ENERGY POVERTY IN AUSTRIA

DEFINITIONS AND INDICATORS

E-CONTROL

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PREFACE

In recent years, energy poverty has become a catchword in the Austrian debate about the affordability of energy in the light of increasing gas and electricity prices. And yet the notion of energy poverty has neither been (uniformly) defined nor properly measured in Austria. However, a number of proposed measures are to ensure that energy poverty in Austria is pushed back through social and energy policies as well as energy utilities and private households.

E-Control Austria contributes to the ongoing debate about energy poverty in Austria by determining the extent of this phenomenon among the Austrian population in accordance with its regulatory tasks, which were extended by the *Elektrizitätswirtschafts- und -organisationsgesetz* (Electricity Act) 2010 and the *Gaswirtschaftsgesetz* (Natural Gas Act) 2011. If deemed necessary, E-Control will also propose measures to counteract energy poverty.

The main objectives of E-Control with regard to energy poverty are as follows:

- to determine the meaning, importance, extent and significance of energy poverty in Austria;
- to identify similarities and differences between energy poverty and poverty in general (income poverty);
- to gain a profound understanding of the extent and distribution of energy poverty among the Austrian population through a detailed and multidimensional measurement of energy poverty;
- to propose a definition of energy poverty in Austria;
- to pave the way so that the different causes of energy poverty in Austria can be detected, creating a solid basis for effective measures to fight energy poverty.

To accomplish these objectives, E-Control is presenting this paper with definitions and test measurements of energy poverty. Initially, a group of four Austrian and German experts in the fields of research and statistics were invited to critically comment on a previous version of this paper. Subsequently, the paper was publicly consulted in spring 2013. The final version now reflects the valuable suggestions and ideas gained from the first reviewing round as well as altogether eleven statements and a number of further commentaries.

EXECUTIVE SUMMARY

Why we talke about energy poverty

In Austria's political and public sphere, but also at European Union level, there has been increasing talk of "energy poverty". But what is "energy poverty"? What is the difference to poverty in general? How can energy poverty be measured? And how can it be fought?

E-Control is trying to get to the bottom of these questions because they are essential to an informed discussion about energy poverty. Only when all stakeholders understand what energy poverty really means, to which extent it exists in Austria and how it develops over time, we will be able to put up a good fight against energy poverty and win it. This is why this paper pursues the following **objectives**:

1. to present definitions of energy poverty;
2. to identify differences between energy poverty and poverty in general (i.e. income poverty);
3. to evaluate methods of measuring energy poverty; and
4. to propose new approaches to measuring energy poverty that particularly take into account Austrian conditions.

Existing definitions of "energy poverty" are criticised

In Austria, there is **no clear and uniform definition** of energy poverty. The only country in the European Union to have properly defined energy poverty is the **United Kingdom**. In the UK, a **household is considered energy poor if it would have to spend more than 10% of its income on the energy costs required** to reach the adequate standard of warmth according to the World Health Organization (WHO) and to cover additional energy needs (particularly electricity).

But there are ongoing **discussions** about this definition. Specifically, it is being criticised that:

- the 10% rate cannot be justified;
- the housing expenses and household size should be taken into consideration; and
- the household composition should play a role as well.

According to a recent British survey (Hills 2012), energy poverty is a **combination of below-average household income and above-average energy costs**. Moore (2012) similarly proposes analysing energy poverty in terms of the minimum income standard.

Current "energy poverty" measurements are insufficient

Statistical indicators of energy poverty are scarce. Among the few representative household surveys that exist, **EU-SILC** (European Union Statistics on Income and Living Conditions) data are often used to illustrate the extent of energy poverty. Participants of the survey are asked whether their "household can afford to keep its home adequately warm". In 2011, roughly **219,000 people (2.6%)** answered "no". In 2010, it had been 313,000. But a single indicator, which is also subject to substantial annual fluctuations, does not suffice to analyse a phenomenon as complex as energy poverty.

Definition of energy poverty in an Austrian context

Low-income or poor households are forced to spend a larger share of their income on the necessities of life, such as housing, food or energy. Although low-income households are often burdened by their energy expenses, a sole focus on proportionate expenses on energy (e.g. 10% or more of the income) is not enough to distinguish the definition of energy poverty from that of income poverty. Instead, it is important to also highlight the amount of energy expenses as such and view them in comparison to the expenses of other households. Only if large amounts of money are spent does it become clear whether energy poverty afflicts a household for reasons other than scarce financial resources (e.g. longer presence at home or poor thermal quality of the occupied rooms).

Based on existing definitions, this paper therefore proposes to define the phenomenon of energy poverty, aside from a higher financial burden through energy expenses among low-income households, as follows:

> *A household is considered energy poor if its income is below the at-risk-of-poverty threshold and, at the same time, it has to cover above-average energy costs.*

Household size and housing costs should be taken into consideration when determining the income. Above-average energy costs are defined as expenses on energy (electricity and heating) that are considerably above the median expenses. By referring to energy expenses of individual households in comparison with the overall population, it is possible to

- clearly distinguish energy poverty from income poverty (although empirically, they will often overlap);
- identify different causes of energy poverty;
- implement measures against energy poverty, particularly energy efficiency measures, in a way that energy poor households can really benefit from them.

Alternative measurements must be multidimensional

To better illustrate energy poverty in all its facets, E-Control suggests using a multitude of **indicators** to measure energy poverty:

1) **Determining household income, housing expenses and energy costs** allows us to understand energy poverty based on the latest definition used in the United Kingdom as well as on Austrian reports on poverty. But phenomena such as households switching off their heating devices or lacking consumption opportunities need to be considered as well.
2) Further indicators are to cover new **statutory regulations regarding energy consumption**. They particularly include reminders for past due energy bills, threats of and actual disconnections, the installation of pre-payment meters, etc.
3) **A number of subjective indicators** top off a **comprehensive concept of measuring** energy poverty. By extending the EU survey, relevant dimensions of energy poverty from the households' standpoint, such as permanent financial difficulties, considerations relating to compensation and energy-saving measures, are closely examined.

1. INTRODUCTION

In recent years, the debate on energy poverty has considerably intensified in many European countries, but also at an EU level. While energy poverty has been a major social issue in some European countries for several decades, the discussion in Austria is still in the early stages. It must be stressed that there is only little consensus about energy poverty in Austria so far. What is energy poverty? Does it really exist? How can energy poverty be measured? Which social groups are particularly vulnerable – and thus worth protecting? How can sociopolitical measures counteract energy poverty?

Reliable data on energy poverty in Austria are hard to come by. The past three years saw the publication of the first qualitative studies on energy poverty (e.g. Benke et al. 2012; Berger 2011; Brunner, Spitzer and Christanell 2011; Proidl 2009). However, statistical indicators on the extent or the social significance of energy poverty are yet to be developed. Currently available data – of which three sources are mentioned here – point to the general financial situation of Austrian households and their energy expenses.

1) **Reports on poverty** by the Austrian Federal Ministry of Labour, Social Affairs and Consumer Protection (BMASK) show (cf. Statistics Austria 2012):

- In 2011, approximately 1.05 million people, or 12.6% of the Austrian population, were considered *at risk* of poverty, i.e. they had an equivalised net income[1] of € 1,066/month (60% of the median income) or less.
- According to the Austrian definition, 1,246,000 people, or 15%, are *financially deprived*[2]. They are excluded from adequate social participation because they lack the sufficient financial means.
- When risk of poverty and financial deprivation coincide, it is called *manifest poverty*. Roughly 431,000 people (5.2%) are affected by this type of poverty.

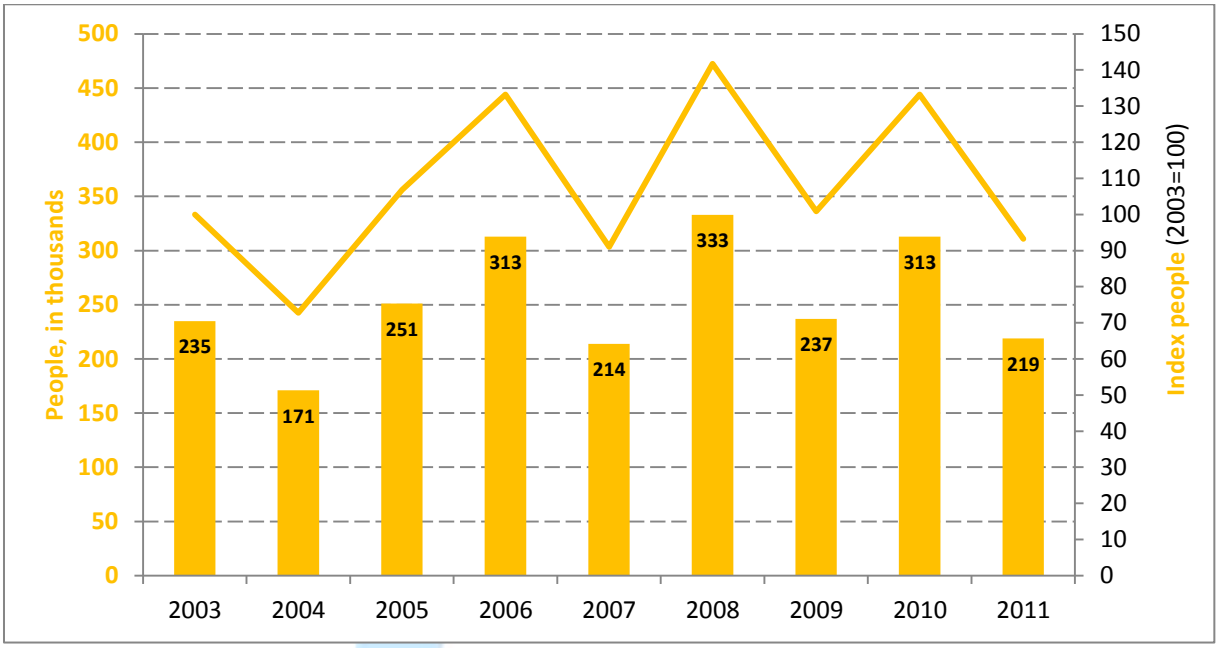
2) Regarding the **affordability of energy** for households, the latest report on poverty (EU-SILC 2011) offers the following information:

- **219,000 people (2.6%) state that their households cannot afford to keep the entire home adequately warm. Of these people, however, "only" 95,000 are at risk of poverty (43%)**.

This number is often mentioned in media coverage to quantify the extent of "energy poverty" in Austria. However, the **minor overlap with a general risk of poverty** shows that "energy poverty" and "poverty" can be two different phenomena. But what would it mean for our understanding of energy poverty if a majority of those suffering from it were not even at risk of poverty?

Based on the data from 2010, the media also repeatedly reported about a drastic increase of energy poverty until 2012. This is because the number of people who could not afford to keep their home adequately warm increased from 237,000 to 313,000 in 2010 before dropping to 219,000 in 2011 (see Figure 1). It is debatable whether these fluctuations indicate real changes in the extent of energy poverty. Indeed, no obvious trend can be recognised in Figure 1. It is much more likely that these **fluctuations** happened for **methodical reasons**. As Statistics Austria has emphasised over and over again, these figures are subject to a relatively wide statistical fluctuation margin, which tends to fall prey to the public discussion.

Figure 1 Number of people in Austria (in thousands) who cannot afford to keep their entire home adequately warm, 2003–2011.



Sources: EU-SILC 2011; BMASK 2011, 2010, 2009; Statistics Austria 2012a, 2009, 2008, 2007.

3) The **Household Budget Survey** 2009/2010 (Statistics Austria 2012b) shows:

- The average household spends approx. € 137/month, or **4.7%** of all monthly consumption expenditures, on energy. This includes **electricity and heating** expenses (depending on the heating method, these comprise gas, district heating and other fuels), but not engine fuels.
- **Proportionately, low-income households spend slightly more on energy on average**.[3]
    - The **poorest 10%** of Austrian households (with a disposable household income of € 1,305 or less per month) spend **€ 83 (5.9%)** of altogether € 1,410 on energy.
    - Households of the second household income decile spend € 1,600 on consumption per month, including € 106 (6.6%) on energy.
    - The wealthiest 10% of Austrian households (income of € 5,342/month or more) spend € 189 (3.7%) of their average monthly consumption expenditures (€ 5,110) on energy.[4]

While these figures provide valuable insight into the financial situation of Austrian households and the affordability of energy, they also suggest that even the poorest households have to spend much less than 10% of their expenditures on energy – at least on average. **However, the distribution of energy expenses among the poorest households is unknown**. For instance, how many of the poorest households spend more than 10% on energy, how many more than 20%? At the same time, there may be at-risk-of-poverty households that spend less than 5% – either because they actually only need little energy or because they are saving drastically.

As useful as these figures are, one must bear in mind that **none of these statistics are based on a clear definition of energy poverty**. Precisely because in the debate on energy poverty, existing sociopolitical measures are repeatedly criticised and new regulations are called for (cf. Benke et al. 2012; Friedl 2011; Getzinger and Berger 2011), the measurement of energy poverty must be based on a deep understanding of the same. This is the only way energy poverty can be effectively counteracted.

2. THEORETICAL BACKGROUND

Energy poverty (also called fuel poverty) is both a global phenomenon and one that occurs in national and local contexts. In a global context, energy poverty often means that people do not have access to energy (particularly electricity) at all or completely depend on solid fuels for cooking, heating, lighting or using mechanical devices (e.g. Guruswamy 2011). This type of energy poverty affects almost half of humanity – particularly in Asia and Africa, about 1.4 billion people live without electricity; another billion only has irregular or hardly ensured access to electricity (Sovacool et al. 2011).

In developed countries, this definition of energy poverty is hardly relevant at all, so it is not surprising that energy poverty is considered something (completely) different in Europe. However, current national and EU-wide efforts indicate that in most countries, energy poverty is neither clearly defined nor precisely distinguished from general concepts of poverty research (e.g. lack of resources, deprivation or lacking participation in social life). But because the public debate on energy poverty is flourishing, such a lack of definitions can entail severe misconceptions. When different stakeholders have different notions of energy poverty and its extent, it impedes the problem-solving potential of society.

From the point of view of E-Control, a clear definition is crucial for the fight against energy poverty for several reasons:

- It ensures a clear understanding of the concept and points out differences to income poverty.
- It enables a precise measurement of the phenomenon.
- Most importantly, it shows to which extent energy poverty exists, and whether and how it can be counteracted.
- Finally, it makes sure that measures against energy poverty can be evaluated in terms of reasonableness and cost-efficiency.

2.1 COMPARING EUROPEAN DEFINITIONS OF ENERGY POVERTY

At a European level, energy poverty has been recognised as a problem since 2009 through the Directives 2009/72/EC and 2009/73/EC concerning common rules for the internal market in electricity and in natural gas, respectively. Although the EU has expended effort to better understand energy poverty, a clear definition is yet to be presented (European Commission 2010).

The European Economic and Social Committee has suggested the following definition: *"Energy poverty occurs where a household finds it difficult or impossible to ensure adequate heating in the dwelling at an affordable price (by way of reference, it might be worth adopting the definition used by the World Health Organization, which considers an adequate standard of warmth to be 21°C in the living room and 18°C in the other occupied rooms, or any other definition deemed technically appropriate) and having access to other energy-related services, such as lighting, transport or electricity for use of the Internet or other devices at a reasonable price. Although this is a general definition, other criteria could be added in order to update the concept when necessary"* (Santillán Cabeza 2010:2-3). Such a broad definition is ill-suited to provide clarity as to which phenomena are considered energy poverty. Then again, it does allow for a consensus among different stakeholders. Especially this circumstance will need to be considered if a common definition of energy poverty should be aimed for at European level. To reach such a compromise, however, the interpretation of individual vital terms of this definition will have to be agreed upon in tough negotiations. Some points in particular might prove problematic: what is to be understood by *difficult* or *impossible* and *adequate* or *affordable costs* or *price*? A definition of these terms is subject to strict normative deliberations – while the WHO does specify an adequate standard of warmth, other notions like "other energy-related services … at a reasonable price" would most likely require (tedious) discussions.

Another example for a broad definition at European level can be found in the European Fuel Poverty and Energy Efficiency project (cf. EPEE 2006b). There, the following definition is suggested: *"We have defined fuel poverty as a difficulty, or even incapacity to have proper heating in one's home, all this at a reasonable cost"* (EPEE 2006b: 5). This definition clearly distinguishes energy poverty from general poverty as the latter does not necessarily engender energy poverty. However, this also leaves open much room for interpretation of the terms used.

At national level, the United Kingdom and Ireland currently provide the only official definitions of energy poverty implemented by a government. While the United Kingdom has seen an ongoing sociopolitical debate on this issue for some decades, a growing diversity of opinions and criticism can be discerned, leading to increased readiness to change the prevalent definition of energy poverty (e.g. Hills 2012; Moore 2011).

2.1.1 FUEL POVERTY IN THE UNITED KINGDOM

UK FUEL POVERTY STRATEGY

The UK Fuel Poverty Strategy defines energy poverty in the United Kingdom as follows:

> 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 21ºC in the living room and 18ºC in the other occupied rooms – the temperatures recommended by the World Health Organisation.
>
> (Department for Industry and Energy 2001:6)

In the UK, **households that *would have to* spend over 10% of their income on their entire energy requirements including an adequate standard of warmth** are thus widely considered **fuel poor**. This definition underlines the *required* spending instead of the actually incurred costs. That may be related to the fact that many – especially poorer – households often go without energy, having or choosing to heat their homes to a temperature below what is generally considered "normal" or "healthy", not least due to the inferior construction material of British residential buildings.

From this definition, three main causes can be derived: [5]

1) Energy efficiency of the house or flat

The size of the room, the energy consumption mix, the condition of the building and the heating regime are factored into the calculation of energy efficiency in a complex manner.

2) Energy prices

While the original measurement was based on actually incurred energy costs, thus justifying the threshold value of 10% (which roughly corresponds to twice the average spending on energy back then, cf. Boardman 1991), the current survey is based on *modelled required energy costs*. The relevant standards comprise a certain amount of energy for room temperature (21°C in the living room, 18°C in all other rooms) as well as a number of other domestic needs. The prices for the respective amount of energy calculated as required are finally made available by the *Department for Business, Enterprise and Regulatory Reform* (BERR) and adjusted regionally as well as according to the household's energy consumption mix and payment method.

3) Household income

The calculation of fuel poverty is based on the net household income after income tax and social security contributions, adding (social) benefits directly connected to housing (e.g. housing benefits, income support for mortgage interest (ISMI), mortgage payment protection insurance (MPPI)) and council tax benefits[6].

2.1.2 CRITICISM OF THE EXISTING DEFINITION

In the past few years, growing criticism has been directed against the government regarding the established assessment of fuel poverty.

Firstly, critics note the randomness of the 10% threshold, making fuel poverty strongly susceptible to volatile energy prices. According to them, this would lead to similarly strong and short-term fluctuations in the extent of energy poverty. Consequently, the fight against it would become even harder because structural causes of fuel poverty would not be recognised and political attention would solely be focused on financial aspects.

Despite the benefits of a fixed 10% rate of the income as an "absolute measure", critics increasingly tend to measure energy poverty in *relative* terms. With this method, which is similar to those used in poverty research, fuel poverty of a household is determined in relation to other households based on a comparison between the relative income situation and the energy costs.

Secondly, it is discussed whether *housing expenses* should be subtracted out of the income. One argument for doing so would be the fact that they depend on the income that is actually available to the specific household, since housing expenses (e.g. rent), just as deducted taxes and contributions, cannot be spent on energy bills.

Thirdly, an *equivalisation* of income and energy costs according to the composition of the household is under consideration. Some say that in that case, energy needs should be equivalised as well, while dissenting experts argue that this is already done in the calculation of the required energy requirements.

WARM HOMES AND ENERGY CONSERVATION ACT 2000

As an alternative, the Warm Homes and Energy Conservation Act 2000 provides the following definition: *"a person is to be regarded as living in 'fuel poverty' if he [sic!] is a member of a household on a lower income in a home which cannot be kept warm at reasonable cost".* The same act stipulates that definitions of a lower income, reasonable cost or a warm home may be specified by regulations. This, however, can lead to different interpretations in England and Wales, where the legal act is in effect.

Interestingly, this definition distinctly refers to lower incomes. Although poverty as such does not seem to be a necessary feature, a lower income is considered a prerequisite for fuel poverty. Thus, energy poverty is regarded as a sort of "qualified poverty" and, contrary to the prevalent definition, excludes households with higher incomes. But as neither reasonable cost nor warmth are defined, the act does not provide a clear understanding of energy poverty either.

HILLS FUEL POVERTY REVIEW

Based on the *Warm Homes and Energy Conservation Act 2000*, Hills (2012, 2011) submits the following definition: *"households are considered fuel poor if a) they have required fuel costs that are above the median level; and b) were they to spend that amount they would be left with a residual income below the official poverty line"* (Hills 2012:9). More specifically, Hills (2012) defines energy poverty as a **combination of above-average costs and below-average household income**. A household is considered fuel poor if the net household income (equivalised for income tax, social security contributions *and* housing expenses) amounts to less than 60% of the median net household income *and* if the household requires energy expenses that exceed the median modelled energy costs of all households.

Taking into account that high calculated energy costs could also considerably strain or even push into poverty households which, if only their income situation were regarded, would not be considered poor, Hills suggests adding the calculated energy costs to the household income poverty threshold (see Figure 2). Another important key indicator introduced by the *Hills Fuel Poverty Review* (2012, 2011)

is the *fuel poverty gap*. It is the difference between the calculated energy costs of an energy poor household and the median costs, thus illustrating the "depth" of a household's state of fuel poverty.

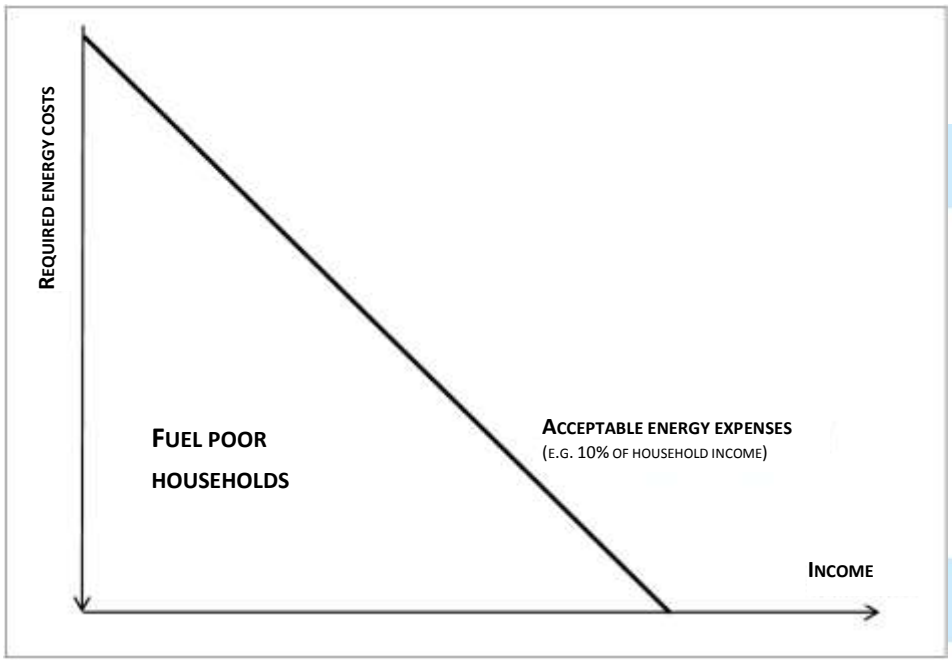
MOORE'S APPROACH TO FUEL POVERTY

Moore (2012) proposes a so-called "budget standard approach" for the definition of energy poverty (cf. the "reference budgets" of the ASB Schuldnerberatungen GmbH, the umbrella organisation of all Austrian debt advice services, 2012). Based on the criticism of the existing definition and measuring method of energy poverty in the United Kingdom as well as of the Hills Fuel Poverty Review (2012), Moore (2012) suggests counting energy costs as aspects of everyday life necessary for basic social participation (cf. Davis et al. 2012):

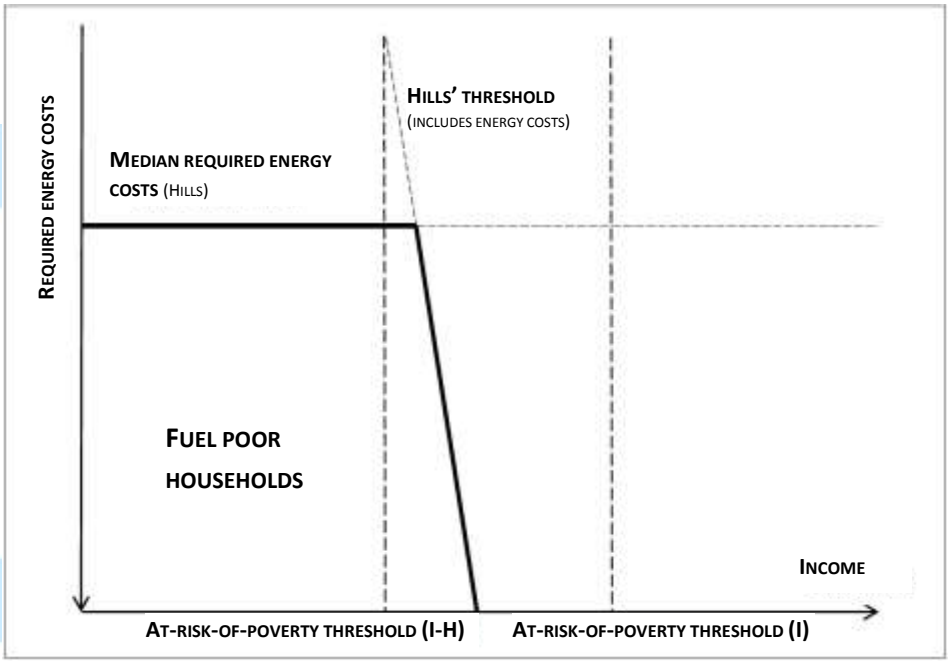
> ... households are deemed to be in fuel poverty if, after deducting their actual housing costs, they have insufficient residual net income to meet their total required fuel costs (…) after all other minimum living costs (…) have been met.
>
> (Moore 2012:4)

Put differently, this definition not only takes into account housing expenses, but also costs for all other essential areas of life (food, clothing, cultural participation, child-rearing…) before calculating fuel poverty. According to this approach, households and individuals are considered fuel poor if, after deducting their housing and all other living expenses, their income does not cover the required energy costs.

Figure 2 Schematic comparison between the definitions of energy poverty according to the UK Fuel Poverty Strategy and according to Hills (2012).



Definition according to the UK Fuel Poverty Strategy



Definition according to Hills (2012)

Notes:

According to the UK Fuel Poverty Strategy, fuel poor households in the UK have since 1991 been defined as households that need to spend more than 10% of their income on the energy required to achieve a pre-defined standard (of warmth, electricity, etc.). Hills (2012) suggests a combination of clear below-average incomes after deducting housing expenses and above-average required energy costs. Housing expenses (H) are first deducted from the household income (I) to obtain the basis for calculating a new at-risk-of-poverty threshold (I-H). The required energy costs are then added to this value. All individuals and households with an income below this new at-risk-of-poverty threshold are considered fuel poor, but only if they are burdened by above-average required energy costs (= above the median costs). Moore's (2012) approach goes into another direction and can therefore not be included in this schematic comparison.

2.1.3 STRENGTHS AND WEAKNESSES OF THE UK FUEL POVERTY STRATEGY, HILLS AND MOORE

Table 1 Comparison of strengths and weaknesses of the different definitions of fuel poverty

Definition	Strengths	Weaknesses
UK Fuel Poverty Strategy	- Absolute measure/defined percentage as a threshold for fuel poverty (10%)	- No relation to the income situation of a household - Largely dependent on short-term fluctuations of energy prices - Difficulties justifying the percentage
Hills (2012)	- Taking into account housing expenses - Equivalisation of the household income - Relatively stable amount of households concerned (sustainable assessment of energy poverty) - Correlation with poverty and risk of poverty and established social deliberations - Information on the severity of stress caused by fuel poverty (fuel poverty gap) - Largely independent of quickly increasing or decreasing energy prices - High significance of energy in one's lifestyle	- Complex juxtaposition of relative income with relative energy costs - Lowest-income households are nevertheless burdened with average (and sometimes considerable) energy costs - Actual cost pressure is neglected - Limited international comparability
Moore (2012)	- Integration into the entire household budget (living expenses) - Reference to realistic expense situations where low incomes are concerned - Correlation with poverty and risk of poverty and established social standards - Relative significance of energy in one's lifestyle - International comparability	- Dependence on short-term fluctuations of energy prices - Complex and normative ascertainment of "minimally adequate" living expenses - Different regional and national composition of reference budgets

The three introduced definition approaches reveal certain similarities and differences, which are indicative of their strengths and weaknesses (see Table 1). All three British approaches set energy costs in relation to the income situation of a household. In doing so, the UK Fuel Poverty Strategy juxtaposes absolute sums of money and does not set a maximum income limit above which the term "fuel poverty" is no longer deemed appropriate. Meanwhile, both Hills (2012) and Moore (2012) state the relative character of fuel poverty and define – though in completely different ways – above-average costs combined with below-average income as the characteristic features of fuel poverty. Thus, Hills and Moore practically rule out fuel poverty above a certain income. All three approaches share the assumption of required energy costs, which necessitates complex, expensive and internationally uncommon survey methods. Modelled costs do have the unambiguous advantage of guaranteeing a minimum extent of warmth and energy consumption. They also factor in the circumstance that not all households consume as much energy as is considered adequate by society, for example when they are forced to dispense with heating (switching off devices themselves) or because of a lack in (heating) infrastructure. However, it has also been observed that these normative standards may run contrary to individual preferences. While in many cases, required energy costs will outrun actual energy costs, they could also lead to undesired additional energy consumption, for

example when certain households prefer a lower room temperature or wish to do without certain electric devices against the current trend.

It should not be forgotten that different definitions ultimately lead to differences with respect to the understanding, extent and distribution of fuel poverty. A comparison of Hills (2012) and Moore (2012) shows that subtracting housing expenses out of the household income would lead to a change in the distribution of fuel poverty among the British population. As a consequence, the amount of house or flat owners among fuel poor people would drop from 48% to 25%, while the share of tenants would rise from 37% to 52%. By equivalising household incomes, these tendencies would be further aggravated, entailing severe consequences for single elderly people as well as households with children. Moore (2012) states that after equivalising household incomes, the amount of affected small households with elderly persons would drop to 17% (from currently almost 50%), while the share of single parents and couples with children would rise to 46% (from originally only 17%). Hills (2012, 2011) reaches similar conclusions regarding changes in the amount and composition of fuel poor British households depending on the prevalent definition.

3. REFLECTIONS ON A DEFINITION OF ENERGY POVERTY IN AUSTRIA

The above-written statements unmistakably show that any definition of energy poverty in Austria would lead to consequences for the understanding, extent and distribution of the phenomenon. Thus it seems necessary to draw on the existing approaches and consider the effects of potential decisions about a definition of energy poverty in Austria.

3.1 CORRELATION BETWEEN INCOME POVERTY AND ENERGY POVERTY

Current definition deliberations (Hills 2012; Moore 2012) mention a correlation between poverty in general and energy poverty. Austrian studies also show that many low-income households suffer from elevated energy costs. Talks with Caritas Austria have revealed that especially low-income households (e.g. persons entitled to receive the *Ausgleichszulage*, a compensatory allowance, or the *Bedarfsorientierte Mindestsicherung*, a needs-based guaranteed minimum income) receive energy-related benefits.

Therefore, it generally makes sense to link energy poverty to general poverty or risk of poverty when looking to define the phenomenon. A low income appears to be a prerequisite for any definition of energy poverty. There will hardly be any scenarios in which it seems socially acceptable to consider households with average or even higher incomes as energy poor. An income threshold for energy poverty is, however, yet to be fixed. For a low-income threshold, the official "at-risk-of-poverty threshold" according to the EU definition comes to mind, which considers households or individuals to be at risk of poverty if their income amounts to 60% or less of the weighted Austrian median income. This concept of risk of poverty is widely known and firmly established in the Austrian debate. Currently, the at-risk-of-poverty threshold is approx. € 1,066/month. That puts it considerably above the benefits of the Austrian welfare state, considering that the needs-based guaranteed minimum income is, at approx. € 800/month, set significantly below this threshold. As shown by the following chapter 3.2, it may be wise to think about including households with incomes (minimally) above the at-risk-of-poverty threshold as well, since they are often in similar predicaments.

3.2 TAKING INTO ACCOUNT HOUSING EXPENSES

Housing costs should be factored into any calculation of the disposable household income. A look at social institutions shows that housing expenses are utterly important since they cover what is probably

the most essential basic need. Moreover, housing costs are unavailable sums, similar to withholding taxes and contributions on employment or other income.

Considering other expenses, such as for (work-related) mobility, seems rather inappropriate. For one thing, mobility expenses of low-income households tend to be lower according to the Household Budget Survey 2009/2010. For another thing, current data only provide little indication that elevated mobility expenses go along with lower housing expenses. Mobility expenses are also highly dependent on fuel prices. These are not only volatile, but considering them would make energy poverty dependent on fuel prices. This is exactly what should be avoided. Even the argument that mobility expenses are higher in rural areas is not entirely backed by the data of the Household Budget Survey 2009/2010. Per-capita mobility expenses in the smallest municipalities tend to be higher (€ 313) than those of the Austrian average (€ 295) or in big cities (€ 241, and € 271 in Vienna), but not as high as in smaller cities of up to 100,000 inhabitants (€ 350 per capita).

3.3 ADJUSTING THE INCOME TO THE HOUSEHOLD STRUCTURE

According to established EU practice, it is recommended that household composition be considered when calculating the disposable household income. By equivalising the household income, large households would be increasingly included in the definition of energy poverty (cf. Hills 2012; Moore 2012).

3.4 ENERGY EXPENSES IN RELATION TO OTHER HOUSEHOLDS

A state-of-the-art definition of energy poverty must discern the reasons why low-income households are burdened by energy expenses: because their income is low and/or because energy costs are up for other reasons. Limited financial means therefore seem to be a necessary, but not the only requirement for energy poverty. Although they are indicative of the percentage of the income that a household spends on energy, they ultimately do not show whether these energy costs are high or low. The latter can only be determined in relation to average energy costs. In other words, monthly energy costs at the amount of € 200 appear rather high from a present-day perspective. Currently, there is hardly any doubt that such costs would put a considerable strain on low-income households in Austria today. But how would we estimate these costs in 20 years' time? Or if average costs amounted to € 300? Which amount would have to be used as a reference in other countries in order to make substantiated assertions on energy poverty in an international comparison?

Since it is impossible to answer these questions, it makes more sense to zero in on energy expenses in relation to other households. Whether energy costs are high or not is much better determined by the expenses of all other households than by a fixed amount of money. Likewise, poverty research has long recognised that poverty can particularly be observed in relation to other people or households.

3.5 ACTUAL INSTEAD OF REQUIRED ENERGY COSTS, SAYS PRAGMATICS

Theory sometimes favours using the *required* energy costs to reach a pre-defined standard of warmth and other forms of energy use from a health and social perspective (cf. Hills 2012). By considering the required costs, one may also account for the fact that actual expenses are often lower because energy is already "saved", dispensed with involuntarily or switched off by the concerned households themselves. This is often the case in poor households and would lead to the misapprehension that they are not energy poor. At the same time, actual costs can also be higher, which points to "energy waste" because of the inferior construction material and/or the needs or behaviours of household members.

However, factoring in the required costs would necessitate a great deal of technical and financial effort. This is why it is not customary in Austria to have the energy efficiency of single housing units recorded in statistical surveys by experts (technicians). Moreover, severe normative decisions have to

be made when determining the required energy costs. Which level of energy consumption is ultimately required? Although the WHO has reflected on standards of warmth, the question of appropriate power consumption still remains to be answered. It would therefore be more realistic to measure energy poverty based on actual energy costs, even though collecting this information can be a challenge in its own right. Additionally, low-income households whose energy costs are low because they involuntarily dispense with energy should also count as energy poor.

3.6 ENERGY CONSUMPTION STANDARDS: NORMATIVE AND COMPLEX

Standards for the evaluation of required energy consumption and costs pose a serious challenge. While the WHO has a clear conception of adequate room temperatures, the question remains to what extent these standards are up-to-date and independent of climate, culture and habituation. Basically, this is a debate over values, in which it should be clearly specified – by whomever – what amount of energy consumption is deemed "adequate" and required. Although it sounds somewhat exaggerated, this means that we would also have to start thinking about "how long the lights may be on", "how big and old the refrigerator may be", "at which temperature and rotational speed laundry may be washed", or "how long a TV of which size or the Internet may be used". If there were rules for all this, it would, from today's perspective, probably be alarming rather than helpful.

We therefore need further detailed expertise to determine appropriate standards for electricity and other energy requirements. The energy sector, social sciences and politics are called upon here to give an important impetus to defining sustainable standards that are valid for a certain period of time and both economically and socially just. This is why we refrain from suggesting such standards in this paper.

3.7 WHAT ARE "APPROPRIATE COSTS" OF ENERGY?

The official British definition considers costs of up to 10% of the disposable net household income as appropriate ("fixed" limit). Hills (2012) regards energy costs as reasonable as long as they are below the median costs ("relative" limit), regardless of their share of the household budget. Both limits – fixed and relative – have been criticised. Based on the Household Budget Survey, a threshold of about 10% seems too high for Austria, even for the poorest households. It appears that only lowest-income households (below or at the subsistence level of about € 800/month) pay an average of 10% or more. Then again, 10% would correspond to the designated expenses in the existing Austrian guaranteed minimum income schemes. Both the Austrian needs-based guaranteed minimum income and the German Hartz IV standard rates/housing cost rates expect lowest-income households to spend approx. 11 to 14% on household energy needs.[7]

Trying to determine the percentage of energy expenses goes hand in hand with the question of how much money households should be expected to pay for energy now (and in future). It is therefore always legitimate to question percentages, no matter if 5, 8, 10, 12 or 15% are considered the appropriate threshold. Incidentally, the same goes for fixed amounts.

Instead of a fixed percentage, *above-average energy costs* should be used as a criterion. But which threshold can be used to define above-average energy costs? Hills (2012) already considers energy costs to be above average if they lie above the median expenses of all households. In other words, if you pay just one Euro more than the average household, your energy bill is considered too high. However, it should be noted that Hills (2012) bases his definition on *required* energy expenses and also accepts that *half of all households face above-average energy costs*. Similarly to the Austrian reports on poverty, however, energy costs could also be considered above average if they amounted to, for example, 140% or more of median expenses. The threshold could also be fixed at ten sixths (167%) or more of average energy costs. Both thresholds, 140 and 167%, are derived from the

definition of risk of poverty as a "low income" at 60% or less of the median income: while the 140% threshold results from the additional 40 percentage points that are subtracted when calculating the at-risk-of-poverty threshold, the 167% threshold is the reciprocal of the at-risk-of-poverty threshold (ten sixths instead of six tenths). Other (lower or higher) thresholds are also plausible. There are, however, many benefits to a tangible difference between *average* and *above*-average energy costs:

1. Higher thresholds help distinguish energy poverty more clearly from poverty: this is the only way to define above-average energy costs as an essential characteristic of energy poverty in addition to a low income.
2. They also allow for a clear and unambiguous determination of the causes of energy poverty, which is the only way to really recognise and, subsequently, fight different reasons for high expenses.
3. Higher thresholds also benefit from higher social acceptability: considering someone energy poor although they do not have high energy bills meets with less popular acceptance than cases where average costs are clearly exceeded.

3.8 A "MINIMUM INCOME APPROACH" IS NOT (YET) SUITABLE FOR AUSTRIA

An alternative for defining energy poverty in Austria draws on the findings of Moore (2012). It would be possible to examine whether a household budget after deducting energy costs suffices to cover other areas of life to a satisfactory extent. Such an approach would place high priority on energy costs – similar to the practice of the Austrian debt advice services. Although the *reference budgets* of ASB Schuldnerberatungen indicate more or less realistic expenses for different household needs, they clearly describe their set of costs as simplified assertions that are relevant and valid for the *majority* of Austrians (cf. ASB Schuldnerberatungen GmbH 2012, emphasis added). This makes it clear that the reference budgets are closer to an "average budget approach" than to a "minimum income standard" and that calculating the minimum expenses for energy and all other areas of life requires thorough studies and value debates.

4. ENERGY POVERTY IN AUSTRIA

Based on the reflections about current definitions of fuel poverty in the United Kingdom, a combination of several approaches is suggested here. Borrowing from the Austrian reports on poverty, every household should be able to cover certain energy expenses in relation to its income (see also the UK Fuel Poverty Strategy). A clear definition of ***energy poverty*** could therefore be as follows:

> *A household is considered energy poor if its income is below the at-risk-of-poverty threshold and, at the same time, it has to cover above-average energy costs.*

Both *household size* and *housing costs* should be considered when calculating the disposable weighted per-capita *income* (= equivalised income according to the EU scale), as is suggested in current research. The at-risk-of-poverty threshold is – based on existing EU models – set at 60% or less of the median income.

Energy costs should comprise all costs – actual energy costs as well as costs that had to be saved either voluntarily or involuntarily. Cases in which households dispense with a "healthy standard" of energy consumption either voluntarily or involuntarily have to be considered as well. Energy costs thus have to be interpreted in a broader sense, but should not be equated with required costs. Energy costs, at least heating costs, decline with the size of the household and should also be equivalised. A comparison of average consumption data in Austria shows that equivalising energy costs according to the EU scale would definitely make sense.[8]

Above-average energy costs are energy costs that can be considered above average according to the invoice amount. Based on the distribution of energy expenses, the median amount is proposed as the relevant average value. But where to above-average energy expenses start? Is it from the first Euro spent above average or should above-average energy costs be limited to costs that considerably exceed the median expenses? Based on the Austrian reports on poverty or by reversing the definition of risk of poverty, the following thresholds for *above*-average costs could be conceived: either 140% of the median expenses could be considered above average, or the threshold could be fixed at 167% of the median costs. The first threshold (140%) is based on the absolute difference of 40 percentage points between the average income and the at-risk-of-poverty threshold (60%), which are now added to the average energy costs to receive above-average expenses. The second threshold (167%) uses the reciprocal of 60% (or six tenths) to receive above-average energy costs. Correspondingly, this amounts to ten sixths of the median expenses, or 167%. Choosing a limit of above-average energy costs leads to certain consequences: it is instrumental in determining the extent of energy poverty among the population.

It is therefore necessary and important to link a definition of energy poverty to the amount of energy costs instead of the share of energy costs of the income, because for households with high energy costs, measures to reduce energy consumption and increase energy efficiency are also promising. The higher the consumption, the higher the savings potential. Where only little is consumed, expenses can hardly be reduced further through efficiency measures.

There are, however, two points of criticism. Firstly, one might argue that such a "relative" definition of energy poverty overlooks the fact that (extreme) increases in energy prices do not shift the relative position of a household, but do shift its financial burdens. Secondly, one might say that a household is already burdened with having to spend an above-average *share* of the household income on energy alone, irrespective of the invoice amount.

Considering only the *relative* energy costs (measured as percentage of the income based on the indicated thresholds) makes sense insofar as even rather low energy costs in households with low(est) incomes can amount to (percentage-wise) above-average expenses and a large burden. For example, electricity and heating expenses of approx. € 80 at an income of € 800 (approximate amount of the needs-based guaranteed minimum income in Austria) can make up a considerable share (10%). And yet the amount itself would hardly qualify as "above average". Also, in such a case, efforts to further reduce energy costs would often be fruitless as they are already very low. It is also a well-known fact that low-income households have to spend relatively more on basic life needs – this is an inevitable part of poverty, which is why it is so important to distinguish it from the concept of energy poverty. It is also possible that general price increases put a greater strain on low-income households, especially as far as energy needs are concerned, which are characterised by a rather inelastic demand.

To consider these important arguments, the concept of ***risk of energy poverty due to a large burden through energy costs*** is introduced, in which a large burden through energy expenses is mostly ascribed to a low income rather than to above-average energy costs:

> *Households are considered at risk of energy poverty due to a large burden through energy costs if their income is below the at-risk-of-poverty threshold and they simultaneously have to spend an above-average percentage of their household income on energy.*

Following this differentiated perspective, Appendix A provides a first insight into the distribution of risk of energy poverty through a large burden based on energy costs as well as energy poverty itself. Based on data gathered in the Household Budget Survey 2009/2010 by Statistics Austria, it shows how

many Austrian households would currently be considered at risk of energy poverty or energy poor based on the definitions and different thresholds suggested.

5. INDICATORS OF ENERGY POVERTY

Drawing on the findings of poverty research, we distinguish between energy poverty and "energy deprivation" when speaking of indicators of energy poverty. "Energy deprivation" is meant to comprise objective as well as subjective components that provide information about the affordability of energy. Indicators of energy poverty as such are limited to the calculation of the household income and energy costs. Indicators of "energy deprivation" are the tools that are used in EU-SILC or other population surveys. They reflect extensive aspects of energy poverty gained by the estimations of surveyed individuals or households to better understand this phenomenon.

5.1 INDICATORS OF ENERGY POVERTY

To measure the risk of energy poverty according to the proposed definition, it is necessary to calculate the household income, housing expenses and actual energy costs. General survey research shows that households often have difficulties indicating their monthly income and consumption expenses in an exact and truthful manner. Thanks to the wide-ranging practical experience of statistics and data collection institutions, a more detailed methodical discussion on the collection of these data is not required here.

Providing information on actually incurred energy costs may, however, turn out to be rather complex. Household members are not always aware of actual energy costs or able to state them correctly (cf. Brunner et al. 2011; Proidl 2009, for example). The Austrian Household Budget Survey is designed to poll households as to a) whether a certain energy source, e.g. electricity, is used, b) how much is paid for it and c) how many times a year said sum is paid. For each of the possible sources (electricity, natural gas, fuel oil, fuelwood/pellet fuel/woodchips, coal/coke/briquettes and district heating), there are three free text questions:

- Do you use...?
- How much do you pay for...?
- How many times per year do you pay this amount for...?

In addition, it is ascertained whether energy expenses (heating and/or hot water costs) are billed together with housing costs or service charges, how high these amounts are and whether they are included in the service charges or housing expenses. As an alternative, it would also be possible to ask for the latest bill for electricity, gas and/or another energy source and use the obtained data to calculate the household's average monthly energy expenses in the last year.

5.2 INDICATORS OF "ENERGY DEPRIVATION": MONITORING

Section 88 of the *Elektrizitätswirtschafts- und -organisationsgesetz* (Electricity Act) and section 131 of the *Gaswirtschaftsgesetz* (Natural Gas Act) stipulate that distribution system operators are obliged to disclose certain information that allows to draw conclusions about energy poverty in Austria (also called "monitoring"). This particularly includes data on disabled connection rates due to default of payment, the number of pre-payment meters put to use as well as the number of household re-enablings following disabled connections due to default of payment. On top of that, further manifestations of energy poverty could be considered, for instance having received one or several reminders of past due energy bills due to default of payment, having been threatened with having one's power supply cut off, having arranged for payment in instalments with utilities or having invoked the right to universal service or supply of last resort.

Following this approach, further indicators of energy deprivation could be introduced to measure such circumstances in households over a certain period of time. However, there is a risk that they will only show the tip of the iceberg because many households manage to pay their energy bills despite financial difficulties. The following deliberations may still be useful as they examine energy poverty in its entirety, multidimensionality and complexity:

- Has a household received payment reminders from utilities for failure to pay bills?
- Has the household been threatened with having its power supply cut off or was this threat actually followed through?
- Has payment in instalments been arranged with the energy utility?
- Has a pre-payment meter been installed?
- Has the household ever invoked the right to universal service?

5.3 INDICATORS OF "ENERGY DEPRIVATION": SUBJECTIVE INDICATORS

At European level, at least two major international surveys use subjective indicators that are associated with energy poverty. EU-SILC in particular has already been mentioned as the source of statistical data that are frequently used in the Austrian debate on energy poverty to quantify the extent of this phenomenon. Other than that, the EQLS (European Quality of Life Survey) also includes an indicator that enquires as to what extent private households have sufficient financial means to afford to keep their flats or houses adequately warm.

In the course of the survey on severe material or financial deprivation in Austrian households, EU-SILC enquires as to *whether a household can afford to keep the entire home adequately warm*. The question itself is integrated in a row of similar questions concerning the affordability of a week's holiday away from home per year, eating fish, meat or a comparable vegetarian meal every second day, buying new clothes when required and inviting friends or family over for a meal.[9] In EQLS, the problems are rather similar to the ones presented in EU-SILC.

A comprehensive measurement of the subjective components of energy poverty would, however, allow for extended questions. A single indicator can never describe a social phenomenon, particularly one as complex as energy poverty, in all its facets. This is why it makes sense to ask several questions on this topic. We therefore suggest including the affordability of energy, the energy efficiency of a household's occupied rooms and the energy-relevant behaviours of household members as indicators:

1) AFFORDABILITY OF ENERGY

Combined with the financial situation of a household, the perceptions of household members may give some indication of whether they are able to meet existing needs. In this respect, the EU-SILC/EQLS indicators provide valuable information about the financial affordability of an adequately warm home, although this should be complemented by further aspects considering the complexity of energy poverty. Such a multidimensional subjective method to measure "energy deprivation" could ascertain whether households worry about being able to pay their energy bills or failed to pay them or, for instance, whether they switched off the heating to save money for food ("heat or eat" phenomenon).

2) ENERGY (IN)EFFICIENCY IN OCCUPIED ROOMS

One of the most frequently mentioned causes of energy poverty are energy inefficient rooms or appliances. Leaky windows, doors and roofs, poorly insulated outer walls, old and badly maintained heating systems and household appliances, little daylight, draughts and the like can lead to an increased consumption of energy – and thus to increased energy costs. It is therefore advisable to also consider the housing condition and household appliances when trying to grasp energy poverty. Questions relevant in this respect could clarify to what extent a household is living under such energy inefficient conditions.

3) ENERGY CONSUMPTION

The way energy is used can also lead to an unnecessary increase in energy costs. Especially low-income households could reduce their energy expenses by improving their way of using energy. Optimising energy consumption at least promises (slight) financial relief. In particular, indicators of energy use are to reveal whether a certain behaviour can be associated with energy poverty. Surveys could include questions such as whether freezers are defrosted, laundry or dishes are washed at low temperatures, small electric devices (e.g. water boilers) are used or how rooms are aired and heated.

6. OUTLOOK

Precisely because there are already international definitions of energy poverty, finding a definition for the Austrian debate represents an cornerstone in the fight against energy poverty. It is time to live up to the complexity of the phenomenon and capture the many facets of energy poverty – for this, the EU data do not suffice, especially since they are increasingly used in a rather doubtful way in media coverage.

As our deliberations have shown, taking into account a combination of low household income and high energy expenses can unveil the various causes of energy poverty. While high relative energy expenses do reflect the financial strain that low-income households experience in covering their basic needs, we can only speak of energy poverty if above-average energy consumption and, by extension, high energy bills arise. The threshold of above-average energy costs should ultimately be based on the deliberations about the at-risk-of-poverty threshold.

Combined with the proposed multidimensional measurement approach, the definition of energy poverty will enable informed discussions about adequate and cost-effective social and energy policies. This advance by E-Control is also highly approved by the four research and statistics experts who commented on a previous version of this paper. In the near future, E-Control will therefore conduct a quantitative pilot study to better investigate energy poverty with the help of both existing and newly developed indicators. This way, targeted measures in the fight against energy poverty can be developed.

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APPENDIX A: RESULTS OF THE HOUSEHOLD BUDGET SURVEY 2009/2010

The data gathered in the Household Budget Survey 2009/2010 provide a first impression of the extent of energy poverty in Austria according to the definitions presented here. Table A1 shows the results concerning the risk of energy poverty due to a large burden through energy costs, and energy poverty in Austria, calculated based on

- the British definition (A), according to which a household is considered fuel poor if its energy expenses exceed 10% of its income;
- the at-risk-of-poverty threshold based on the equivalised income *without taking into account* housing expenses (B) and
- the at-risk-of-poverty threshold based on the income has been equivalised *taking into account* housing expenses (C), wherein the extent of risk of energy poverty or energy poverty itself is illustrated by various thresholds.

Table A1 Extent of risk of energy poverty due to a large burden through energy costs, and extent of energy poverty in Austria. Results of the Household Budget Survey 2009/2010.

			Households			
			Risk of energy poverty (due to a large burden through energy costs)		**Energy poverty**	
	At-risk-of-poverty threshold	**Thresholds for energy expenses**	**%**	**n**	**%**	**n**
A	Random (UK definition)	10% income			8.67	312,714
B	60% median income or below (***WITHOUT*** taking into account housing expenses)					
		Median	10.49	378,316	4.16	149,982
		140%	8.48	305,784	1.48	53,377
		167%	6.58	237,297	0.71	25,453
C	60% median income or below (taking into account housing expenses)					
		Median	13.94	502,636	6.29	226,616
		140%	10.63	383,115	**2.62**	**94,294**
		167%	8.28	298,536	**1.43**	**51,442**

Notes: reference values = median income: € 1,847; median income (income minus housing expenses): € 1,535; median energy expenses: € 81; median energy expenses (% of the income): 4.45%.
Source: Household Budget Survey 2009/2010; own calculations based on weighted data. All amounts are equivalised to account for different household sizes.

END NOTES

[1] Income equivalisation takes into account the different levels of purchasing power that households of various sizes and composition hold. It is based on the idea that large households require a higher income to maintain a certain standard of living, but it also takes into consideration the cost-saving effects in multi-person households (economies of scale). Equivalisation is used (by reference to the EU scale) to calculate a weighted per capita income, which allows for a comparison of various household incomes.

[2] *Financial deprivation*, an Austrian concept, occurs when a household can no longer afford two or more of the following things for financial reasons: 1) to keep the home adequately warm; 2) to settle regular payments of the past 12 months on time (rent, service charges, loan repayments, utilities, water, sewage and refuse removal fees, other due repayments); 3) to make necessary visits to the doctor or dentist; 4) to pay unexpected expenses of up to € 950 (e.g. for repairs; this amount is equivalent to the rounded monthly at-risk-of-poverty threshold in EU-SILC 2008); 5) to buy new clothes; 6) to eat meat, fish (or a comparable vegetarian meal) every second day; 7) to invite friends or family over for a meal once a month.

On top of that, 793,000 people (9.5%) are considered *materially deprived* and 325,000 people (3.9%) *severely materially deprived*. Both are EU definitions. We speak of *material deprivation* when a household cannot afford at least three of the following things for financial reasons. *Severe material deprivation* applies when a household cannot afford four or more of these things: 1) to settle regular payments of the past 12 months on time (rent, service charges, loan repayments, utilities, water, sewage and refuse removal fees, other due repayments); 2) to pay unexpected expenses of up to € 950; 3) to keep the home adequately warm; 4) to eat meat, fish (or a comparable vegetarian meal) every second day; 5) a week's annual holiday away from home; 6) a car; 7) a washing machine; 8) a colour television; and 9) a telephone or mobile phone.

[3] For results based on the deciles of equivalised disposable income, see http://www.statistik.at/web_de/static/monatliche_aequivalenzausgaben_nach_dezilen_der_aequivalenzeinkommen_060530.pdf (in German).

[4] *Households with low consumption expenditures* spend proportionately more on energy on average. The households with the 10% lowest monthly household expenditures (average expenses of € 860) spend an average € 83 (9.7%) on energy. Households of the second household expenditure decile (average expenses of € 1,290/month) spend € 99 (7.7%) on energy. The 10% of the households most willing to spend money (average expenses of € 6,850/month) spend € 185 (2.7%) on energy.

[5] The tools used for collecting the required data are the *English House Condition Survey (EHCS)* for England, the *Scottish House Condition Survey (SHCS)* for Scotland, the *Living in Wales* survey for Wales and the *Interim House Condition Survey* for Northern Ireland. These are, for one thing, representative surveys of households in the respective countries of the United Kingdom. For another thing, these surveys are complemented by technical inspections of the occupied rooms in the surveyed households to ascertain the required information for a state-of-the-art calculation of required energy costs.

[6] The council tax is a type of administrative fee charged per household. It also includes elements that are considered service charges in Austria, e.g. fees for sewage and refuse removal.

[7] The Hartz IV standard rate designates approx. 6%, or € 24 out of € 374 (as of 2012), for energy (electricity) costs. What is more, the housing cost rates of the German *Grundsicherung* (basic security benefits) specify approximate sums between € 62 and € 90 for heating costs in single-person households, depending on the source of energy and the floor area (for this evaluation, housing costs in Berlin-Brandenburg were used as reference). All in all, a percentage of about 11 to 14% (€ 86 – € 114) can be calculated if the Hartz IV standard rate of about € 374 and the benefits of the (actual and as far as reasonable) housing cost rates between approx. € 380 and € 410 are added together (€ 754 – € 784). Applying the share of approx. 25% of heating costs in gross rent excluding heating costs from the German Hartz IV regulations to Austria, where 25% of the needs-based minimum guaranteed income is thought for housing expenses, this would translate into about 7% of € 794.91 (the 2013 rate of the minimum guaranteed income) or € 56 that are set aside for heating costs. If the Hartz IV percentage for energy costs were considered on top, this would make for an additional € 41 accounted for by energy. In total, this would amount to energy expenses of approx. € 97, or 12% of the Austrian needs-based minimum guaranteed income. Based on the UK Minimum Income Standards, the relative energy expenses for minimum incomes would be slightly lower.

[8] A comparison of average consumption data of Austrian households of different sizes shows that the same factors can be used for equivalisation. In Austria, a single-person household in a 50-m^2 flat (adequate according to established criteria) consumes approx. 8,900 kWh of electricity and gas per year, a 2-person household (70 m^2) consumes about 12,900 kWh (or 1.5 times as much as a single-person household), a 3-person household (85 m^2) consumes approx. 16,100 kWh (1.8), a 4-person household (100 m^2) consumes 18,700 kWh (2.1) and a

5-person household (115 m^2) consumes about 21,300 kWh (2.4) on average. The factors for adjusting consumption to household size thus correspond exactly to those used in the EU equivalisation scale of incomes: 0.5 for a second adult and 0.3 for any other household members, especially children.

[9] The questions are: Can you afford A) to pay for a week's annual holiday away from home if you have to pay for accommodation? B) a meal with meat, chicken or fish (or a comparable vegetarian meal) every second day? C) to buy new clothes if needed? D) *to keep your home adequately warm?* E) to invite friends or family over for a meal at least once a month?