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A View from the North: Gender and Energy Poverty in the European Union

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Energy poverty in the EU has a gender face; more women than men are struggling to afford the energy services which they need. The structural causes of energy poverty between European countries vary as well as the policies to address access to energy services. A metric approach dominates attempts to define and measure energy poverty which overlooks social characteristics within and between households.

While the existing data are limited, this chapter shows that there are clear gender differences, linked to other social characteristics, in the causes of energy poverty and the derived outcomes. This chapter shows that while economic factors are a contributor to energy poverty there are also biological/physiological and socio-cultural factors which are more difficult to capture quantitatively. When tracking policy initiatives to address energy poverty, arguments are presented for including an indicator which reflects the gender dimension of energy poverty and the intersectionality of this issue.

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Introduction

Energy poverty is a recognised issue in the Global South, but is a less well-known issue in the Global North.[1] It is easy to assume that the figures cited by the United Nations (UN) of three billion people living in energy poverty, without access to electricity or cooking on biomass, relate to people living in the Global South. It therefore comes as a surprise to many people in Europe, including politicians, to find that some of these three billion energy poor are actually living in Europe. Within Europe, a significant part of the political discussion in the energy sector is dominated by two interlinked themes: energy security and climate change which has led to focusing on policies to promote the transition to more sustainable energy systems. However emerging revelations[2] about energy poverty as a lived reality within Europe is causing a re-evaluation of energy policies, also in line with the UN's Sustainable Development Goals (SDGs) and Sustainable Energy for All (SEforAll).

A sign that energy poverty has been recognised by policy makers within the European Union (EU) can be seen in the vocabulary of the EU institutions when preparing for the Third Energy Package of 2009 (Bouzarovski et al. 2012). Indeed, between 2009 and 2018, a number of pieces of legislation designed to address energy poverty were enacted by the European Parliament (see Table 8.1). The link with gender came in December 2016 when the European Parliament, having acknowledged the existence of vulnerable consumers in energy poverty, adopted a resolution on access to energy which called for the EU to include a gender dimension in all its energy policies. This is in line with the EU's gender policies which require social inclusion for all European citizens in all EU

[1] The Global South and Global North are concepts not used in a strict geographic sense but in a political economy sense of large disparities in wealth and political instability. There are pockets of the Global North in the South and *vice versa*. A universal definition is elusive, evolving and contested (for an overview see Clarke 2018). The origin of the concepts is in the Brandt Report (Brandt 1980) which made the link with countries emerging from colonialism and their economic situation although for many their economies have changed significantly over the last 30 years. In this chapter, the intention is to use the term in a descriptive way. The Global North can be taken to include United States, Canada, Europe (i.e. EU and non-EU), Israel, Japan, Singapore, South Korea, Taiwan, Australia and New Zealand.

[2] See for example Bouzarovski et al. (2012).

Table 8.1 Overview of EU legislation relevant to addressing energy poverty

Energy poverty in EU legislation
7/2009: Third Energy Package: develop definitions, elaborate action plans and strategies to tackle energy poverty protect vulnerable customers
11/2010: EC: call on MS to replace direct subsidies for high energy bills with a support for improving the energy quality of the buildings
EU Cohesion Policy 2014–2020: innovation, low-carbon economy, social inclusion
11/2016: regulation on the Governance of the Energy Union: meeting the 2030 energy and climate targets
Internal Market in Electricity Directive
05/2018: Energy Performance of Buildings Directive: 2050 decarbonisation objective for EU buildings
06/2018: Energy Efficiency Directive: article 7 more explicit requirements to tackle domestic energy poverty in the annual savings objectives and Governance Regulation by mandatory monitoring of domestic energy poverty in the Nation Energy and Climate Plans
Renewable Energy Directive: new rights for communities to set up local energy projects and to facilitate participation by households in energy poverty
12/2018: Clean Energy for All Europeans Package

legislation and policy implementation. The gender link was further strengthened in December 2018, when the Parliament adopted the package 'Clean Energy for All Europeans' in accordance with the EU's commitment to the SDGs and SEforAll. The SDGs are intended to be mutually reinforcing. Therefore, based on the recognised gender dimension of energy poverty (see e.g. Clancy et al. 2003; Sovacool 2012; Pachauri and Rao 2013), an initiative on energy poverty (SDG7) would be expected to include a gender dimension (SGD5).

This chapter is based on a commissioned study for the EU Parliament FEMM Committee (Clancy et al. 2017). The study explores the existing situation within the EU with respect to the way energy poverty is experienced by women and men. The aim of the study was to provide recommendations on appropriate policy measures to address energy poverty

and to relieve the burden on vulnerable consumers in the European Union struggling to afford the energy services[3] they need.

The objectives of this chapter are to: (i) explain the drivers, causes and effects of energy poverty within the EU; (ii) provide insights into the gender dimension of energy poverty within the EU; (iii) demonstrate an analytical approach that shows energy poverty has not only a gender dimension but is multi-dimensional over a range of social characteristics.

The chapter is structured as follows: after a brief description of the methodology used in the study for the FEMM Committee, there is an overview of how energy poverty is conceptualised as a basis of policy making. We then look at current understanding of the gendered nature of energy poverty in the European Union with a suggested analytical approach. The concluding section summarises the main insights and reflects on the theoretical, methodological and practical contribution of this chapter to the existing body of knowledge on energy poverty.

Methodology

The data gathering methodology used in the research, which forms the basis of this chapter, was a mix of literature review, desk review of policy documents (from both EU and national levels) combined with mapping the selected case study countries to identify positive examples of addressing issues related to gender and energy poverty. The seven EU Member States (Bulgaria, France, Italy, the Netherlands, Spain, Sweden and the UK) were selected as case studies to identify existing initiatives on eradicating energy poverty and improving gender equal access to energy services. The seven have different political backgrounds and institutional differences which are reflected in differences in legislation and policy measurements to eradicate energy poverty and to change energy policy to

[3] There is no universally agreed definition of the concept of an energy service. Based on a systematic review of the literature, Fell proposed the following: *energy services are those functions performed using energy which are means to obtain or facilitate desired end services or states* (Fell 2017: 137). An example of a desired end service is 'heating' with the desired state 'to be warm'. This is the definition we use.

reflect social realities. The geographical spread of the case study countries reflects the different climate conditions in the EU which can be divided into three distinct groups: relatively mild sea climate without severe winters or extremely hot summers (France, the Netherlands and the UK), cold winters and hot summers (Bulgaria) and mild winters and hot summers (Italy and Spain). The findings from the first phase of the research were combined with the insights from interviews conducted at the end of 2017 with 25 key informants representing a mix of academics, decision-makers, policy makers and stakeholders. A small number of experts from the European Institute of Gender Equality (EIGE)[4] also contributed to the data gathering.

We consider gender to be a social construct of a system of 'defined roles, privileges, attributes and relationships between men and women which are learned and not biologically determined' (Khamati-Njenga and Clancy 2002). Gender relations are a dynamic concept depending on time, place and context. Hence, we consider that the gender dimensions of energy poverty will vary across social, cultural, economic and political contexts. We recognise that women and men do not belong to two homogeneous groups—they vary across a range of social categories (e.g. age, class, ethnicity, social status, marital status, economic group and sexual identity) and are influenced by personal and contextual factors in choices they make. These differences exist not only between the two groups, but also within them, and so they may require specific targeted forms of action rather than generic policy instruments. Nevertheless, we are rather constrained by the available data to discuss gender differences in energy poverty other than mainly in terms of 'women and men' rather than a more nuanced analysis.

[4] The EIGE is an autonomous body of the European Union, established to contribute to and strengthen the promotion of gender equality, including gender mainstreaming in all EU policies and the resulting national policies, and the fight against discrimination based on sex, as well as to raise EU citizens' awareness of gender equality. http://eige.europa.eu/about-eige (accessed 1 May 2019).

Defining Energy Poverty

Although energy poverty exists in all EU countries, there is, as yet, no EU-wide accepted definition of energy poverty[5]. Developing a pan-European definition of energy poverty would form part of the standard policy making processes in the European Union in which an European standard will be formulated by the European Parliament. Once the standard is formulated, responsibility for its implementation passes to the National Governments of the EU Member States.[6]

A definition of energy policy is an important step in the planning process to enable policy makers to develop indicators and metrics in order to establish baselines and measure progress towards reaching the set policy objectives.

In research and policy documents, a range of definitions of energy poverty are used. However, two broad categories can be identified in which their focus is on either (1) households that spend a high share of their income on energy; or (2) households that have insufficient expenditure in energy.[7]

Table 8.2 gives an overview of the energy poverty policies in seven EU Member States which formed the case studies in the research conducted by Clancy et al. (2017). At the time of the study, two countries (the Netherlands and Sweden) had no energy poverty policy, while Italy and Spain were in the process of drafting one.

Analysing national energy poverty definitions at the Member State level, three categories of approaches measuring energy poverty can be identified. (i) A *metric approach,* in which deprivation is linked to energy prices, is the most commonly used approach (Pye and Dobbins 2015).

[5] Indeed, there is no agreed use of terminology, with some documents using the term 'fuel poverty' rather than 'energy poverty'.

[6] The formulation of policy at the central level, to be further developed at the national level is the principle of subsidiarity which is the basis for the relationship between the European Parliament and the Member States. The principle of subsidiarity makes the European Parliament reluctant to interfere with Member States decision making.

[7] Indeed, the formulation using 'high' or 'insufficient' are also problematic since these terms are pejorative.

Table 8.2 Overview of the energy poverty policies in seven EU Member States

	Bulgaria	France	Italy	Netherlands	Spain	Sweden	UK
Population (2016) (World Bank 2016)	7,127,820	66,896,110	60,600,590	17,018,410	46,433,960	9,903,120	65,637,240
GDP per capita (in Local Currency Units) (World Bank 2016)	11,751	31,722	25,866	39,346	23,746	405,921	26,925
EU member	2007	1958	1958	1958	1986	1995	1973
Gender income gap (%, EIGE 2017)	79.5	92.3	84.6	95.4	81.2	93.1	85.6
Gender and Energy policy conditions							
Non discrimination and equality legislation	++	++	++	++	++	++	++
Institutional cooperation on energy poverty	++	++	+	-	++	nd	++
Energy poverty relief budget	+	++*	+	+	++*	++	++
Energy poverty policy							
Energy poverty definition	++	++	+	-	+	-	++
Energy poverty indicators used							
Vulnerable consumers	++	+	++	+	++	++	+
Energy expenditure gap	+	++	++	++	++	++	++
Housing quality	nd	+	+	-	nd	++	++
Energy poverty data	++	++	+	++	++	++	++
Energy poverty policy measures							
Financial relief energy costs	+	+	+	+	+	+	++
Energy consumer protection	+	+	+	++	++	++	++
Energy efficiency programme	-	++	++	++	++	++	++
Monitoring energy poverty	+	++	++	-	++	nd	++

Legend:
+ limited reference to gender issues
++ more than one measure, or level of awareness with specific reference to gender issues
* gender-disaggregated data available
- no reference to gender issues and/or energy poverty
nd no data – not known
Source: Clancy et al. (2017: 55)

The UK[8] has a strong metric-driven approach, as can be seen in the official energy poverty definition of Wales stating that 'Fuel poverty is defined as having to spend more than 10% of income (including housing benefit) on all household fuel use to maintain a satisfactory heating regime. Where expenditure on all household fuel exceeds 20% of income, households are defined as being in severe fuel poverty' (Welsh Assembly Government 2010). (ii) A second approach is a *consensual* one, which makes use of self-reported experiences of people living in energy poverty. The French official energy poverty definition uses this approach. It states that energy poverty is the situation in which a person who encounters in his/her accommodation particular difficulties in having sufficient energy supply to satisfy his/her basic needs (ONPE 2016). (iii) A third approach is an *outcome-based* approach in which the consequences of energy poverty are the basis upon which to develop an energy poverty eradication policy, for example, that individuals or households are able to heat or cool their homes to a level of desired comfort.

A pan-EU map of energy affordability, based on energy expenditures shares, shows large variations across the EU which questions the appropriateness of a pan-EU fuel poverty metric (Deller 2016). Deller (2016) concludes that the best way that the European Commission can support policy synergy is by making available high-quality data on pan-EU energy affordability and collating robust impact assessments that identify effective policy interventions. As we describe below, this type of data is lacking.

To identify and to have a deeper understanding of the circumstances of the potential targeted population group of a policy, sufficient data on key indicators are necessary as an input for policy design. The current data available within the EU Member States on energy poverty are limited, not sex-disaggregated and tend to be quanitative. This creates difficulties in identifying target groups and the cause of their energy poverty. For example, Eurostat shares energy expenditure data that are only available at five years intervals with a focus on household averages (Eurostat

[8] Responsibility for energy poverty policy in the UK is devolved to the regional governments in Scotland, Wales and Northern Ireland. England has no devolved government, so energy policy falls under the Department for Business, Energy and Industrial Strategy.

2017). This time interval means a slow response to one of the major causes of energy poverty: energy price increases. Focusing on households is also problematic since what constitutes a household is contested. Households are fluid entities with a dynamic structure, varying in income, class, ethnicity and education (Bell et al. 2015). Divorce, where children are involved, creates families living across multiple households. Demographic changes in the EU have led to a strong increase in the number of registered single-headed households. For example, in the Netherlands, 37% of the households have only one member.[9]

Additional arguments to demonstrate the inadequacy of a metric definition to fully address energy poverty comes from the conceptual map of the drivers, causes and effects of energy poverty in the European Union developed by Trinomics (2016) (Fig. 8.1). The focus is the household energy system, consisting of energy service demand, energy use and expenditure, which is influenced by a range of variables. A household can afford

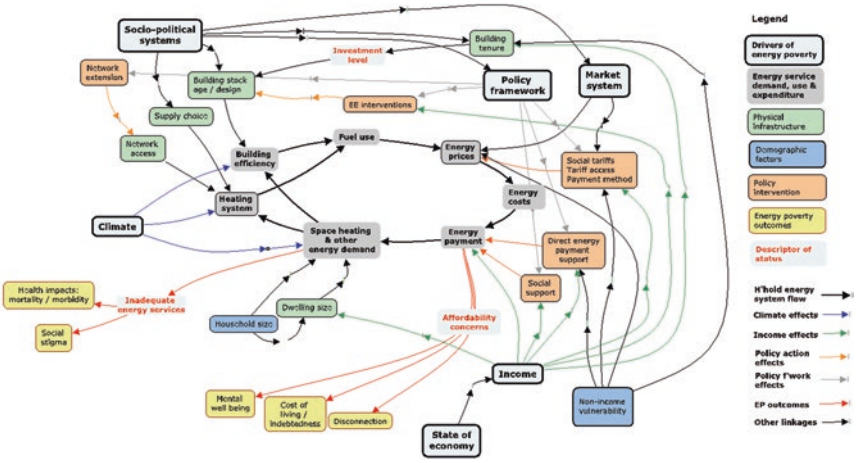

Fig. 8.1 Conceptual map of the drivers, causes and effects of energy poverty in the EU. (Source: Trinomics 2016)

[9] http://statline.cbs.nl/statweb/publication/?vw=t&dm=slnl&pa=37296ned&d1=0-2,8-13,19-21,25-35,52-56,68&d2=0,10,20,30,40,50,60,64-65&hd=151214-1132&hdr=g1&stb=t (accessed 23 May 2019).

a particular level of energy services depending on earned income as well as other factors such as expenditure priorities other than energy and any policy measures to support households identified as vulnerable to energy poverty (e.g. the UK's Winter Fuel Allowance (National Audit Office 2009)). How much a household spends on energy influences specific negative outcomes related to household finances (indebtedness, disconnection, etc.) and the levels of energy services enjoyed, which, if insufficient, can result in negative outcomes (e.g. hypothermia or heat stress).

Trinomics identified six main drivers of energy poverty: income; sociopolitical system; policy framework; climate; market system; and state of the economy. These drivers particularly influence the affordability of household energy services, such as heating and cooling, which can lead both directly and indirectly to energy poverty. The previous and current political and economic systems influence energy market development, institutional structures, heating and cooling infrastructure, housing stock and tenure and energy supply. The type of energy market, including the extent of liberalisation and level of competition, influences the range of energy service tariffs/products available and the type of measures for assisting with energy affordability. For example, the countries in Eastern Europe made the transition from a centrally planned economy with state owned utilities to a market based economy with privatised utilities which has been accompanied by significant increases in energy prices. The social support measures targeted at groups regarded as vulnerable to these price increases have had limited success (Bouzarovski et al. 2012). Also within countries with an established market economy, there have been significant price increases. For example, in the Netherlands, due to an increase of taxation on natural gas implemented in 2019, energy prices for Dutch households are estimated to increase by around 17% (Pricewise 2018). The ambient climatic conditions influence energy demand for heating and cooling, which in turn is influenced by the energy efficiency of the building. A building's physical structure, including construction materials, influence its energy efficiency and the cost of energy services. What people can afford to pay is directly affected by current economic performance for those in work and the past economic performance for retired people. Income level influences where a person or family can afford to live in terms of the type of house, both the physical structure and the

form of tenure (owner/tenant). To adequately address energy poverty would require embedding these factors, not all of which are easy to measure numerically, into the policy framework.

Trinomics classify the key factors influencing or causing energy poverty into three groups: (i) physical infrastructure (particularly the building stock); (ii) policies that determine the types of measures to support households in energy poverty; and (iii) socio-economic and demographic factors (such as retirement age, restricted mobility, rural communities, single parent households, etc.).

Trinomics (2016) identified four characteristics of indicators which would enable addressing energy poverty:

1. Support a definition of energy poverty that is broadly accepted across key stakeholders;
2. The ability to be updated over time without excessive effort or cost;
3. Provide comprehensive spatial coverage, at least at the Member State level but potentially with additional spatial granularity;
4. Allow for comparability of the indicator(s) across Member States and their effective implementation.

The one issue missing in this list, as with all of the EU countries' policies related to energy poverty, is gender. Nevertheless, an entry point for incorporating gender into the analysis is the concept of the vulnerable energy consumer which has been used both at the European Parliament level and within a number of Member States (e.g. UK and Bulgaria). Some states already recognise the differentiation in the social characteristics of vulnerable energy consumers. For example, for assessing people's vulnerability to energy poverty and entitlement to support, Bulgaria uses a number of social characteristics, such as age (70+), living alone, pension as sole income source, children with mobility issues.[10] To take this a step

[10]Translated from Bulgarian from the Ministry of Energy website (News) 'Министър Петкова: Задължително условие за успешно преминаване към пълна либерализация на електроенергийния пазар е защитата на уязвимите клиенти в България' (Minister Petkova: An essential requirement for successful transition to full liberalization of the energy market is the protection of vulnerable consumers in Bulgaria). https://www.me.government.bg/bg/news/minister-petkova-zadaljitelnouslovie-za-uspeshno-preminavane-kam-palna-liberalizaciya-na-elektroener-2264.html. (Accessed 23 May 2019).

further to incorporate a gender dimension into energy poverty interventions requires a level of awareness of the nature and extent of the issues. In the next section, we provide an overview of the current understanding of the gender issues of energy poverty within the European Union.

Gender Dimensions of Energy Poverty Within the European Union Member States

In this section, we present the existing data to show that there is a relationship between gender inequality and energy poverty. We consider that the link between energy poverty and capacity to pay energy bills should automatically draw attention to gender, since, within the EU, there is a distinct gender income gap at all stages in the life cycle. By implication, it would be expected to find more women living in energy poverty than men. Having good data is the basis of policy making—it helps set the agenda and prioritises target groups and interventions. Although the data on gender and energy poverty in the EU are limited, that which exist point not only to a gender dimension of energy poverty but also a more complex disaggregation of characteristics which reflect people's lived reality. For example, analysis of data from France, sampled in 2013, indicates that single parent families and people living alone (often in older age groups) are the types of households more likely to be living in energy poverty. Out of the 5.6 million households who reported themselves as being cold, the largest category (38%) was women-headed households with or without children. Further disaggregation of the data shows that 65% of this group were tenants of a private landlord. More than a third were retired or in a pre-retirement phase (ONPE 2016).

To present the data, we use the framework used by Clancy and her coworkers (Clancy et al. 2017) which proposed three categories for data analysis: economic, biological/physiological, and socio-cultural. The factors described are either causal or consequential. The factors can be linked both within and between the three categories. We consider that this presentation of the data assists not only in the framing of the policy responses but also helps identify where responsibilities to act lie which may not always be in the first instance within the energy sector.

Economic Perspective

As was pointed out above, the macro-economy has a direct effect on income which in turn affects the type of accommodation an individual or family can afford to live in, both in terms of tenure (owner-occupier or tenant) and the physical structure. The physical structure directly influences the energy efficiency of the dwelling in its response to the external climatic conditions creating heating or cooling demands. Creating a comfortable indoor ambient temperature will probably form the main part of a household's energy bills. How households respond to energy bills has specific outcomes in terms of energy poverty. For example, paying the energy bill can lead to indebtedness due to insufficient residual income to pay other bills, while failure to pay the energy bill can lead to disconnection. As we show below, energy poverty can also have negative health outcomes.

The economic factors influencing energy poverty, occur both at the micro- as well as the macro-level. At the macro-economic level, the past and current political economy influences the energy market, institutional structures, the housing stock quality as well as the balance between home ownership and renting. The housing stock quality will influence a building's energy efficiency. Measures a landlord takes towards maintenance of the building infrastructure, including any requirements for compliance with energy efficiency targets, will depend on national laws. Home owners capacity to finance energy efficiency investments will depend on their income as well as policies providing financial support. The type of energy market, including the extent of liberalisation and level of competition, influences the organisation of the energy supply and the range of energy service tariffs and energy efficient products available.

At the microeconomic level, household income is considered one of the most significant factors in determining whether or not a household will live in energy poverty. Here there is a distinct gender issue. Women with low incomes are disproportionately found as heads of households either as single parent families or, due to their greater longevity than men, living alone at pensionable age. The EU average for single female headed households is 18.4% with significant geographical differences: the

highest percentage is in the Nordic and Baltic Member States and the lowest in Ireland, Malta, Cyprus and Spain. Eurostat data show that in 2016, in the EU, 32.5% of households[11] were single-person households, with the elderly accounting for four out of every ten (Eurostat 2017). Interestingly, over the last few years, there has been an increase in the number of single male households (14.1% in 2016). A range of factors, such as higher divorce rates and ageing of the population, contribute to the increase in numbers of Europeans living alone.

One of the few quantitative studies providing insights into the links between household income, gender, age and energy poverty comes from Spain (Tirado Herrero et al. 2016). Under the age of 65, there is not a strong difference in energy expenditure between woman-headed and man-headed households. However, when retirement age of 65 is reached, woman-headed households relying solely on pensions spend from 10% to 15% of their annual income on energy which reflects an increase in their energy expenditure.

A gender income gap is found across all EU Member States which has changed little since 2003 (EIGE 2017). In 2014, the gender gap in earnings was an average of 20%. However, this increases significantly on retirement, when the gender pension gap is an average of 40%. As the next section shows, there are health issues related to ambient indoor temperature which are more significant for older women than men in the same age group, although they are less likely to be able to afford appropriate levels of heating or cooling which promote good health. A less well-recognised issue of energy poverty relates to where a person is born. For people living within the EU, being born outside the EU, means that the risk of living in poverty is more than twice as high as among people born within the EU. In 2015, in the UK, 16.4% of ethnic minority households were living in fuel poverty[12] compared to 10.4% of white households living in fuel poverty (EIGE 2017).

[11] Eurostat uses the term 'household' to mean a unit that has common arrangements to meet daily needs and pooling expenses in a shared residential space. This definition of a household excludes institutions such as prisons, military barracks, student accommodation, hospitals and residential care homes. https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Household_-_social_statistics. (accessed 13 August 2019).

[12] The UK official documents used the term fuel poverty rather than energy poverty.

Biological/Physiological Perspective

European climates create the need for space heating and cooling for significant parts of the year. The ambient temperature has an impact on human physiology and its functioning. Human beings can function, with varying degrees of efficiency, across a range of temperature due to the body's self-regulatory mechanisms. However, there comes a point where the self-regulatory functions find it difficult to respond when the ambient temperature is too low or too high and people experience cold or heat stress both of which have serious impacts on the body's physiological functioning. Age is found to be a significant factor in dealing with heat and cold stress, with young children and older people being particularly vulnerable (Chard and Walker 2016). In northern temperate climates, more people die, particularly from circulatory and respiratory diseases, in the winter months compared to the summer months, a phenomenon known as *excess winter mortality or excess winter death (EWD).*[13] Ambient temperature, particularly in cold energy inefficient homes, is recognised as a factor in EWD, although it is not the only cause of death (Boardman 2010). There is a link between EWD and Alzheimer's disease and dementia since an aspect of these conditions can be lack of attention to self-care which could include regulating ambient temperature.

The energy poverty conceptual map by Trinomics indicates that a building's physical structure (materials and spatial design) have an influence on energy poverty and its outcomes. Certainly, with EWD there is a clear link. The highest EWD levels are found in the countries with the poorest quality housing stock (Portugal, Greece, Ireland and UK) (Healy 2004). The data for the EU show that more women heads of household live in older, less energy efficient homes (Elnakat and Gomez 2015). The age of these buildings is also significant in terms of levels of energy efficiency. Pre-1970s homes are likely to be made of building material with poor thermal efficiency. In England and Wales, in 2015/2016, the gender distribution of the excess winter deaths was 47% men (11,400 EWDs)

[13] The concept has its origins in the UK in which the government compares the number of deaths that occurred in the winter period (defined as December to March) with the average number of deaths occurring in the preceding August to November and the following April to July (Office of National Statistics 2014).

and 53% women (12,900 EWDs). The explanation for this gender difference is in part due to age. In England and Wales, 65% of the population aged 85 and above is female. Another factor is women's greater sensitive to ambient temperature than men's. Insufficient levels of heating can produce other conditions such as damp or mold which have negative effects on people with existing health conditions and restricted mobility (Snell et al. 2015).

Deaths related to heat waves also exhibit age and gender differences. For example, in France, between 1 and 20 August 2003, when day time temperatures in many parts of the country reached 40^0C, 15,000 excess deaths were reported (Fouillet et al. 2006). Excess mortality is found to increase at 35 years of age. Although it is only at age 45 that a gender difference becomes more pronounced, at which point the number of excess deaths is 15% higher for women than men of comparable age. Self-reporting data for the eight EU states bordering the Mediterranean show that 30% of the population are unable to keep their homes adequately cool in summer. Of this group, 70% are above 65 years of age (Bouzarovski and Tirado Herrero 2014).

Socio-Cultural Perspective

Many of the household care tasks, such as cooking, washing clothes and cleaning, are energy intensive. The gender division of labour across the EU Member States is similar to elsewhere in the world, women bear the burden of care work (80% of women are involved daily in unpaid household work compared with only 45% of men) (Brodolini 2011). While many of these tasks are mechanised, the outcome is not necessarily women spending less time on household tasks. For example, washing machines have not reduced women's time spent on laundry. Increased disposable income can result in family members owning more clothes with higher social standards of cleanliness requiring more frequent garment washing.

Another aspect of gendered care work and energy use relates to providing the household's meals. In the EU in 2016, 79% of women cooked and/or did housework on a daily basis, compared with 34% of men

(Eurostat 2018). A health issue relates to the energy source used. There is evidence to show that throughout the EU, particularly in Eastern Europe, wood can be the energy source for cooking (Bouzarovski 2009). The concern here relates to the significant body of epidemiological evidence related to the health impacts of exposure to household air pollution (HAP) from burning wood inefficiently. Prolonged exposure to HAP is linked to a range of medical conditions including cardiovascular disease, eye diseases including cataracts and blindness, asthma, nasopharyngeal and lung cancers, low birth-weights and perinatal mortality (World Bank 2012). Although the data are primarily from the South, it is not unreasonable to assume that these findings would be universally applicable. The evidence indicates that, if using wood as a fuel, women's health, because of their role in the household as cooks, are more likely to be affected than men. However, men can be affected by HAP if they spend time, for example as part of family socialisation, in a smoky kitchen or in households which use wood fuel for space heating. Men's health can be seriously impacted if they have underlying health conditions particularly linked to smoking tobacco.

Household energy use within the EU shows gender differences which cut across age and socio-economic status. In Germany, elderly women tend to consume less energy than younger women (EPSECC 1997). Researchers offer a number of behavioural and socialisation patterns to explain this observation (Preisendoerfer 1999). Women of pensionable age change their behaviour patterns, for example, they cook less frequently. Many of these women grew up in a time of austerity when coping strategies might have been frugality, which remerge if they find themselves in later life with constrained finances. Younger women have grown up with a greater familiarity with technologies than older women, so using new pieces of energy efficient equipment, such as a microwave oven, is less daunting. In Sweden and in the UK, households with an older demographics own a small number of pieces of equipment compared to younger households. The former are more inclined than the latter to switch off appliances when not in use (Carlsson-Kanyama and Linden 2007).

The gender differences in energy consumption are also linked to household composition. Single-woman households in Germany, Norway,

Greece and Sweden have a lower level of direct and indirect electricity consumption compared to single-man households which is attributed to differences in the level of appliance ownership (Räty and Carlsson-Kanyamaa 2010). However, in households with more than one family member, the reverse is found; woman-headed households consume more energy than man-headed households. The explanation links to a factor pointed out earlier—the type of buildings inhabited: woman-headed households are more likely than man-headed households to be living in pre-1970s homes, which are considered less energy efficient (Elnakat and Gomez 2015). In households of similar demographic composition and living in buildings of similar construction, behaviour is considered an important factor in explaining variations in electricity consumption (Bell et al. 2015).

Household composition also influences energy demand, in terms of quantity and the energy services required. Research in the Netherlands found that energy use per capita was more with a working female partner than when the female partner did not work or was a working woman living alone (Broek et al. 1997). Time at home also influences energy use for unemployed or retired people since both groups tend to spend more time at home.

The energy poor are found statistically more likely, than those people not living in energy poverty, to report poor health and emotional well-being (Thomson et al. 2017). Research by Snell et al. (2015) finds people living in energy poverty with a range of mental health issues such as anxiety, stress and depression which are associated with living in poor housing conditions, heating needs, balancing bills, and debt. Anecdotal evidence from the energy poor shows feelings of isolation and loneliness, due to the shame of not being able to invite people to visit because of the uncomfortable ambient temperatures in their homes.[14]

In households with a range of age groups there can be intergenerational tensions. Older household members consider that younger members use energy services (such as hot water for showers and electricity for computer use) without regard for their levels of energy consumption. Research in Greece (Petrova 2017), Sweden (Carlsson-Kanyama and

[14] http://www.coldathome.today/ (accessed 13 August 2019).

Linden 2007) and Germany (Roehr 2001) finds that women are responsible for energy management in the household. If a coping strategy is to reduce energy consumption, it is possible that women will bear the brunt of any resentment at measures to reduce equipment use. A gender issue arises when determining the setting the thermostat, given women's greater sensitivity to ambient temperature than men's.

Coping strategies towards energy poverty or its avoidance (e.g. through energy management) show variations between genders and across social categories. In the Netherlands, motivation to invest in energy efficiency for men was based on environmental reasons, reducing energy wastage and cost-saving. Whereas women were motivated to improve comfort of their homes and to become more independent of utility companies (Tjalma 2016). Women were considered to be more likely than men to respond to social pressure to adopt energy efficiency measures (Straver et al. 2017).

Whether or not you own your own home has an influence on your capacity to act to avoid energy poverty. In the UK, owner-occupiers were strongly motivated to invest in energy efficiency when it increased the value of their property (Sunikka-Blank et al. 2018). However, social tenants had no control over investments to improve the energy efficiency of their homes. The data from France cited above give an indication that the majority of social tenants living in energy poverty were women.

Conclusion and Reflections

With one out of seven European households struggling to pay their monthly energy bill, it can be concluded that energy poverty in the European Union Member States is an existing problem and an emerging concern for policy makers. There are signs at the level of the European Parliament and in some Member States, that there is a growing awareness of the social dimension of energy poverty with a focus on the protection of vulnerable energy consumers. However, recognising that these consumers are not a homogeneous group is taking time to emerge, in particular that there are gender-related issues within the group of vulnerable consumers influencing the access to clean and affordable energy services.

Indeed, the language of the policy documents related to energy poverty tends to be gender neutral, for example, 'consumer'. The outcome is a lack of understanding that the causes of energy poverty can be different for women and men. This understanding is needed to ensure that the correct policy initiatives are put in place to ensure that all vulnerable women and men energy consumers are removed from energy poverty. Commitment to the SDGs is not leading to a more integrated approach to improved outcomes for all citizens.

The first step to greater awareness by policy makers of a societal issue is to have data on the nature and the scale of the problem. The unfamiliarity with the gender dimension of energy poverty is partly caused by the lack of sex-disaggregated data that move beyond the household as the entity of analysis. Eurostat, the main source of data for EU policy makers, does not collect sex-disaggregated data across the European Union on the gender dimension of energy poverty. Good data are the basis of policy making; data allow the setting of goals, establish baselines for monitoring and enable comparison of policies and tracking progress of implementation. In this chapter, we have shown that sex-disaggregation of data is only the first step in the analysis of energy poverty. Gender combines with other social characteristics, such as age, to create a typology of energy users at the household level for whom the causes of energy poverty and their responses vary—both between and within households. To aid in increasing the awareness of policy makers, we recommend to add a fifth characteristic to Trinomics' list of characteristics of indicators to measure energy poverty: reflect the gender dimension of energy poverty and the intersectionality of this issue.

Even though the data on energy poverty in the EU are limited and even more so in respect of gender, this chapter has shown that there is clearly a gender dimension. The EIGE Index (EIGE 2017) has shown that the gender gap that persists across all thematic policy fields, in all EU Member States, is intersectional. Based on the existing data, Fig. 8.2 indicates the particular aspects of the drivers and causes of energy poverty which have a distinct gender dimension. We accept that there could be more aspects which may emerge when more comprehensive sex-disaggregated data, presented intersectionally, are available.

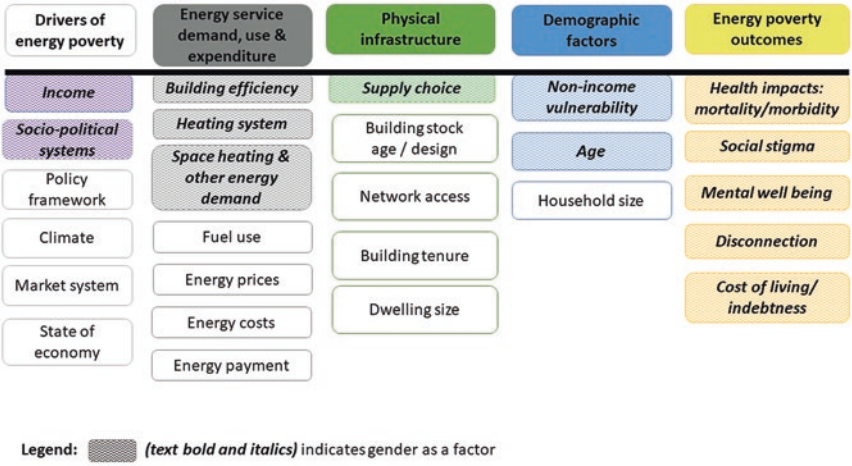

Fig. 8.2 Gender gaps operating in the drivers, causes and effects of energy poverty. (Source: Clancy et al. 2017 (adapted from Trinomics 2016))

What Fig. 8.2 does not show are how the effects of energy poverty are influenced by economic, physiological and socio-cultural factors which also need to be taken into the analysis. As shown in the section on the gender dimensions of energy poverty in the EU Member States, all these three dimensions influence the experience of energy poverty between men and women and the impact energy poverty has on everyday lives. We recommend the use of the framework developed by Clancy et al. (2017) for the formulation of indicators and framing of the policy responses which helps identify where responsibilities to act lie. This framework shows that the energy sector is not always the sole actor responsible for addressing the causes of energy poverty which has a range of drivers, causes and effects with complex, cross-sectoral interlinkages. For example, energy poverty can be the result of poor quality housing with inappropriate insulation and low incomes which would require actions from the housing sector and economic policy.

Further research is needed to create a deeper understanding of the gender dimensions of energy poverty. Existing policy measures aiming at elevating vulnerable consumers out of energy poverty are too generic and do not reflect the gendered differences. The current emphasis of European

energy policy on climate change mitigation by stimulating increased energy efficiency and the energy transition to cleaner energy sources is lacking a demand-driven approach which reflects addressing the social inequalities of energy consumers. The energy policy transition from a supply-oriented towards a demand-driven approach requires a more holistic understanding about energy consumers, moving beyond a model, as the basis for policy making, of the household as a homogenous entity with only household income as a variable to influence energy poverty. Adding gender analysis to the existing theoretical frameworks used by energy policy researchers will enlarge the knowledge base on the gender and energy nexus. Furthermore, adding the gender component to the existing methods to measure energy poverty will increase the availability of sex-disaggregated data giving greater insight into the gender face of energy poverty. As a contribution to a more holistic understanding of the social dimensions of energy poverty we recommend the use of indicators that include a gender dimension, linked with other social characteristics.

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