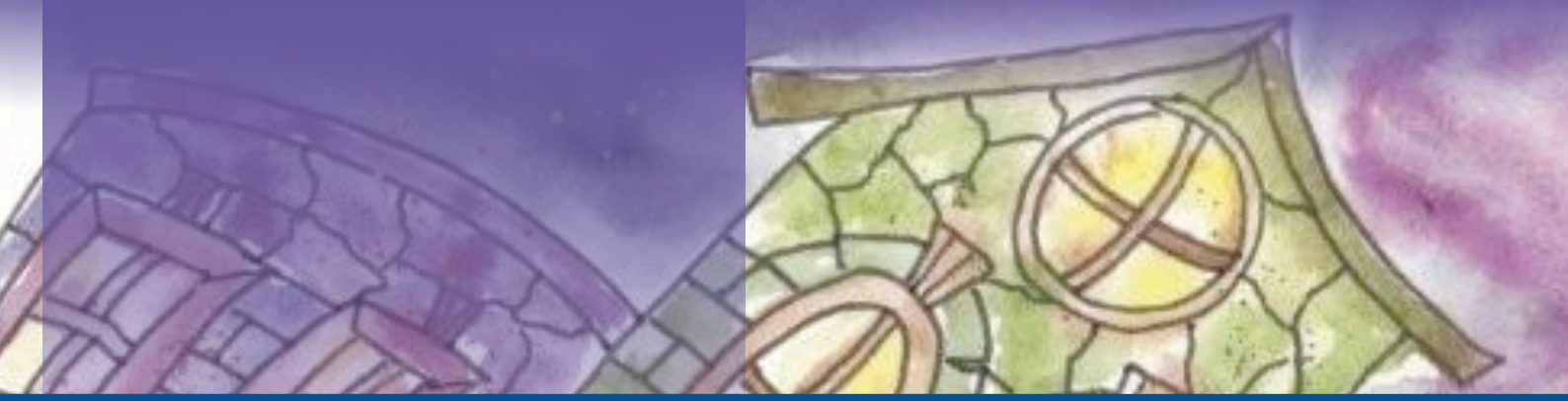
It is not difficult to understand why. Most types of expenditure that are essential to life and health (i.e. housing, fuel, food and clothing) contain an element that goes beyond simple maintenance of life and health. Given the difficulty householders would have in distinguishing between the electricity that powers the oil heating system, the electricity powering the electric heater, the electricity that powers the immersion heater, and the electricity that powers the washing machine, including its own water heater, obtaining accurate information that will separate heating from lighting and appliances is unlikely to be successful at Survey level. (Modelling based on responses from Survey data may hold greater promise).

If Northern Ireland (and the UK) retains a metric that covers all domestic energy use, this offers further support to an earlier recommendation, namely that all areas of domestic energy use are targeted to reduce fuel poverty. Aside from space and water heating, this would include choice of and use of electrical appliances as well as many other lifestyle and attitudinal aspects of the inhabitants' energy-related behaviours (see Chapter 5).

Chapter Recommendations

8.1. Given the difficulty of separating household expenditure on heating from expenditure on other forms of energy, the existing metric (all household fuel use) should be retained.

8.2. In tackling fuel poverty under an "all-energy" metric, more attention should be paid to the full spectrum of household energy consumption. Consequently, the energy efficiency of household appliances, as well as household lifestyle and purchasing choices need to be incorporated into fuel poverty strategy, with implications for resourcing, planning, monitoring, and targeting.



Section 3

FINDING BALANCE

Chapter Nine

COSTS AND BENEFITS OF THE UK FUEL POVERTY STRATEGY

"The alleviation of fuel poverty and the reduction of stress associated with greater financial security emerge as the most likely route to health gains, both mental and physical. A major policy implication is that the UK Government's Warm Front scheme is more successful than implied by a limited analysis relating indoor temperature and property characteristics to physiological health outcomes. The scope for improving health is greater than implied by the UK Government's Fuel Poverty Strategy" (Grimsley, Gilbertson & Green, 2008).

9.1. Impacts of the Strategy on human health

The UK's 2001 Fuel Poverty Strategy was founded on the belief that living in cold homes constituted a health risk. Protecting human health was the original rationale for developing a strategy, and this is reflected in the fact that the word "health" features 238 times in the UK Fuel Poverty Strategy, which consists of 158 pages. In Northern Ireland, "health" featured 17 times in the 2004 regional strategy and 70 times in the 2011 Strategy.

On the ground, the Fuel Poverty Strategy resembles a home improvement programme rather than a health programme. It is not surprising that its principal objective is often overlooked. In fact, nailing the 2001 Strategy to the mast of health improvements was, at the time, somewhat risky. Government committed large sums of money and resources to reducing health impacts of cold and damp housing, at a time when there was a sparse evidence-base to support measurable impacts on human health. Correlations between extremely poor housing and poor health had been known for more than 100 years, but the extent to which these could be remedied through modest improvements in heating and insulation were uncertain (Thomson, Thomas, Sellstrom & Petticrew, 2009).

Since the Strategy was launched, more than a dozen studies investigating this issue – all with sound methodologies, large sample sizes, and sophisticated analytical frameworks - have been published (see Liddell & Morris, 2010). Many of these were funded as part of the Strategy itself. Taken together, these provide a moderately-sized evidence base from which to summarise the health impacts of cold and damp housing, and the potential effects of heating and insulation programmes.

Key findings include:

- A large-scale epidemiological study indicated that, after other key influences are accounted for, there are more excess winter deaths amongst householders who lived in cold and damp homes, when compared with householders who lived in warm and dry homes (Wilkinson et al., 2007).

- A second epidemiological study reported that rates of emergency hospital admission for respiratory illnesses were significantly correlated with fuel poverty indicators (Rudge & Gilchrist, 2005).

- However, evaluations which explored changes in health status after heating and insulation had been installed yield few signs of improvements to physical health at one-year follow-up (e.g. Thomson et al., 2003, Howden-Chapman et al., 2007; Green et al., 2008). Whilst most studies suggest improvements in *self-reported* physical health, there have been few differences in GP consultation and prescribing rates. Reviewers of these studies have frequently pointed out that the interval between pre- and post-retrofit surveys (usually a year or less) may be too short for any health impacts to materialise (e.g. Liddell & Morris, 2010; Grimsley, Gilbertson & Green, 2011).

- More immediate evidence of physical health impacts emerge from studies of fuel poverty and infant growth. A national longitudinal study in the USA compared samples of infants who either received or did not receive a Winter Fuel Payment. Among those who did not, weight gain was more likely to be sub-optimal, and there were significantly more emergency hospital admissions (Frank et al., 2006).

- Amongst children with a history of asthma, parental reports post-refurbishment suggest significant improvements under randomised controlled trial conditions.

Children who received heating and insulation upgrades also had 15% fewer days off school than did controls (Free, Howden-Chapman, Pierse & Viggers, 2009). However, improvements in lung function did not emerge from clinical tests measuring peak expiratory flow rate and peak expiratory volume at one-year follow-up (Howden-Chapman et al, 2008).

- Impacts on adult mental health are significant and consistent across almost all studies (Liddell & Morris, 2010). After refurbishment respondents report immediate impacts on their mood and quality of life, with these effects being sustained at one-year follow-up.

- Mental health impacts may also be found among adolescents. In a major longitudinal investigation of housing quality and the health of English adolescents, cold and damp housing emerged as a strong correlate of multiple well-being risks after other more obvious variables had been accounted for (Barnes et al., 2008).

- Overall, physical and mental health impacts are more evident among the young than they are among the elderly (Liddell, 2008a).

The Marmot Review Team (2011) collated studies concerning the health impacts of cold homes, and concluded that the evidence *"shows the dramatic impact that cold housing has on the population in terms of cardio-vascular and respiratory morbidity and on the elderly in terms of winter mortality. It also highlights the stark effect that fuel poverty has on mental health across many different groups, while also having an impact on children and young people's well-being and opportunities…once the trade-off issues for at-risk households are addressed, energy efficiency interventions always bring multiple health and environmental gains".*

In summary, tackling fuel poverty improves health, with different health impacts at different stages of the lifespan. The most significant impacts on physical health are manifest among the young, whilst impacts on mental well-being are to be found from early adolescence onwards. Whilst it is undeniable that the Strategy will fail to meet its 2010 and 2016 targets on prevalence (some would say monumentally so), the Fuel Poverty Strategy has nevertheless delivered on its central aim, namely to protect human health through improving the energy efficiency of homes.

9.2. Costs and benefits of the Strategy

Recent cost-benefit analyses of the health impacts of tackling fuel poverty indicate that the health returns from investing in fuel poverty are substantial. In mental health alone, the improvement to well-being are significant, with estimates from 6 different national studies indicating a one-third reduction in the prevalence of borderline anxiety and depression among householders who have been included in fuel poverty programmes (Liddell, 2011b). A recent Northern Ireland cost-benefit analysis (Liddell, 2008b) assessed the health impacts of the regional Fuel Poverty Strategy and concluded that, for every £1 invested, 42 pence was returned in quality of life gains (QALY's). Similar estimates have emerged from cost-benefit analyses of other retrofit programs (Clinch & Healy, 2003; Chapman, Howden-Chapman, Viggers, O'Dea & Kennedy, 2009). A recent BRE cost-benefit analysis suggests that tackling only the worst SAP-rated houses in England (EER bands F and G) would pay for itself in NHS savings after 18 years in a medium risk model (BRE, 2011). Since the lifetime of retrofits is commonly estimated at between 15 and 30 years (Liddell, 2009), this suggests that the scheme would be largely cost-neutral.

A cost-benefit analysis of the Kirklees Warm Zone Project, in which all houses in Kirklees were fitted with loft and cavity wall insulation where appropriate, suggested a return of at least 20p in the £, this lower return reflecting the fact that few homes were provided with heating but only with insulation. This reduced likely health impacts (Liddell, 2011b). Where schemes explicitly focus on households with an existing health condition, the returns on savings to health increase greatly (Gibson, Petticrew, Bambra, Sowden, Wright

& Whitehead, 2011) with some estimates indicating returns in the order of £2 for every £1 invested (Chapman, et al, 2009).

Some analyses of costs/benefits of fuel poverty programmes have incorporated collateral benefits thought to accrue from impacts on local employment and manufacturing (e.g. Chapman et al., 2009; Liddell, 2011b). Other estimates have also included savings which householders make on their energy bills. Not surprisingly, all of these further enhance cost effectiveness.

Chapter Recommendations

9.1. Government reviews of Fuel Poverty Strategy, and the monitoring of impacts should take cognisance of the evidence-based benefits that accrue from the Strategy's impacts on health, local employment, and (where appropriate) household energy savings.

9.2. The Strategy's focus on health merits retaining, but should be rephrased. *Health and well-being* more accurately encapsulates the documented impacts of the UK's Fuel Poverty Strategy.

9.3. Given manifest health and well-being impacts, greater efforts must be made to leverage funds into Fuel Poverty Implementation programmes from NHS and other health and well-being budgets.

Chapter Ten

BUILDING SYNERGIES WITH THE NORTHERN IRELAND FUEL POVERTY STRATEGY 2011

10.1. The Northern Ireland Fuel Poverty Strategy 2011

To address the challenges created to human health and wellbeing which are created by people living in fuel poverty, the UK Fuel Poverty Strategy was launched in 2001. In Northern Ireland, the UK Fuel Poverty Strategy has been comprehensively augmented with a regional perspective, as reflected in the region's first two local Strategies, respectively entitled:

- Ending Fuel Poverty: A Strategy for Northern Ireland (2004)
- Warmer Healthier Homes: A New Fuel Poverty Strategy for Northern Ireland (2011).

Although this Preliminary Review is being published later in the same year as the new Strategy, it raises issues which could not have been addressed in the Strategy. Opportunities now arise for identifying synergies between the current Strategy and the recommendations of the Preliminary Review.

The Northern Ireland 2011 Strategy identifies 4 key areas for action to tackle fuel poverty in the future, namely:

- Targeting of Resources
- Improving Energy Efficiency
- Achieving Affordable Energy
- Building Strong Partnerships

10.2. Rationale for the development of new models that can deliver Strategy

As noted in Section 6.3, audits of Fuel Poverty Strategy have taken place in Northern Ireland (NIAO, 2008), Scotland (Scottish Government, 2009) and England (NAO, 2009). All 3 regional audits make clear that a significant proportion of homes which have received subsidised heating and insulation measures through local schemes were not, originally, in fuel poverty. It is now abundantly clear from regional audits that identifying the fuel poor on the doorstep has proved unreliable with the eligibility criteria currently at the disposal of agencies delivering implementation programmes such as Warm Front and Warm Homes.

In addition, rising domestic heating and electricity prices mean that almost half of Northern Ireland's households were estimated to be in fuel poverty at the last (2009) House Condition Survey, at least under the UK standard of needing to spend more than 10% of income on lighting and keeping their homes warm. Under such circumstances, it is becoming increasingly important to find ways of distinguishing the severity of fuel poverty which households are experiencing.

As also noted in Section 6.3, households that need to spend more than 25% of their income to maintain an adequate standard of warmth could reasonably be accorded greatest priority. At the time of the 2009 NIHCS Survey, there were more than 33,000 households needing to spend more than 25% of their income in this manner (see Section 6.3.1). However, any attempt to further refine fuel poverty into bands of severity will fall even more foul of the difficulties already encountered in targeting resources. If it has proven difficult to identify the fuel poor on the doorstep, then it will be more-so if the requirement changes to one in which severity of need becomes salient.

Furthermore, there are growing challenges related to the reluctance of some households (often those most vulnerable) to apply for assistance through subsidized programmes that are available through the Northern Ireland Fuel Poverty Strategy. Issues of stigma, and concerns about the disruptions associated with heating and insulation being installed, are both key factors in this challenge (Bryson Energy, 2010). It is essential that ways are found to maximize the likelihood that vulnerable people who need to spend more than a quarter of their income on achieving an adequate standard of warmth will agree to accept support. Classifying households as "severely fuel poor" risks exacerbating issues of stigma.

Section 7.4 provided evidence that vulnerable people who live in fuel poor homes experience significant social and cultural exclusion. Whilst first demonstrated in studies carried out in England (e.g. Harrington et al., 2005; Bradshaw et al., 2008), a more recent study in Northern Ireland suggests that the extent of social and cultural exclusion associated with fuel poverty is significantly greater in the region than it is in England, as a result of the heavier burden that energy bills create for income-poor households (Smith et al., 2009).

In addition to issues of exclusion, the health and well-being impacts of living in fuel poverty are, by now, well known (Section 9.1). It is these impacts which make the challenges of identifying people in severe fuel poverty especially important.

10.3. Implementing new models

> "A primary aim of this strategy is to target available resources on those vulnerable households who are most in need of help" (Northern Ireland Fuel Poverty Strategy, 2011).

Given:

a) an escalating prevalence rate when measured through UK indicators

b) reluctance among some who are in extreme need to accept assistance, and

c) difficulties in identifying households in greatest need

the current Fuel Poverty Strategy will almost certainly require new models if it is to identify:

- targeted approaches which will identify those who are not only eligible for Warm Homes and similar programmes but who are also in *severe* fuel poverty
- approaches which can effectively de-stigmatise these households, so that vulnerable clients feel more able to participate in schemes that are designed to assist them in achieving adequate standards of warmth.

At 2009, national fuel poverty statistics (using a national twice-median of 10%) indicated that Northern Ireland had 44% of households in fuel poverty. Applying a local twice-median (18%) rather than the national threshold of 10% indicates a core of 13% of households in fuel poverty, all of them in severe fuel poverty by national standards (since all of these households need to spend more than 18% of their income on maintaining an adequate standard of heat and light). For this group, fuel poverty is likely to comprise a public health concern, since many of these people may be living in homes that are below minimum standards.

In order to prioritise those most in need, it is proposed that these 13% of households become the primary focus of Northern Ireland's (2011) Fuel Poverty Strategy in the medium term. This implicates more than 75,000 households, of whom almost half need to spend more than a quarter of their income on heat and light in order to maintain an adequate WHO standard. To address their needs whilst having due regard for other households who may be experiencing significant burden from their heating and lighting expenses, an areas-based approach to identifying those most in need is advocated. This areas-based approach would run in parallel with the customary system of clients self-referring themselves for subsidized packages of assistance with energy efficiency measures.

10.3.1. Adopting an areas-based approach

Section 6.3.3 of the Preliminary Review set out an areas-based approach to targeting fuel poverty which has the potential to fulfill the objectives boxed above. Although not commonly acknowledged, the areas-based approach was originally piloted in Northern Ireland in the highly-regarded Beechmount Project (Cassington, Whittington & Devlin, 2002). However, the areas-based approach was championed by Kirklees Borough Council in Yorkshire between 2005 and 2009; the Council was awarded 2 Ashden Awards For Sustainable Energy for the scheme.

There is increasing interest in an areas-based approach to tackling fuel poverty, reflected in:

- the adoption of areas-based techniques in Council areas serving residents in England and Scotland
- the endorsement of it by leading experts in fuel poverty such as Brenda Boardman (Boardman, 2010)
- a more recent local endorsement of the approach by the Consumer Council of Northern Ireland.

Aspects of an areas-based approach are currently deployed in Northern Ireland by the Warmer Ways to Better Health teams (see Section 11.4), and the Public Health Agency's Western Health Action Zone, so there is considerable expertise already on the ground.

10.3.2. Proposed methodology for implementation – beginning with a pilot

It is proposed that pilot implementation take place in 4 Councils, chosen strategically. Consecutive House Condition Surveys have indicated that some Councils have been more effective in tackling fuel poverty than others. The proposal aims to pilot an areas-based model using 3 Councils with strong track records, and a fourth Council that has a less strong track record. The former could be drawn from either the Councils that comprise the Northern Investing For Health Partnership (NIFHP) or the Councils that comprise the Western Health Action Zone, all of whom have teams dedicated to delivering fuel poverty and energy efficiency programmes at an areas-based level. Both of these initiatives are funded by the Public Health Agency.

Relying on teams with the greatest expertise and commitment, the pilot could identify obstacles and resolve problems before taking the project to a wider scale. Through partnering a slightly less experienced Council with 3 more experienced Councils, methods of dissemination and cascading across areas can be developed in preparation for a broader rollout.

Collaboration between experienced and less experienced teams for delivering an areas-based approach, and between financial investors such as DSDNI, local District and Borough Councils, and the Public Health Agency will be harmonious with the Strategy's "significant emphasis on the partnership approach required to tackle fuel poverty and the cross departmental nature of the whole area of poverty" (Northern Ireland Fuel Poverty Strategy, 2011).

District and Borough Councils would act as the principle facilitators for operationalising the areas-based approach. As elaborated in Section 6.3.3, each Council would nominate their preferred parameters from the Census and other databases, and the mapping agent would build a series of local severity maps based on their priority parameters (within the boundaries set by the 2011 NI Fuel Poverty Strategy). Time will be spent exploring the different outcomes that emerge from different priority lists and different weighting regimes. After deliberation and consensus-building, Councils will agree an algorithm that will produce their list of areas for targeting, establishing a sequence in which these areas will be targeted. This process will be led by each Council's fuel poverty teams, and where needed other stakeholder agencies will be invited to participate in the decision-making process e.g. Consumer Council for Northern Ireland, local Citizen's Advice, community groups, and other core agencies operating within a Council area.

Delivery of the areas-based approach to priority areas will follow the Kirklees Zip-Up Method model (see Liddell, 2011b). This involves training a small team of home visitors (enablers) that serve the entire Council Area, and whose role it is to:

- contact each household and arrange a visit
- provide a one-stop service that identifies each household in terms of a wide range of services they may be eligible for i.e. not only fuel poverty programmes but also:
    - professional advice on energy efficiency measures suited to the household's needs and lifestyle
    - benefit entitlements and income maximisation
    - local services such as community transport schemes, luncheon clubs, etc.

- additional home enhancement opportunities such as home safety checks and discounted CO monitors or smoke alarms
- opportunities for energy brokerage through community cooperatives, etc.

If Green New Deal products are available during the pilot, products available from this scheme could also be incorporated into the package of advice and referral that enablers provide. The same applies to products which may come onstream through new renewable or sustainable energy initiatives, as well as other services which Councils or Government introduce during the pilot.

As with the Kirklees scheme, almost every home in a COA priority area of 125 households could receive some form of extra service or income as a result of the visit. Referral through to schemes will be undertaken by the enablers wherever possible.

Using the Kirklees model of home visits, letter follow-ups, and word-of-mouth accounts which encourage neighbours to accept a home visit, it is envisaged that at least 85% of homes will be able to become part of the scheme in each COA.

By making sure that fuel poverty is tackled in conjunction with other areas of need (such as income maximization, home safety, etc.) the service can be made cost-efficient and ensure that a wide-range of potential improvements are put in place at the same time. For example, a recent report has indicated that benefit entitlement checks alone can result in an average of £47 per week for clients who are eligible for additional benefit (Bryson Energy, 2010).

Within 3 of the 4 Council areas, enablers may already have been fully trained in energy efficiency and income maximization. Many may be qualified at City and Guilds level through training provided by NEA NI; they may require “top-up” training in the broader areas of providing advice and referral for other schemes such as community transport, home safety, luncheon clubs, and (if relevant) Green New Deal. They will also require training in completing an energy efficiency checksheet which will assist in estimating the SAP status of homes. Funding for the design of this checksheet, and the provision of top-up training (as well as a fuller training package for new enablers in the less experienced Council) will be required.

An areas-based approach, if used on its own, would leave fuel-poor households that are located in low-risk areas with little hope of assistance in the medium term, which raises ethical difficulties. Phasing in an areas-based approach until it reaches a point where it has parity with the current (self-referral) programme is recommended. A two-track system of targeting, with self-referral and areas-based approaches operating in parallel will maximise cost-effectiveness whilst protecting those most vulnerable to fuel poverty and its effects throughout the 4 Council areas.

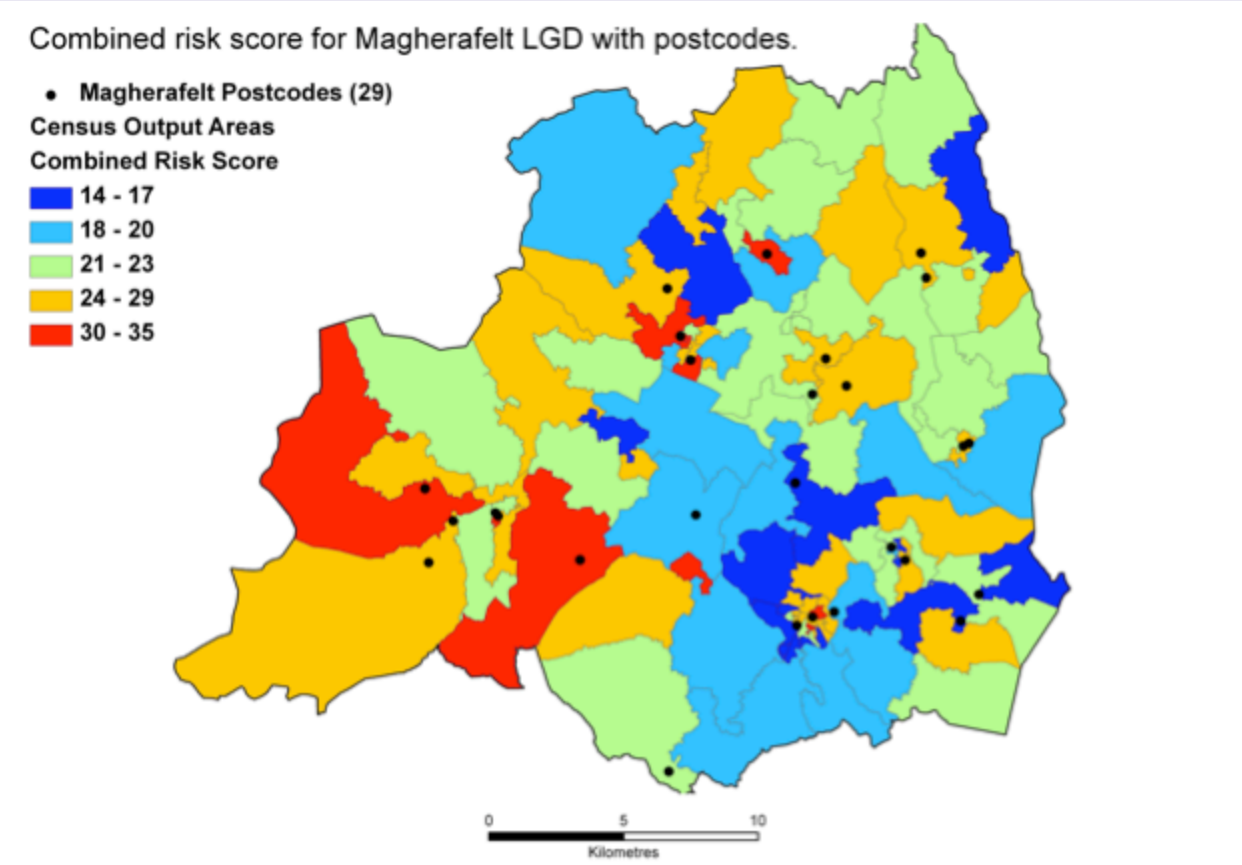
10.3.3. Setting baselines and monitoring targeting efficacy over time

GIS could also be used to:

- assess the targeting accuracy of the current model of recruitment (i.e. self-referral through callers contacting fuel poverty agencies such as Bryson House and NEA NI).
- monitor targeting efficacy over time, for both the current self-referral system and the proposed areas-based system.

Using Magherafelt District Council as an example, Figure 10.1 overlays the post-codes where full heating and insulation retrofits were carried out in 2009/10. As in Section 6.3.3, risks of fuel poverty are colour-coded, with red areas being Census Output Areas (COA's) at greatest risk of having large numbers of homes experiencing fuel poverty. In this particular Council area, targeting appears to have been successful, in that the majority of installations have been carried out in areas of highest risk. Over time, targeting would be monitored in this way for both self-referred and areas-based systems of recruitment in Northern Ireland.

FIGURE 7.1 Fuel poverty prevalence over time - England.



10.4. Synergies with other Strategic initiatives in Northern Ireland

There are synergies with several OFMDFM Strategies (Office of the First Minister and Deputy First Minister). For example, regional government's anti-poverty and social inclusion strategy is laid out in OFMDFM's *Lifetime Opportunities* Strategy. This states that *"access and provision of decent housing is central at a time where many may experience health problems"*. By 2020, the Strategy aims to *"ensure that every child lives in a decent and safe home, which is warm,* and to *"ensure that every pensioner lives in a decent, warm, secure home in a community where they experience reduced levels of isolation and loneliness."*

The current OFMDFM Research Strategy incorporates the Equality and Social Need Research Programme. The first aim of the Strategy is *"to assist our understanding of the extent, distribution, and causes of inequality and social exclusion in Northern Ireland…*

and the consequences of policies and actions aimed at reducing them". As already noted, fuel poverty creates social exclusion throughout the UK, and social exclusion is greater in Northern Ireland than in other regions of the UK. The proposal contributes to achieving the first aim by endeavouring to:

- tackle fuel poverty at its root
- build partnerships between government departments, Councils, and the voluntary sector to attain this goal
- provide evidence-based tools for monitoring progress in achieving this Aim.

Key elements of the second and fifth aims of the Research and Information Strategy will also be addressed in this model. These are to *"assist Departments and Public Bodies in complying with their statutory duty"* and in accessing *"the data they need to inform their implementation of "Lifetime Opportunities", the new anti-poverty strategy for Northern Ireland, and monitor its impact".*

Beyond OFMDFM Strategies, the proposal is also consistent with *A Healthier Future* (2005), DHSSPS(NI)'s regional strategy for health and well-being. Similarly, the cross-departmental *Investing for Health Strategy* (2002), seeks to reduce *"health inequalities by focusing on the wider determinants of health, which include the effects of poverty, disadvantage and social exclusion".* This position is corroborated by a 2011 Position Statement from the Royal College of Psychiatrists which states that: *"Risk factors for poor mental health in adulthood include unemployment, lower income, debt, violence, stressful life events, inadequate housing, fuel poverty, and other adversity".* The Royal College of Psychiatrists Statement goes on to nominate housing intervention as an area in which: *"robust evidence exists for ...interventions which prevent mental disorder, promote well-being and help strengthen resilience against adversity".*

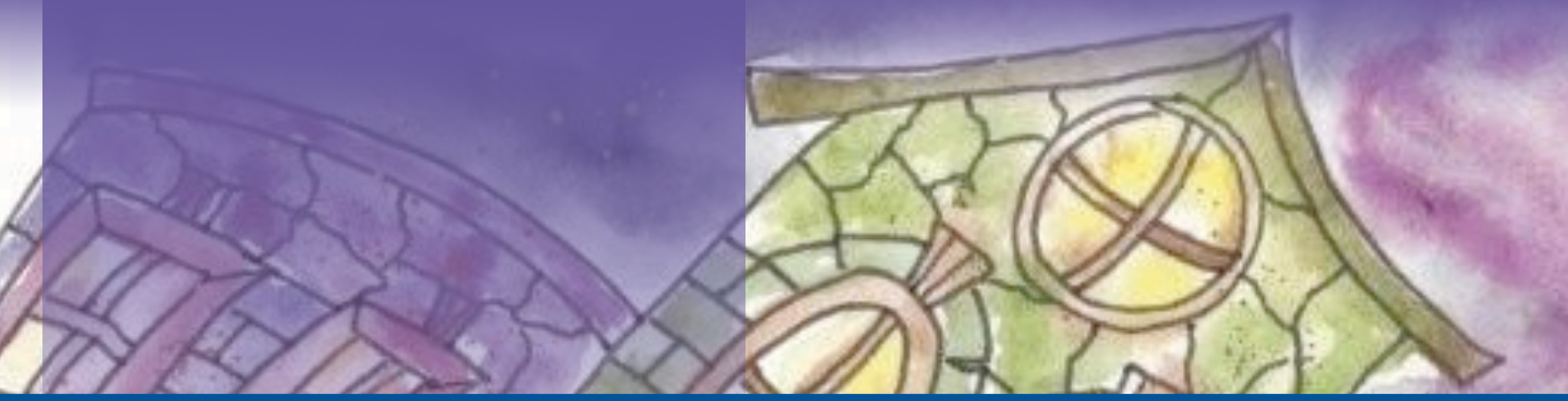
In terms of the 2011 Fuel Poverty Strategy, the proposal seeks to combine a primary focus on energy efficiency and vulnerable households, with a focus on building partnerships at cross-departmental, voluntary sector, and Council levels. This model is consistent with both goals. It is also in keeping with 2011 Fuel Poverty Strategy's prioritization of building partnerships around the goal of enhancing energy efficiency in the domestic sector, and it directly addresses the Strategy's concerns over mis-directed funding, which has sometimes reached people least in need.

10.5. Concluding Remarks

The proposed model seeks to develop an evidence-based approach to tackling fuel poverty at area level, focusing on assisting those in the most severe fuel poverty, but ensuring that all households in an area are provided with a comprehensive audit of their eligibility for community, voluntary, Council-led, and government-led support packages. By targeting areas rather than households, the potential to tackle social exclusion and issues related to stigma are maximized, since there are opportunities for all households to participate (although with maximum benefit and support ending up in households most in need). This model would run in parallel with the customary self-referral model, allowing comparison of their performance in achieving targets.

The initial roll-out of this approach in 3 experienced NI Councils and 1 less experienced Council will refine the new areas-based approach, and address obstacles, paving the way for a more cost-effective expansion to scale. Benchmarking before the project starts, combined with the setting of goals and targets, and monitoring of goal achievement will all enhance cost-effectiveness.

Finally, an areas-based proposal of this kind has neighbourhood renewal and community regeneration at its heart. If successful, the approach could generate a template for a cost-effective areas-based approach to tackling fuel poverty which is an integral part of a wider social support package for Northern Ireland's neighbourhoods and communities. This could have relevance to other regions of the UK, and more generally for energy efficiency agencies across Europe. Locally, it could also provide helpful guidelines for the delivery of wider energy-efficiency measures on the horizon, such as Green New Deal and a variety of other renewable/sustainable energy initiatives, since many of these are equally suited to an areas-based approach.



Section 4

CONCLUSIONS

Chapter Eleven

CONCLUSIONS

> With the wisdom of hindsight, a recent Scottish assessment of the targets to eradicate fuel poverty concluded that the targets could only have been achieved by *"massive increases in income and changes in its distribution (amounting to billions of pounds per annum), huge reductions in fuel prices (almost a 100% reduction) or unrealistic improvements in energy efficiency".* Even then, eradication was unlikely. Based on Scottish House Condition Survey data, and assuming that everyone in Scotland lived in homes with the highest energy efficiency rating (NHER 10), it was estimated that 10% of all households would have remained in fuel poverty. Among single pensioner households in Scotland 21% would have remained fuel poor. (SFPF, 2010b)

11.1. Exercising caution

Despite a relatively uncontroversial start in 2001, many contested spaces have gathered around the UK definition of fuel poverty in the ensuing 10 years. The definition is now awash with debate and rival statistics, and the field as a whole is in danger of sinking under them. Debate is beginning to obfuscate rather than sharpen public and expert understanding. At the same time, even more definitions of fuel poverty are emerging, opening up new avenues of debate. In the mean time on the ground, the prevalence of fuel poverty in the UK (and worldwide) is escalating dramatically and all attempts to contain it appear to be failing. In such a volatile situation, there is logic to proceeding cautiously. It is timely to accept that all of the metrics which contribute to the fuel poverty definition need review, but it is also timely for regions of the UK to be given space and opportunity for full reflection and extensive consultation. The definition alone has evolved into a multi-dimensional and multi-purpose concept which requires considerable disentangling at both national and regional levels.

11.2. Tightening relationships between Definition, Strategy, Policies and Implementation

Over the last decade, the definition of fuel poverty has been used in two primary contexts:

a) for making upstream decisions on the overall UK Strategy, including aims, budgets, resourcing, target-setting, and monitoring progress;

b) for delivering fuel poverty Strategy on the ground, which has usually taken place under the auspices of the Regional Strategies separately implemented in England, Wales, Scotland, and Northern Ireland.

Moore (2011) argues that upstream debates about the definition need have little impact on how fuel poverty is being tackled on the ground:

"...in practice, local strategies tend not to be concerned with the detailed definition, but with making housing generally "fuel poverty proof". The different number and distribution of fuel poverty would have major implications for resources, targeting, and the policies, but the way the basic programme is implemented would not necessarily need to change as a result of adopting a different definition".

Many would concur, since in reality there is only a weak connection between the Strategy and how it is implemented. Regions have assigned responsibility for delivering the UK Strategy to smaller units such as local authorities, energy agencies, and Warm Zones, for whom the intricacies of the fuel poverty definition have been less germane.

In fact, all 4 regions of the UK implement fuel poverty strategies that allow for sliding scales of intervention to tackle fuel poverty – ranging from free energy-efficient light bulbs and energy advice to some households, through loft insulation top-ups, boiler replacement, to complete refurbishment of heating and insulation systems.The Warm Homes 2006/7 spend on measures that could have no conceivable impact on SAP ratings in Northern Ireland was £300,000. This could have paid for 800 cavity wall treatments or loft insulations, both of which would have increased SAP ratings by 5 points (NIAO, 2008).

There is a looseness of fit between the Strategy and the programmes that aim to serve it. This lies at the heart of why the Strategy is experiencing systemic failure. Fuel poverty implementation programmes have become too weakly governed by the Strategy's aims. There has been slippage between the Strategy and implementation which – even before the current energy price crisis - made the achievement of targets set within the Strategy increasingly difficult to achieve. Escalating energy prices may ultimately have caused the Strategy to unravel, but the loose association between Strategy and implementation exposed a weakened system to a formidable stressor.

For example:

- A Strategy focused on heating and insulation improvements in the national housing stock subsequently declined to use SAP scores as a passport criteria for eligibility; in addition, targets for SAP score gains were not benchmarked for assessing the Strategy's impact, with many retrofits leaving homes with SAP ratings that fell short of minimum standards for fuel-poverty proofing.

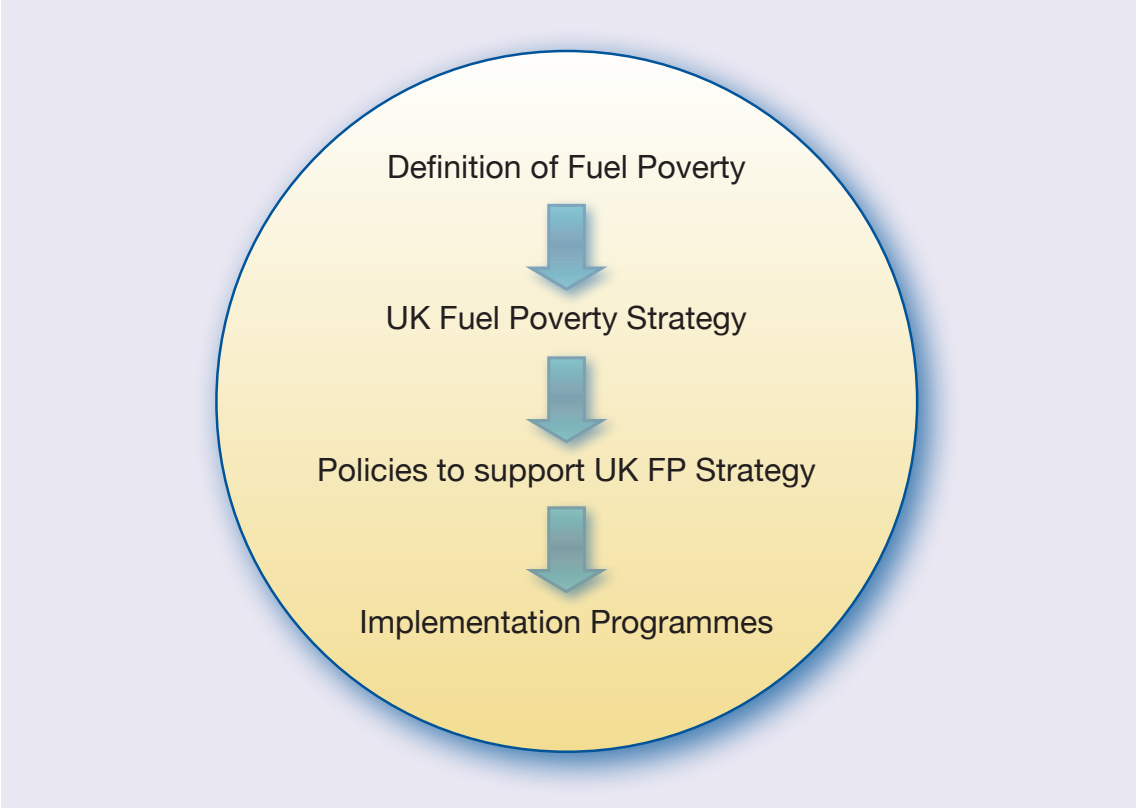
- Whilst a building stock initiative, the Strategy's explicit aim was to protect human health. However targets on improving health were never set, and investment from Departments of Health in the scheme has been negligible.

- Whilst the Strategy specifies baseline temperatures for protecting human health, which derive from WHO Guidelines, the attainment of thermal baselines is not part of targeting or monitoring practice.

In effect, the Strategy *as implemented on the ground* has targeted a patchwork of energy efficiency measures to people in receipt of passport benefits that are only marginally associated with fuel poverty, and regardless of whether anyone in the household was in poor health or not.

Figure 11.1 re-illustrates a Figure from Chapter One, which describes the ideal relationships between Definition, Strategy, Policies, and Implementation.

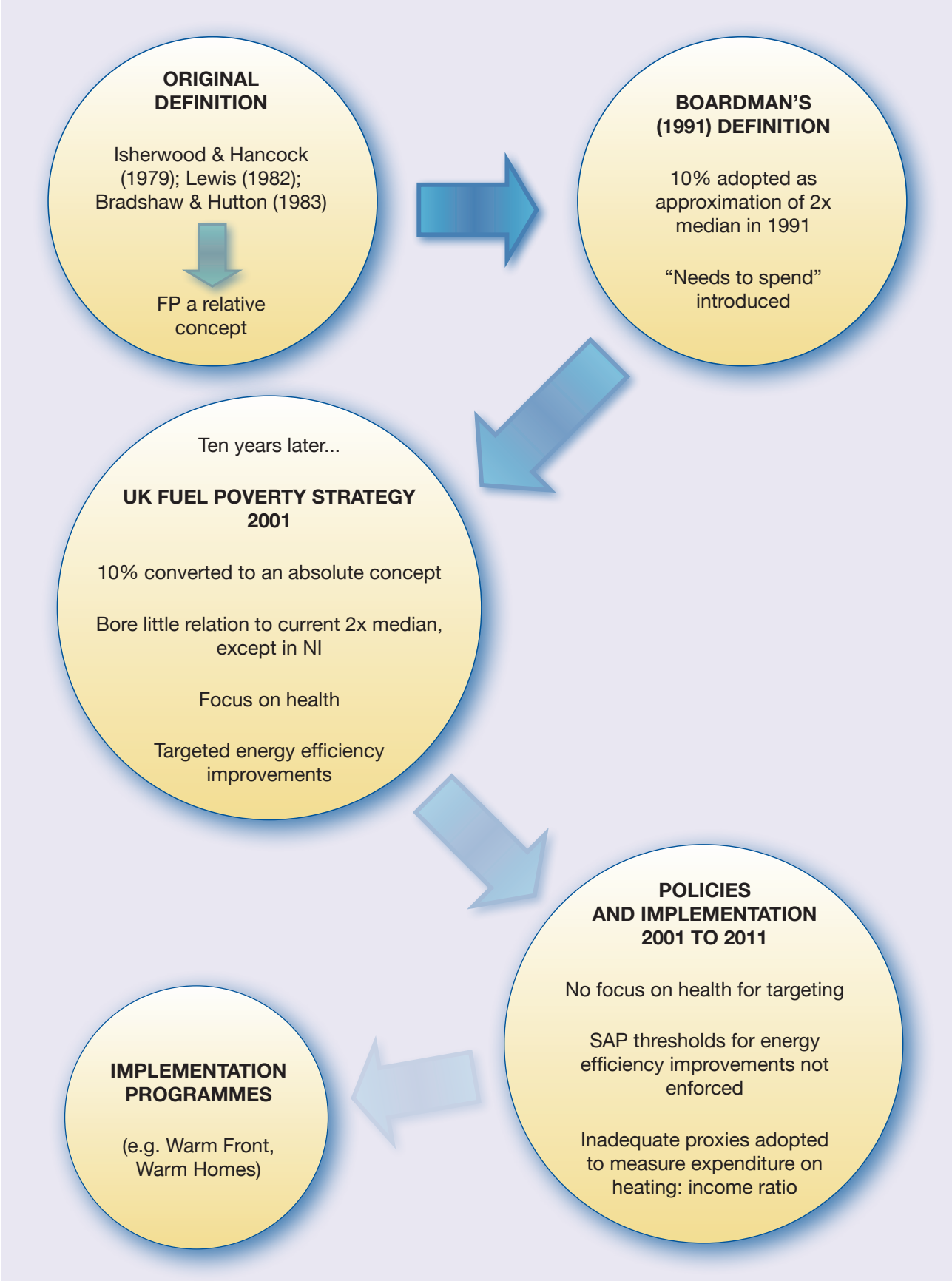
FIGURE 11.1 Definition, Strategy, Policies and Implementation – ideal relationships.



Even at the point when the Strategy was published, this Preliminary Review has highlighted some slippage between Definition and Strategy. The original definitions of fuel poverty in the 1970's and 1980's were concerned primarily with relative fuel poverty, and Boardman's 1991 definition was based on a similar philosophy. A threshold of 10% pertained in 1988, but was adopted in 2001 without scrutiny. Furthermore, the Strategy silently reframed the 10% threshold as an absolute value, and the implications of this were quickly lost to view.

Thereafter, the Policies and Implementation programmes that devolved from the Strategy bore a weak relationship to both the definition and the Strategy. It is in the flow from Strategy to Policy and Implementation that the greatest slippage has occurred. Ultimately, the failures to deliver on Strategy have considerably more to do with how Policies were formulated, and how they were then implemented on the ground, than they have to do with problems inherent in how Fuel Poverty was defined (see Figure 11.2)

FIGURE 11.2 The current relationship between Definition, Strategy, Policies, and Implementation.



11.3. Root and branch reform

A review for a Fuel Poverty Strategy going forward might seek to realign these elements to achieve greater integration, whilst also drawing on what has emerged over the past decade in terms of regional diversities (see Figure 10.3).

FIGURE 11.3 Proposed realignment of elements:

Decisions about all contested areas of the definition would be taken at national level, which would yield more explicit national indicators for monitoring and targeting. Regions would adopt these nationally prescribed indicators, and gather data in accordance with them. In parallel, regions would implement the Strategy in ways that would best represent local needs and local drivers of fuel poverty (the importance of which has been illustrated in this review).

Regions would:

- set appropriate regional indicators and targets for monitoring whilst also
- returning results to the national database from the national indicators.

Implementation would be fully embedded in the Strategy so that all aspects of implementation were subject to scrutiny in accordance with the Strategy's intent.

11.4. Local exemplars of best practice

There are many exemplars at regional level which demonstrate how Strategy, Policy, and Implementation can be kept tightly bound together with a focus on health. In Northern Ireland, for example, tackling fuel poverty was identified as one of the key targets within the Public Health Agency's (PHA) Investing for Health Strategy. As a result the PHA's Northern Area Fuel Poverty Steering Group was established in 2005. This is a multi-agency partnership made up of a range of organisations from the statutory, voluntary and private sectors and spanning ten Council areas. The Group published its fuel poverty strategy *"Warmer Ways to Better Health"* in January 2006. The strategy was written in conjunction with a specialist energy agency (NEA NI) and seeks to take forward at a local level the implementation of the Regional Fuel Poverty Strategy for Northern Ireland. The vision of the WWTBH Strategy is to:

"Reduce fuel poverty by minimising energy inefficiency and maximising the incomes of households across the Partnership area that would be considered to be at greatest risk."

Most importantly, the strategy has 11 aims each with key tasks, timeframes, outputs and outcomes; progress is monitored through annual action plans, and the strategy has recently undergone a formal evaluation via customer and stakeholder surveys. An infrastructure has been established comprising the Steering Group, locally based Warmer Homes Groups and funding from the PHA has enabled the appointment of a Co-ordinator and part-time energy efficiency advisers in each Council area. An ongoing programme of training, capacity building and public awareness raising has been undertaken within local communities and with health professionals. Much of the success of the Strategy is due to the dedication of all partners, particularly the ten local Councils, who have shown

enthusiasm and commitment to tackling fuel poverty at a local level, a strong community based approach, as well as regular monitoring of progress.

11.5. In summary

Based on an extensive evidence base, the Preliminary Review concludes that past and present approaches to tackling fuel poverty in Northern Ireland have delivered a highly cost-effective programme of housing regeneration. Returns from investment in Warm Homes and similar programmes include:

- substantial impacts on human health and well-being
- significant savings on energy bills for thousands of households
- measurable returns in terms of job creation
- a widening of opportunities for consolidating partnerships across the public and private sector.

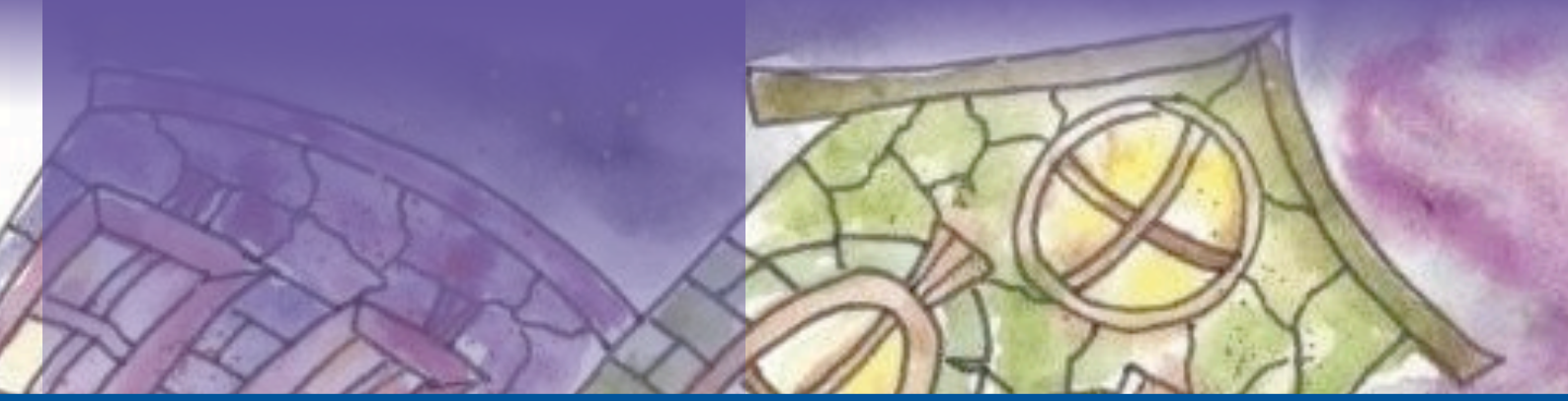
When all of these gains are taken into account, it is likely that the Warm Homes Scheme and similar fuel poverty programmes are cost-neutral over a lifespan of 15 years. This is because the amount invested in tackling fuel poverty is fully returned through beneficial impacts on the NHS, household income, and employment.

Despite this, there is still much to do. Survey data (NIHCS, 2009) indicates that more than 33,000 households in Northern Ireland need to spend more than a quarter of their income on heating and lighting for their home. Whilst efforts to tackle fuel poverty in the region have made measurable inroads – Northern Ireland has been particularly successful in this regard - the severity of fuel poverty in Northern Ireland remains, for many households, profound.

The most critical local issue concerns whether a national “needs to spend” metric remains the sole means by which prevalence of fuel poverty is calculated, or whether a regional “needs to spend” metric is adopted to run in parallel with it. It is clear that 18% rather than 10% represents a closer approximation of local needs to spend in Northern Ireland, (NIHCS, 2009). If applied, this converts fuel poverty prevalence from 44% to 13%, and may well also change the demography and geography of where fuel poverty is most acute in Northern Ireland. Further exploration of this issue is vital.

At the present time, fuel poverty in Northern Ireland should be higher than that of other regions in the UK, by virtue of the local climate and the reliance on oil for heating. However, only a regional "needs to spend" metric will permit the region to monitor local efforts aimed at bearing down on fuel poverty in Northern Ireland. For this reason the introduction of a regional median, coupled with a severity index that ranges from median to 4X+ median, is strongly advocated. In order that energy costs are not marginalized, this approach needs to be coupled with an affordability index that provides a means by which energy prices vis-à-vis incomes can be monitored too. All of these tools will provide the region with an enhanced monitoring capacity, and an ability to set meaningful regional goals for tackling fuel poverty.

At a broader UK level, solutions need to be found which strengthen the bonds between Definition, Strategy, and Implementation. The Review concludes with suggestions for a new model of delivery for Fuel Poverty Strategy in Northern Ireland, based on an areas-based approach designed to tackle the 13% of households that need to spend more than 18% of their income on heat and light (ie. more than twice the local median). Among the 44% of households in fuel poverty at last survey (NIHCS, 2009) this represents the core of households most severely affected, and comprises more than 75,000 homes. The challenge therefore remains a profound one. The UK Fuel Poverty Strategy (2001) has been in place for a decade, during which there has been major investment, relentless monitoring, and intense debate. Much more is available for review at this stage than the definition and it consequences for targeting, and the current round of reviews should be the first stage in a process of more systemic reflection and reform. Northern Ireland is well-placed to contribute to this process. It has a strong grasp of the regional issues that should be taken into the national arena, and a networked infrastructure of stakeholders which has the capacity and passion to move debate forward.



Section 5

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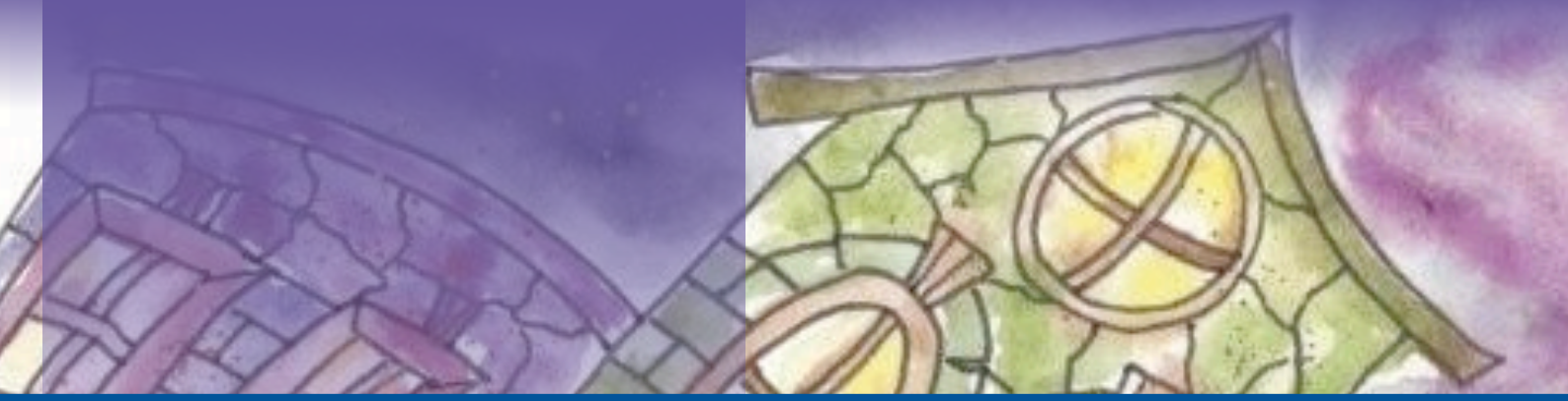

Section 6

SUMMARY TABLES OF RECOMMENDATIONS

TABLES OF RECOMMENDATIONS

DEFINITION ISSUES	RATIONALE	Regional variants?
Technical definition supplemented with lay definition of fuel poverty.	Could enhance public engagement and help make the concept more accessible to local politicians and councillors.	No
A watching brief is kept on alternative definitions of fuel poverty such as EFP and EU-SILC.	In the search for a global or Europe-wide definition, these hold more currency than the UK Fuel Poverty Strategy definition.	NA
DATABASE ISSUES	**RATIONALE**	**Regional variants?**
Fuel poverty statistics for all 4 regions of the UK should be based on data collected at same point in time, and should be published at the same time.	This will help coordinate monitoring, especially during periods of volatility.	No
FP prevalence is fully calculated every 4 years. Now cast modelling estimates published in 3 intervening years.	Energy price volatility and concomitantly rapid changes in FP prevalence merit more frequent monitoring.	No
Northern Ireland to quote fuel poverty prevalence data for gas-fired and oil-fired heating systems separately.	Allows more meaningful comparisons to be made with GB. Increases the focus on (and pressure to reduce) the burdens being generated by reliance on oil-fired heating systems.	No
FP annual headline figures to quote estimates based on a single income metric only.	Most income metrics move in parallel with each other. Efforts are made to ring-fence funds for marginalised groups.	Yes
Background FP figures to be calculated using all income metric options.	Regions use these comparator tables to decide their own priorities in terms of preferred income metric.	Yes
Regional choices are made about which income metric/s suits regional goals best.	Regional choice of metric provides rational for ring-fencing money to target household types that have been designated priority.	Yes
MIS to be funded through to a more mature metric.	Has promise as a new “needs to spend” model and also has promise as an international comparator. Extension to rural households needs testing. Validation of the fuel measure is needed.	No

DATABASE ISSUES (continued)	RATIONALE	Regional variants?
Sample sizes for collection of BREDEM-12 data are reset to levels that allow accurate regional data to be collected i.e. to the national standard of complexity.	FP prevalence data will, otherwise, only be available at generic levels in some of the regions. Since most of the regions affected are those with the more acute FP problems, this will generate inequity in data quality and information for planning, resourcing, and targeting.	No
Alternative metric should be sought to replace BREDEM-12 in the longer term.	BREDEM-12 has no international currency and has inherent problems.	No
Alternative metric is augmented with data collected during the SMART meter rollout.	SMART rollout offers unique potential for new survey data collection.	No
New metric should include measures of household energy efficiency, appliance quality, and lifestyle choices.	An "all household fuel" metric includes electrical appliances, lighting and many other aspects of consumer choice. An estimated 5-20% savings are obtainable through customer engagement and support.	No – though regional variants feasible
Twice median is recalibrated to recent national level and set for 4 years. Regional variants are published.	Twice median is a conventional cut-off for assessing need and should be retained. However, 10% is not the current twice-median figure in all regions. Regional variation is substantial and has implications for budgets and planning.	Yes
HOW MANY? Calculating the prevalence of Fuel Poverty	**RATIONALE**	**Regional variants?**
UK Boardman-based definition remains in place for estimating prevalence.	"Needs to spend" embodies the letter and spirit of UK FP Strategy. Offers best protection for human health, as well as for the most vulnerable (low-income, low SAP, and underspending).	No
EFP metric is supported as an affordability index.	Permits international comparison and can monitor rapid changes over time.	No
A severity index is developed based on areas-based mapping and local house-to-house surveys.	Combines high-quality multi-variate data with community involvement.	Yes
BREDEM-12 methods for calculating income are re-examined – how well or otherwise do income estimates correlate with more conventional measures e.g. LCS?	Major implications for estimating the prevalence of fuel poverty.	No

WHO? Targeting and Intervention	**RATIONALE**	**Regional variants?**
Age bands for defining vulnerable groups are reviewed.	Restricting to Pensioners over 65 or 70 years and Children under 5 years would narrow target groups, and enhance likelihood of capturing those more at risk.	Possibly
OTHER ISSUES	**RATIONALE**	**Regional variants?**
Areas-based approach targets low-income/low-SAP homes only.	Contains cost.	Possibly
Areas-based approach does not replace individual household programme.	Need for a programme that can assist households in dire need, regardless of area.	Possibly
Working Group on Domestic Heating Pricing should be set up in Northern Ireland.	Heating Oil prices have comprised a key driver of fuel poverty prevalence in Northern Ireland, with wide variations in oil prices across the region. In the short space of time gas has been available to customers in Northern Ireland, it too has proven unpredictable in terms of pricing, and for reasons that are not immediately obvious.	NI Specific
Northern Ireland should explore options for leading debate on fuel quality.	Given growing worldwide interest in the quality of heating fuels, and local reliance on oil, Northern Ireland is well positioned to take UK lead.	NI Specific
Indoors temperature guidelines scaled up to 23°C for vulnerable households.	Better compliance with WHO Guidelines, and colder climate prevails in NI.	Possibly
Combined impact of raising incomes (e.g. BECs and using Winter Payments to offset energy expenditure should be modelled for NI).	Has potential to drive down fuel poverty prevalence.	Yes
Health impacts of the UK Fuel Poverty Strategy should be given greater prominence.	The Strategy aims to protect human health.	No
Cost-benefit analyses of the Strategy should include health impacts, employment impacts, and possible utility bill savings.	The Strategy has had wider impacts than retrofitting.	No