Christoph Strünck

Fighting Energy Poverty in Europe – Responses, Instruments, Successes

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FOREWORD

The energy prices paid by European consumers have been rising in real terms for years. The average German household's electricity bill roughly doubled between 2000 and 2015. Today the domestic electricity price in Germany is almost 50 per cent above the EU average. The cost of energy for heating and transport has also risen, with the price of gas increasing by about 80 per cent since 2000. According to the European Commission, energy prices have been outstripping inflation in most member states. These high and rising energy costs frequently create financial distress for consumers, especially in low-income households.

In contrast to many other commodities, it is impossible to simply turn one's back on the energy market; energy is indispensable. "Vulnerable consumers", especially those on low incomes and mired in debt, are therefore squeezed especially hard by rising energy prices. Energy is vital for social participation and quality of life, but customers who fall into arrears often simply have their electricity and/or gas cut off. According to the German regulator the Federal Network Agency (Bundesnetzagentur), about 350,000 households in Germany had their electricity disconnected in 2014.

There is a lack of clarity concerning precisely who is affected, what the impacts are and which solutions might be effective (Germany and Europe do not even share a generally accepted definition of "energy poverty"). What does seem clear is that potential solutions will be located at the intersection of energy policy, social policy and consumer policy, because the causes lie not solely in rising energy prices, but also in a string of other factors: stagnant or falling incomes, precarious employment, inadequate pensions and social benefits, rising rents, legislation (for example on basic provision) and to some extent also poor energy standards in the housing stock.

The German government has discussed the problem of energy poverty, which is mentioned in its coalition agreement of 2013. The need to protect vulnerable consumers from energy poverty is also regularly expressed at the European level, most recently in the context of the strategy to create a European energy union. However, individual EU member states have yet to develop a collective strategy for tackling the problems.

In the present study, the Friedrich-Ebert-Stiftung seeks to provide an overview of the topic of "energy poverty" and outline the policy approaches adopted by various EU member states. From the analysis of the instruments used in various European countries, conclusions are drawn concerning the situation in Germany and how its energy poverty problems might be tackled more effectively.

We hope you find reading this paper informative.

DR. ROBERT PHILIPPS
Head of the working group on consumer affairs at the Friedrich-Ebert-Stiftung

SUMMARY IN NINE THESES

1. There is no European consensus on what energy poverty is or how to measure it.

Most European governments understand energy poverty as not being able to heat one's home adequately or to secure an adequate electricity supply. But there is also another perspective, one that takes into account how disproportionate spending on energy puts households at risk of poverty. Neither a shared definition of energy poverty nor the development of suitable measuring instruments is as yet on the horizon, however. The problems, interpretations and data situation differ too widely across European countries. Only a handful of European governments are willing to consider energy poverty as a social problem in its own right. Instead, they treat it as one component of income poverty and use the relevant standard indicators.

2. The data set in Germany is inadequate.

The main household surveys provide scant data on energy supply. The questions are not standardised and data sources tend to be mutually incompatible. In comparison with research into supply, the available data for private households are very poor. The same also applies to housing quality. Given the centrality of housing this situation is plainly unsatisfactory. Standards need to be agreed and incentives created to include infrastructure dimensions – in addition to income aspects – in the most important surveys. Only then will it be possible to properly assess the circumstances of vulnerable households.

3. Financial support, social tariffs and renovations are regarded as the most important instruments for fighting energy poverty in European countries.

Most measures adopted in European countries are directed towards providing energy-poor households with financial support. These include standard social security instruments, such as basic subsistence benefits and heating allowances, but social tariffs for energy also feature prominently (although not in Germany). The second priority in Europe is energy-efficient buildings. Most states promote measures to improve the energy efficiency of buildings, but these initiatives are motivated primarily by climate protection policy and are not necessarily concentrated on households at risk of poverty. It is therefore doubtful that these programmes have thus far been effective in counteracting energy poverty.

4. Energy policy can help households at risk of poverty.

Especially in Germany energy costs have risen faster than the average cost of living in recent years, driven primarily by government measures rather than the market situation and competition. Households at risk of poverty are hardest hit because they have to spend most of their income on basic necessities and unlike normal consumer goods, there is little potential for economising on energy. Households at risk of poverty are also affected by other risks, such as debt. In practice, that means that, for example, in Germany a poor credit rating prevents them from taking advantage of lower-priced alternatives to the expensive standard tariff. They are denied the benefits of competition. Future energy policy frameworks will have to tackle these multiple disadvantages of households at risk of poverty, for example through a guaranteed, affordable basic supply for households in need.

5. Low-income households should benefit more from efficiency improvements.

Few of the benefits of well-insulated homes and efficient household appliances fall to low-income households. Models such as "mini-contracting", where households lease new appliances from energy providers, could bring improvements. Renovation measures are problematic, despite the existence of funding programmes. They may even lead to the displacement of low-income households. Certainly, they indirectly increase housing costs (as well as housing quality, of course). Here entirely new funding arrangements and incentive systems need to be created in order to resolve the tenant/landlord dilemma and promote socially inclusive climate protection.

6. Basic social security must take greater account of rising energy costs.

There is a broad consensus that the overdue increase in benefit allowances in Germany means that social security has failed to keep pace with rising energy costs. Experts estimate that they would have to be increased by 45 euros per month. As a vital necessity, it is especially important that the cost of energy be properly reflected. Benefits agencies could also give greater weight to energy consumption and efficiency when assessing the costs of rent. An affordable rent including heating should be the decisive criterion. That would allow households receiving basic social security to enjoy a greater share of efficiency gains.

7. Low-income households above the social security threshold need special assistance.

Households only slightly above the social security threshold experience particularly difficult problems. This group frequently seeks help from consumer advice centres because – unlike recipients of basic social security – they do not receive assistance with the cost of housing and heating. One concrete measure would be to ensure that all households entitled to housing benefits also receive them. Beyond this, the right to housing benefits could also be expanded to include more households. This contact with the benefits agencies would also create opportunities to refer affected persons to energy and debt advice services. Housing benefit also needs to take better account of real energy costs, as do standard benefits.

8. Legislation for better prevention of disconnection.

In the interests of affected households and energy providers, experience from pilot projects needs to flow into the reform of the German Energy Industry Act. Consumer advice centres and other organisations could provide mandatory counselling before power is cut off and, potentially, mediate between households and providers. The communication process, which initially only takes place in written form, can also be improved. Important elements should be communicated in plain language and, where applicable, information should be supplied in other languages. Alternative instalment plans, prepayment and other instruments could help to prevent disconnections. But there is also a need for benefits agencies and providers to improve their coordination of payment and billing dates in order to reduce arrears. Pilot projects on the effectiveness of prepayment meters would be useful.

9. Fighting energy poverty: A pragmatic mix of policy instruments is needed.

Poverty risk due to high energy prices, the debt problems of private households, poor living conditions and general income poverty; energy poverty has multiple facets and can signal a range of different social problems. That is what makes it so difficult to conduct a differentiated survey of the instruments and their effectiveness. Analysis of the instruments in the present study reveals that there is no simple standard answer to the complexity of the problems. There is no single model for fighting energy poverty. But ways of addressing social problems are discernible and they do not have to involve resorting to the welfare state. Traditional social policy tends to neglect the spending side and the complex living situations of low-income households. A socially sensitive consumer and energy policy that takes better account of vulnerable households is also needed.

1

A NEW SOCIAL QUESTION? THE ENERGY POVERTY DEBATE IN EUROPE

Energy poverty tends to be regarded as a problem affecting developing countries and emerging economies, where the infrastructure is often inadequate and many households receive only sporadic power or none at all. Energy poverty arises there because state infrastructure systems and private enterprises fail to satisfy demand. Social inequality exacerbates the problem: access to electricity is contingent on money and proper housing.

In this original sense energy poverty is equivalent to social exclusion and represents a form of absolute poverty. Energy is a basic good of existential importance. But this phenomenon also exists in the so-called industrialised countries. In its most extreme form – which is comparable to the situation in developing countries – it affects the homeless, who lack practically all basic goods: housing, energy, health care and access to banking.

But other groups are affected, too. People whose electricity is disconnected for payment arrears receive only a minimal supply. According to a survey by the Federal Network Agency and the Federal Cartel Office (Bundesnetzagentur/Bundeskartellamt 2016), 352,000 households in Germany were disconnected in 2014, up from 312,000 households in 2011 (just under 1 per cent of all households). However, the number of threatened disconnections is a great deal higher. In 2014 basic suppliers threatened 6.3 million households with disconnection. It is true that they ordered action in just 1.4 million cases and only 352,000 of them were ultimately carried out, but the number of threatened disconnections is crucial, as they always affect households in precarious circumstances with a high debt risk.

To be cut off from the energy supply is the harshest form of energy poverty. The potential causes vary enormously and often represent an accumulation of difficult circumstances, debt and other problems. Especially in industrialised countries, energy poverty is always also a facet of income poverty: households facing financial difficulties always find it difficult to pay for important basic goods. The problem has been exacerbated by the steep rise in energy prices in Europe in recent years. This, in turn, has generated a debate in Europe that treats energy poverty as a problem in its own right and seeks specific solutions.

Energy poverty arises where disposable income is too low and/or spending on energy is too high. But the potential causes of energy poverty are multifarious, as are the arenas in which households struggle with it. Certain theories recur prominently in the debate, but to date very few have been subjected to systematic empirical scrutiny.

In Europe the efficiency theory is especially popular. This is the idea that the occurrence of energy poverty is governed decisively by housing type and condition and residential segregation. Especially in parts of Eastern Europe, the poor condition of both housing stock and infrastructure causes energy poverty. In other member states, such as Germany and Denmark, the main focus of discussion is rising energy prices. Thus there are different starting situations in Europe, but similar political instruments. The European Commission, in particular, is looking for possibilities to raise awareness of the issue among national governments and to put it on the European agenda. One factor at play here is increasing resistance to energy policy decisions with socially unacceptable consequences.

1.1 DEFINING AND MEASURING ENERGY POVERTY

There is no shared European understanding of energy poverty. The lack of differentiation between definition, indicators and measures itself generates confusion. In fact a definition is relatively simple to arrive at:

A person experiences energy poverty if they are unable to satisfy their fundamental energy needs on account of lack of access or resources.

That is roughly the definition of energy poverty applied in most official documents, sometimes spelled out in more detail, sometimes less. Ironically, one leading European network against energy poverty proposes a definition that is both narrower and less precise:

"Fuel poverty as a household's difficulty, sometimes even inability, to adequately heat its dwelling at a fair, income indexed price." (European Fuel Poverty and Energy Efficiency (EPEE) 2009).

Theories on the causes of energy poverty

The causes of energy poverty are the subject of much speculation, but there is little in the way of systematic research. One can distinguish broadly between theories that focus on income and those that prioritise energy spending. In reality, energy poverty is typically a multidimensional problem, where inadequate household income is accompanied by other problems.

Table 1
Theories on the causes of energy poverty

Income theories	Undersupply	Disadvantaged households cut back on energy and fail to heat adequately.
	Debt	Income is insufficient to pay for adequate supply of essentials such as energy. This results in debt, which exacerbates the problem.
	Life situation	Particular phases when starting a family or periods of unemployment may reduce household income.
Spending theories	Inflation	Higher energy prices represent a relatively greater burden for poor households.
	Efficiency	Disadvantaged households live in less energy-efficient buildings and have fewer energy-efficient household appliances.
	Behaviour	Lack of information on and awareness of how to save energy.
	Life situation	Households may require more energy depending on their family and social situations.

Source: author.

This proposal reflects an obvious focus on heating costs at the European level; in view of the poor quality of buildings in certain European countries this is hardly surprising. It also underlines that the crux of the energy question is not physical access but affordability. This narrower definition also illustrates how the debates are shaped by their national contexts. In Germany, it has tended to be steep rises in the price of domestic electricity that have put the issue on the agenda (Kreider/Sommer 2016).

Even more contested than the definition of fuel poverty is the question of how to measure it. Here again, a wide spectrum of different approaches is seen at the European level and in the individual member states. The widely cited 10-per cent rule ("Anyone spending more than 10 per cent of their disposable income on energy is affected by energy poverty") is a measure of fuel poverty rather than a definition. Like many measures the rule has a rational basis, but is still arbitrary to some extent.

British researcher Brenda Boardman compared the proportion of energy spending in average-income and in low-income households. While in average-income households about 5 per cent of spending went on energy, the figure for most low-income households was double that, or 10 per cent. It was this important observation that led her to establish a measure that remains the most popular and easiest to use.

However, the methodological criticisms of this simple rule are obvious. Firstly, it also includes high-income households with energy-intensive lifestyles. Secondly, a rigid percentage threshold contradicts the findings of dynamic poverty research. The German government continues to cite the rule, while the British government has in the meantime adopted a new yardstick, the Low-Income-High-Cost (LIHC) indicator developed by John Hills (2012).

LIHC takes account of both spending and income. Two conditions must be fulfilled for a household to be classified as energy-poor: its energy consumption must exceed the median for all households and its income after subtraction of energy costs must fall below the official poverty line. But in order to apply such an indicator, for example in Germany, one would need reliable data on the real energy usage of private households. Currently, that is more or less impossible.

The objective of practice-driven research must therefore be to develop useful and practicable indicators that capture the complexities of the phenomenon. Identifying fundamental factors whose interaction could lead to fuel poverty is not difficult. They include:

— low household income;
— high energy prices;
— low energy efficiency (buildings and appliances).

Household income is the central factor, even if by no means all low-income households experience problems with energy costs. The importance of energy prices is also relative. If a home is highly efficient, unit price is much less important. Studies to date generally combine data on the following dimensions:

— household income;
— household energy consumption by type;
— national housing structure and energy systems;
— proportion of rented housing;
— national energy prices;
— subjective well-being;
— subjective undersupply;
— housing conditions.

It is not, however, possible to create a simple indicator from these sources, still less an index; they serve merely to signal the prevalence of energy poverty in particular countries. There are also specific indicators, such as seasonal variations in the death rate (Fowler et al. 2015). Such data allow us to conclude that inadequate heating could be the cause. Numerous other specific indicators exist for relations between energy poverty and other variables. The most relevant indicators are the general level of poverty, the level and trend of energy prices, housing quality and heating systems.

Despite the existence of so much data, empirical findings on energy poverty in Europe remain thin, above all because of the theoretical difficulties involved in separating it from other aspects of poverty. Additionally, the various data sources cannot simply be aggregated. Initial attempts to establish terminological clarity across the EU were made in 2010. The European Economic and Social Committee defined energy poverty as follows:

"The difficulty or inability to ensure adequate heating in the dwelling (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 to have access to other essential energy services at a reasonable price. Although this is a general definition, other criteria could be added in order to bring the concept into line with developments in society." (European Economic and Social Committee 2010: 3)

A year on from this, the European Commission had to admit that no consensus had been achieved on the constituent elements of energy poverty (Bouzarovski et al. 2012: 78), and that as long as this was the case there was no point in creating an EU-wide definition. In the meantime, the European Economic and Social Committee is explicitly calling for European indicators capable of making energy poverty measurable and comparable (European Economic and Social Committee 2013: 2).

The approaches adopted by EU member states vary enormously, with the United Kingdom and Germany at the two poles, according to Dubois and Meier:

"The UK and Germany can be considered as two polar cases. They disagree on whether fuel poverty should be considered as a subcategory of poverty (Germany) or as a specific issue (UK) They disagree on whether fuel poverty in a context of increasing energy prices is a problem for the whole population (Germany) or only for those with the lowest incomes and the highest energy costs (UK – Hills approach)." (Dubois/Meier 2014: 6)

Whether a state wishes to measure energy poverty systematically at all will depend on whether it regards it as a social problem in its own right. To date, only four European states – the United Kingdom, Ireland, France and Slovakia – have adopted an official definition (Dubois/Meier 2014: 2). France prefers the concept of energy precarity, which occurs when a household experiences "particular difficulties obtaining the energy supply necessary to satisfy elementary needs because of the maladjustment of resources or housing conditions" (Dubois/Meier 2014: 2).

Thus although a number of advanced national approaches to defining and measuring energy poverty already exist, they cannot be applied easily to the EU or to other member states. In particular, the modern and sophisticated Hills-LIHC approach lacks international comparability (E-Control Austria 2013: 12).

The EPEE consortium found that between 50 and 125 million people in Europe are affected by energy poverty. According to the European Statistics on Income and Living Conditions (EU-SILC), the problem of energy poverty exists in all member states (Bouzarovski et al. 2012: 78). EU-SILC contains certain deprivation indicators that potentially identify energy poverty: whether respondents feel they can heat their home adequately and whether they find it difficult to pay utility bills.

Most policy papers on energy poverty in Europe open with assertions that energy poverty is increasing. Although there are indications of this, real and systematic monitoring is currently not a prospect in Europe. We thus cannot really know whether energy poverty is on the rise there.

1.2 DATA AND DATA GAPS

A report for the Hans-Böckler-Stiftung using the 2008 Income and Consumption Survey (Einkommens- und Verbrauchsstichprobe 2008, EVS) produced a number of representative findings for Germany, while also revealing the kind of elementary data gaps that exist (Strünck et al. 2016). The simple indicator for energy poverty developed for the project is:

A household is energy-poor if its (OECD-weighted) net household income after subtraction of (OECD-weighted) energy costs lies below the 60-per cent risk-of-poverty threshold.

On that basis, about 21.5 per cent of households in Germany (8.5 million out of 39.4 million) were energy-poor in 2008. However, the sheer volume of spending on energy in households at risk of poverty is not conspicuously high (at least not in 2008). In 2015, a model household with an annual consumption of 3500 kWh spent on average about 85 euros a month on electricity alone (source: BdEW). However, half the energy-poor spent 75.33 euros a month (median value) or less on heating and electricity together. The largest proportion of energy-poor households (28.3 per cent) is observed in the 60–70 euro monthly spending bracket. But rising energy prices are pushing the figures up across the board (Figure 1).

Low-income households that do not receive basic social security suffer perceptibly from energy poverty. Under the above definition 14.7 per cent of households with earned income suffer from energy poverty, as do almost 73 per cent of households receiving housing benefits. This group is heavily represented among those attending consumer advice centres, because they receive little assistance from the social security system (Figure 2).

On the other hand, many energy-poor households are also found in the lowest energy spending categories. Most of these are probably "involuntary savers", who economise even on necessary energy. It is also known that energy costs per square metre are higher in energy-poor households, which tend to occupy less efficient housing. Although the difference is compensated by the small size of such homes, the finding also demonstrates that energy-poor households benefit little from improving building standards.

Generally speaking, the data available in Germany are not good enough for conducting broad, differentiated longitudinal analyses. Although regular household surveys such as the Microcensus, the Income and Consumption Survey and the Socio-Economic Panel (SOEP) also include questions on energy consumption and housing, the wording and response options vary. Moreover, it is almost impossible to interface the German data with statistical information on the housing stock. That means that even if a standard definition of energy poverty were to be adopted, it would remain difficult to measure its extent and concentration.

Given the great importance of private energy consumption, it is surprising that the data situation in Germany has not been improved. In fact, a wide range of associated data would also be highly pertinent for policymaking, administration and research.

While such substantial data gaps persist, the discussion about definitions will also remain relatively fruitless. On the other hand, this debate is useful because it helps to clarify what data are particularly important. The European comparison identifies a number of points that should also be observed in Germany.

Most European countries lack such data, but that doesn't stop them trying to develop strategies for fighting energy poverty. It is unclear how successful these strategies can be as long as there are no shared definitions and the data situation is inadequate. At the same time, the debate on rising

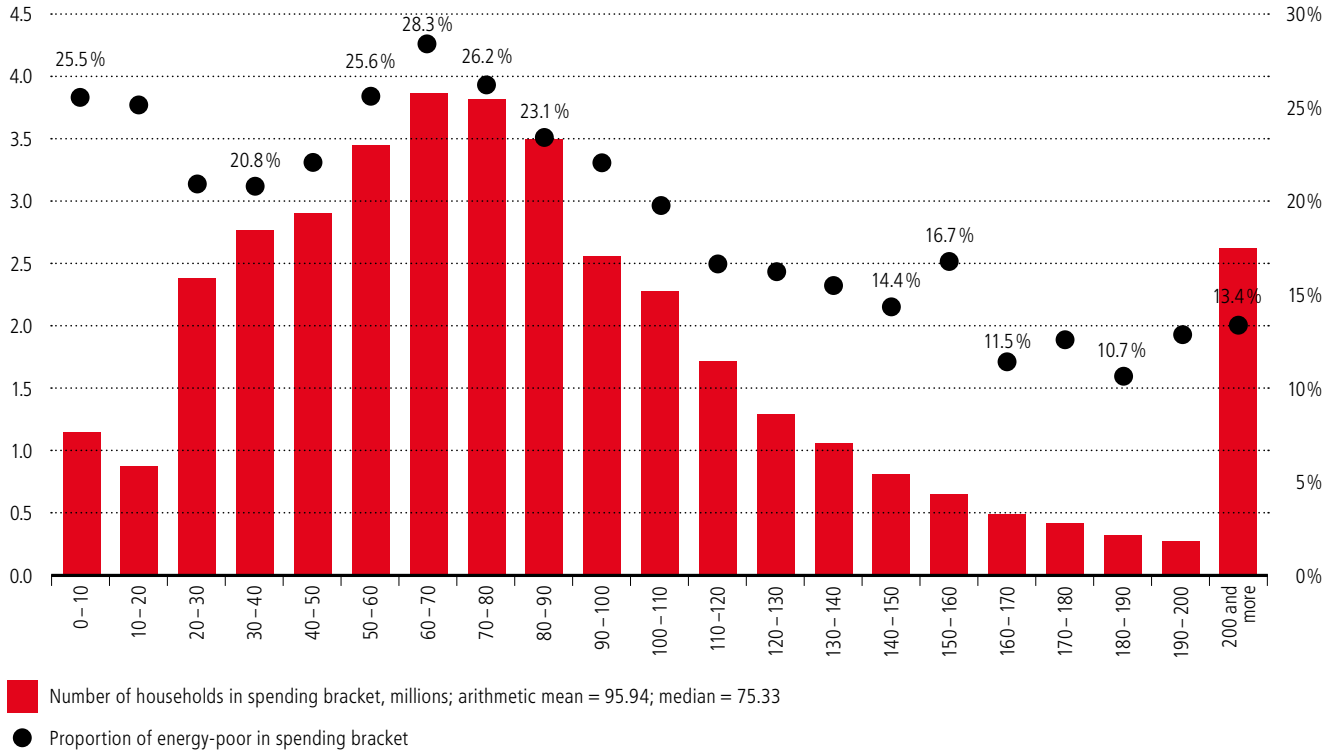
Data gaps in Germany

Regular household surveys such as the Income and Consumption Survey, the Microcensus and the Socio-Economic Panel (SOEP) include questions on energy consumption and living conditions. Other surveys such as the Wärmemonitor (heat monitor) (Deutsches Institut für Wirtschaftsforschung) elicit important information on heating needs and behaviour. Data on housing quality are also available. But frequently there are gaps in the data and it is often impossible to integrate the datasets that do exist.

Data on characteristics of homes and buildings are unsatisfactory. There are no data at all on exact building typologies and the position of flats within buildings, both of which are important for assessing energy efficiency.

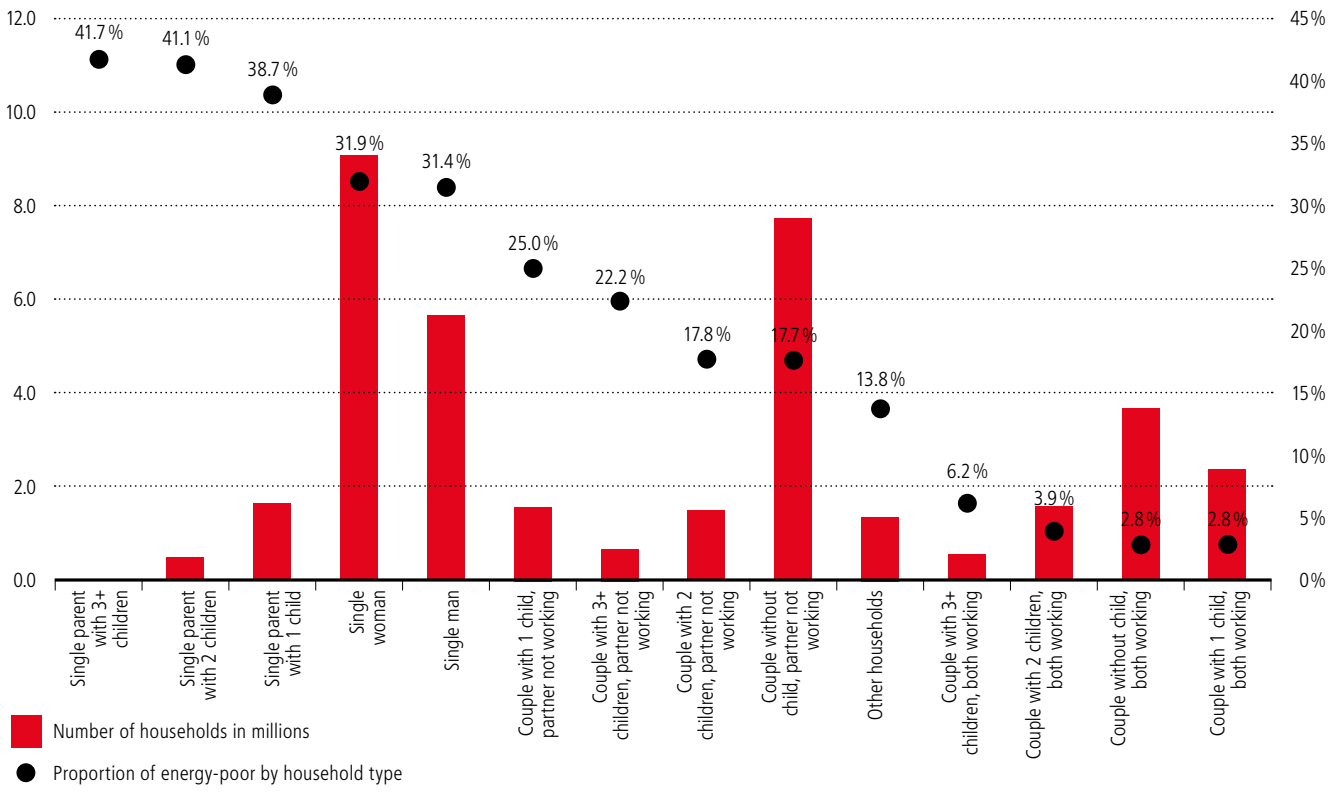
Data on the energy efficiency of homes and buildings are also completely lacking and no improvement can be expected in this respect. Although home energy labelling has been introduced, including details of the specific energy consumption for new and renovated buildings, that doesn't mean that survey respondents will be able to supply such information (unless, ideally, they are the owner of the home or building). The same applies to the broad field of occupants' energy consumption. Information on people's use of technical options for saving energy, as well as on individual behaviour, and thus on possibilities for economising by changing behaviour, is completely lacking.

Figure 1
Proportion of energy-poor households by energy spending



Source: Scientific-use-file from Einkommens- und Verbrauchsstichprobe 2008.

Figure 2
Which household types are likely to be energy-poor?



Source: Scientific-use-file from Einkommens- und Verbrauchsstichprobe 2008.

Table 2
Ways of improving the measurement of energy poverty

Objects of measurement	Distinguish between national and local indicators. National indicators should relate spending to income. Local indicators identify vulnerable households using socio-economic variables.
Indicators and data	Subjective and objective indicators are useless if the required data are unavailable. Ideal indicators are frequently non-operationalisable.
Energy needs and energy consumption	Indicators should reflect real energy consumption and objective energy needs by household type in order to determine whether households are doing without the energy they need.
Include all energy types	As a basic good, energy also encompasses such aspects as mobility costs. Indicators should include these.
Subtract net rental costs from household income	Cost of housing (without energy) should be subtracted from disposable income.

Source: Pye et al. 2015g: 42, author.

energy prices and a socially acceptable energy supply is putting pressure on governments to act.

1.3 ENERGY POVERTY AS A CROSS-CUTTING ISSUE?

In Germany the political debate on energy poverty is overshadowed by the energy transition (Energiewende). Discussions often revolve around whether energy will remain affordable and whether energy policy is pursuing social objectives. It is an empirical truism that inflation always hits the poorest households hardest and the price of energy today is almost as central as the price of bread used to be. People find it hard to economise on such an essential good and in many policy fields the European Union has identified "vulnerable consumers" whose ability to pursue alternative strategies is extremely limited.

The task of the EU member states is therefore to ensure that protection is offered to particularly vulnerable consumers, also in the energy sector. They have approached this duty with varying degrees of enthusiasm, however, and in widely differing circumstances. However, it is not only the external conditions that differ. Governments and other actors have very different motivations in their struggle against energy poverty and conduct it in different arenas.

These motivations are associated with different policy areas. Firstly, there is energy policy. Since the liberalisation of its energy markets, Europe has witnessed a discussion about impacts and side-effects. In fact, the European Commission is concerned about vulnerable consumers mainly to bolster public acceptance of liberalised markets. Political positions on energy policy oscillate between the poles of basic supply and market dynamism.

The debate about remunicipalising electricity grids in Germany highlights the type of normative principles that are still present in the debate. One side regards energy as a basic good that should be supplied mainly by non-profit entities. The other side stresses the massive investment required for modern energy infrastructure, which they say can only be mobilised in the private sector, and argues that only competitive energy markets can provide affordable energy prices. The frequently reoccuring discussion about introducing a social tariff or even a (tax-funded) minimum supply for all is another component of this (German) discussion.

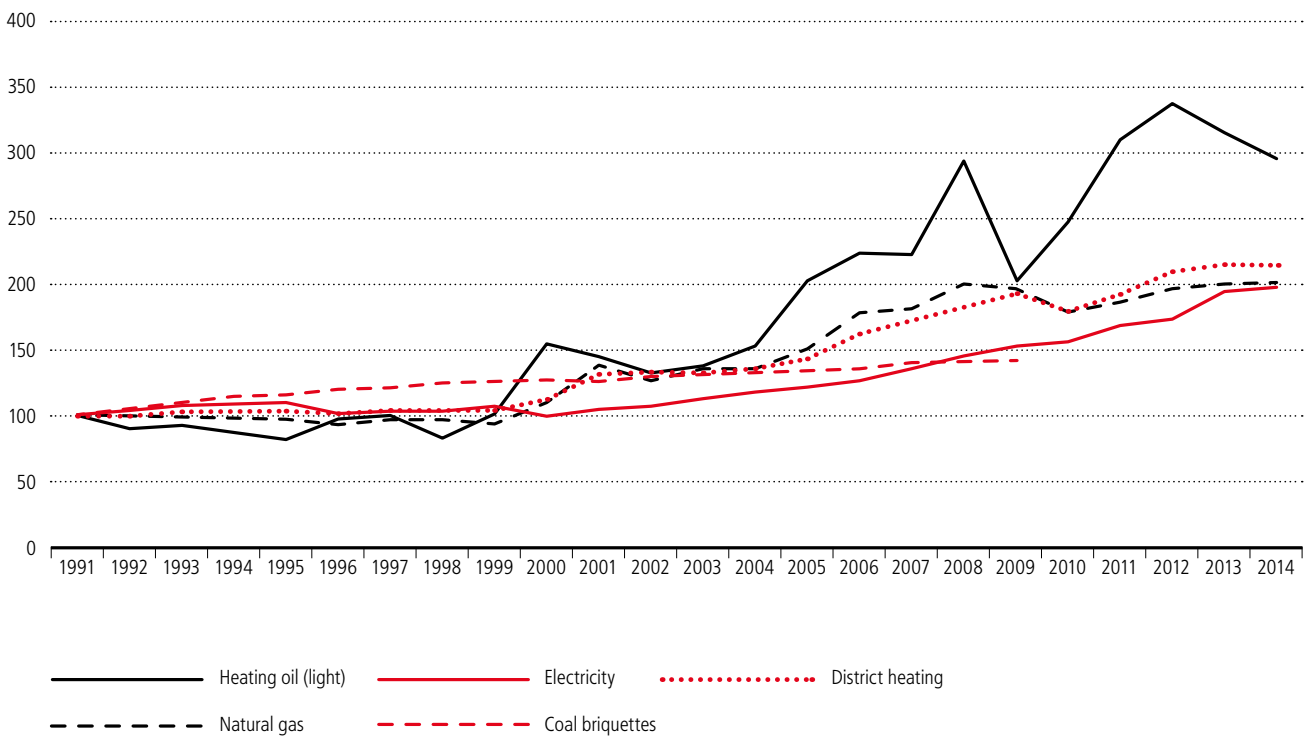
On top of this comes the energy transition (Energiewende) in Germany, and above all the consumer-subsidised promotion of renewable energies, which consistently fuels the energy poverty discussion. Subsidisation of renewables, principally through the Renewable Energy Act (Gesetz für den Ausbau erneuerbarer Energien, EEG), contributes to electricity price increases for domestic consumers, as funding for renewables is raised by a levy on private and commercial electricity bills (although many companies receive exemptions). Research into the redistributive effects of the Renewable Energy Act finds that low-income households are especially affected (Neuhoff et al. 2012; Deutsches Institut für Wirtschaftsforschung 2012; Ecke et al. 2014; Philipps 2013). This has led to increasingly insistent calls for a socially acceptable energy transition, and not only from the social policy side. The German debate about socially acceptable energy prices and energy poverty is therefore often also a debate about the opportunities and risks of the energy transition and the instruments through which it is implemented. One must not forget that heating costs are often much higher than electricity bills, and that in Germany, the cost of both heating and domestic electricity has risen sharply, as Figure 3 shows.

Other climate protection measures also form part of the energy poverty debate. This applies first and foremost to renovations that aim to render buildings more climate- and environmentally friendly, but also to the promotion and dissemination of energy-efficient household appliances. The question here is whether households affected or threatened by energy poverty actually benefit from such measures and are able to reduce their own spending (Dünnhoff et al. 2006; Malottki 2012). Critics complain that climate measures are frequently socially blind and that too little account is taken of their distributive effects. Their fear is that renovations and efficiency measures lead to cost increases, especially for socially disadvantaged tenant households. On the other hand it might be possible to target such measures towards vulnerable consumers and to configure them in such a way as to produce economic savings, too.

Here, environmental policy intersects with housing policy. The architectural and energy standards applied, for example, to social housing, and the types of housing available to low-income households fall under the remit of housing policy. And here there has been fundamental change in recent decades. Large parts of the public housing stock have been privatised, social housing construction has practically ceased and demand-side funding has been prioritised over supply-side funding. In this new situation economies of scale through centrally organised renovations are no longer available and for private landlords the incentives to undertake energy-saving renovations are limited.

Depending on the type of welfare state, social policy may also be involved. After all, social security systems are supposed to prevent people from falling into poverty. Issues such as social deprivation and undersupply also fall under social policy. But the question is which households receive social benefits and which must cope without assistance. As a rule, social policy also aims to guarantee a particular level of income. But energy poverty does not necessarily stem from income problems alone. Awareness of this also shapes the activities of the European Union and its member states.

Figure 3
Domestic energy prices 1991 – 2014 (Index 1991 = 100)



Source: Bundesministerium für Wirtschaft und Energie (BMWi), index values from the Statistisches Bundesamt (StBa).

2

WHAT TO DO ABOUT ENERGY POVERTY? EUROPEAN APPROACHES, INSTRUMENTS AND EXPERIENCES

The European Union has been addressing the question of energy poverty for some time. The term makes its first appearance in European legislation in the context of the European Union's Third Energy Package of 2009, in which the directives on liberalisation of the internal markets in electricity (2009/72/EC) and gas (2009/73/EC) recognised energy poverty as a problem in its own right and called upon the member states to develop instruments to fight energy poverty and "to ensure essential energy needs for vulnerable consumers" (Bouzarovski et al. 2012: 77). Many authors regard the focus on vulnerable consumers as problematic because – like energy poverty – the term has no agreed European definition and the injunction inserted in the directives thus leaves enormous scope for interpretation (for example, Bouzarovski et al. 2012: 77; European Fuel Poverty and Energy Efficiency 2009: 11).

2.1 PERSPECTIVES IN THE EUROPEAN UNION

The European Commission wishes to improve the functioning of competition in energy markets. It is clear that it objects to certain aspects of market regulation in member states. At the same time, the Commission is seeking to protect socially disadvantaged consumers as liberalisation progresses. This is clearly visible in the latest Energy Union package:

"Energy poverty negatively affects living conditions and health. It has many causes, mostly resulting from a combination of low income and general poverty conditions, inefficient homes and a housing tenure system that fails to encourage energy efficiency. Energy poverty can only be tackled by a combination of measures, mainly in the social field and within the competence of authorities on the national, regional or local levels. When phasing out regulated prices, Member States need to propose a mechanism to protect vulnerable consumers, which could preferably be provided through the general welfare system. If provided through the energy market, it could be implemented through schemes such as a solidarity tariff or as a discount on energy bills. The cost of such schemes needs to be covered by non-eligible consumers collectively. Hence, it is important that such a system is well targeted to keep overall costs low and to limit the distortions deriving from regulated prices (e.g. not increase further tariff deficits in Member States)." (European Commission 2015).

European legislation has launched various initiatives. Both, the latest gas directive and the electricity directive, require action by the member states. The Electricity Directive notably pushes policy measures prioritised by the European institutions, including in particular social policy initiatives and improved building efficiency standards. Here, the EU emphasises specific causes of energy poverty that it regards as decisive: income and efficiency. The EU also treats energy poverty as a growing problem, even if the relevant data are scarce.

European Electricity Directive (2009/72/ECG) and energy poverty

Art. 3 (7)
"Member States shall take appropriate measures to protect final customers, and shall, in particular, ensure that there are adequate safeguards to protect vulnerable customers. In this context, each Member State shall define the concept of vulnerable customers which may refer to energy poverty and, inter alia, to the prohibition of disconnection of electricity to such customers in critical times. Member States shall ensure that rights and obligations linked to vulnerable customers are applied. In particular, they shall take measures to protect final customers in remote areas. They shall ensure high levels of consumer protection, particularly with respect to transparency regarding contractual terms and conditions, general information and dispute settlement mechanisms. Member States shall ensure that the eligible customer is in fact able easily to switch to a new supplier. As regards at least household customers, those measures shall include those set out in Annex I." (Council of the European Union 2009)

Art. 3 (8)
"Member States shall take appropriate measures, such as formulating national energy action plans, providing benefits in social security systems to ensure the necessary electricity supply to vulnerable customers, or providing for support for energy efficiency improvements, to address energy poverty where identified, including in the broader context of poverty. Such measures shall not impede the effective opening of the market set out in Article 33 or market functioning and shall be notified to the Commission, where relevant, in accordance with the provisions of paragraph 15 of this Article. Such notification may also include measures taken within the general social security system." (Council of the European Union 2009)

Other directives, such as the Energy Efficiency Directive (2012/27/EU), also require member states to introduce specific efficiency measures to benefit, in particular, low-income households. Numerous advisory bodies and organisations recommend that the EU and its member states develop meaningful indicators for energy poverty and plan responses based on these (Pye et al. 2015g).

In 2015, the European Commission outlined its plans for the Energy Union in a Communication: "A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy". One aspect underlined in that document is that this strategy can be successful only if special attention is paid to households with low incomes and energy-inefficient homes. While these initiatives have certainly been welcomed in the member states, the European Union's stance also reveals the driving force behind the energy poverty discussion: stricter climate standards tend to push up the price of energy and other essentials such as housing – potentially to the detriment of low-income households. In other words, making the European energy transition – and respective national energy transitions – socially acceptable is still very much on the agenda.

2.2 PRIORITIES IN THE EU MEMBER STATES

Half of the twenty-eight member states at least have an official definition of what represents a vulnerable consumer in the energy market (Pye et al. 2015g). One central criterion is the risk of being unable to pay electricity and heating bills. In concretising the phenomenon most governments therefore draw on social policy criteria of the kind applicable to safety net systems (see Table 3).

National legislation is generally based on objective socio-economic indicators. But there is also a wide range of subjective indicators that can also be used to assess the extent of energy poverty. The countries selected for this study exhibit clear differences in this respect. In representative surveys conducted for Eurostat, households were asked whether they had problems with their energy supply. Examination of the three central indicators for these problems reveals clear differences between the countries compared in this study (Table 4).

Housing quality in particular appears to vary widely from the subjective perspective, a view confirmed by objective data. The risk of debt due to energy costs is especially great in the United Kingdom, which is the reason why the issue first appeared on the political agenda there.

Within the broad spectrum of instruments to counter energy poverty, some are especially popular. Many member states try to ensure that customers in arrears are not disconnected. Social tariffs and social benefits such as heating allowances are also widely applied. But there are also more exotic approaches such as a tax-funded basic energy supply, which was trialled for some years in Belgium. Some member states focus on heating costs and home insulation, while others concentrate their attention more on electricity pricing.

One of the few comparative studies on energy poverty in Europe examines the prioritisation of policy instruments in the European Union (Figure 4).

It is clear that social policy is the highest priority; however, this is a double-edged sword. The lion's share is supplied by social benefits, above all basic social security and benefits for low-income households. But recipients have to undergo means-testing. Even instruments outside the social security systems are frequently contingent on needs assessments or are only granted at all where the recipients are already in receipt of particular benefits. While this form of "targeting" may appear sensible, such measures largely exclude one important group: low-income households whose income lies just above the basic social security threshold. If energy poverty is acknowledged to be a phenomenon in its own right, this is where social policy instruments come up against their limits (Figure 5).

It is notable that promotion of energy efficiency is right in second place. But this also encompasses very general measures for enhancing the energy efficiency of buildings and appliances, with no guarantee that the benefits will also be felt by the energy-poor. Closer examination of the areas targeted for energy efficiency promotion reveals where the problems lie (Figure 6).

About half of all measures are motivated by economic, environmental and climate concerns, without any fundamental social policy component. However, most studies insist on listing such measures under the heading of fighting energy poverty. And this intentionally or unintentionally conceals the potential conflict of goals between environmental and social policy as one of the most sensitive aspects of the energy transition in Europe (Bontrup/Marquardt 2014; Heindl et al. 2014; Kopatz 2013). Depending on how renovations are funded, households at risk of poverty may experience no benefit at all – or even suffer increased costs.

Information and advice campaigns are widespread, again with a slant towards energy efficiency, as is avoiding disconnection and cushioning its negative consequences. If one looks more closely, sophisticated solutions are found in some European countries. But we don't know enough about the extent to which they are actually tailored to – and benefit – vulnerable households.

For many years, energy poverty featured only marginally in the public debate in Germany. But here, too, rising energy prices have put the issue firmly on the political agenda. The next chapter begins by describing the German situation in greater detail, in order to highlight the fundamental diagnoses and therapies in the fight against energy poverty.

Table 3
Definition of vulnerable people in EU member states

Definition	Member states
Households with low incomes and high energy costs	France, Italy, Sweden
Recipients of basic social security benefits	Bulgaria, Croatia, Cyprus, Denmark, Germany, Hungary, Lithuania, Malta, Poland, Portugal
Disability/chronic illnesses	Czech Republic, Netherlands, Slovakia, Ireland
Selection of different socio-economic groups	Austria, Belgium, Greece, Romania, Spain, United Kingdom

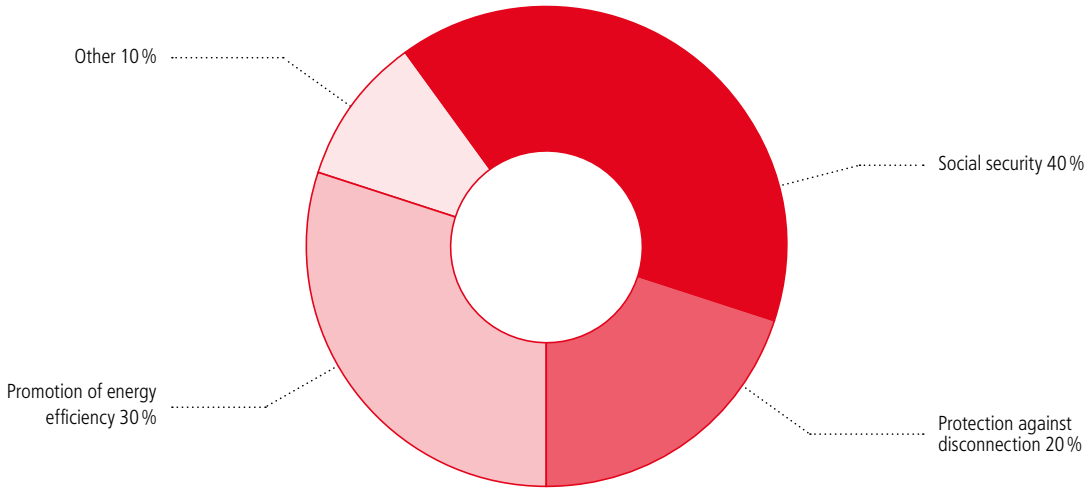
Source: Pye et al. 2015g: 27, author.

Table 4
Energy-poverty indicators – comparison of the six countries (%)

	Arrears with energy provider	Difficulties keeping the home warm	Home is poorly insulated
United Kingdom	30.3	19.4	21.4
France	17.8	15.2	22.1
Bulgaria	50.7	70.0	29.5
Belgium	14.0	18.8	26.2
Denmark	5.5	7.1	25.3
Germany	8.6	14.8	21.0

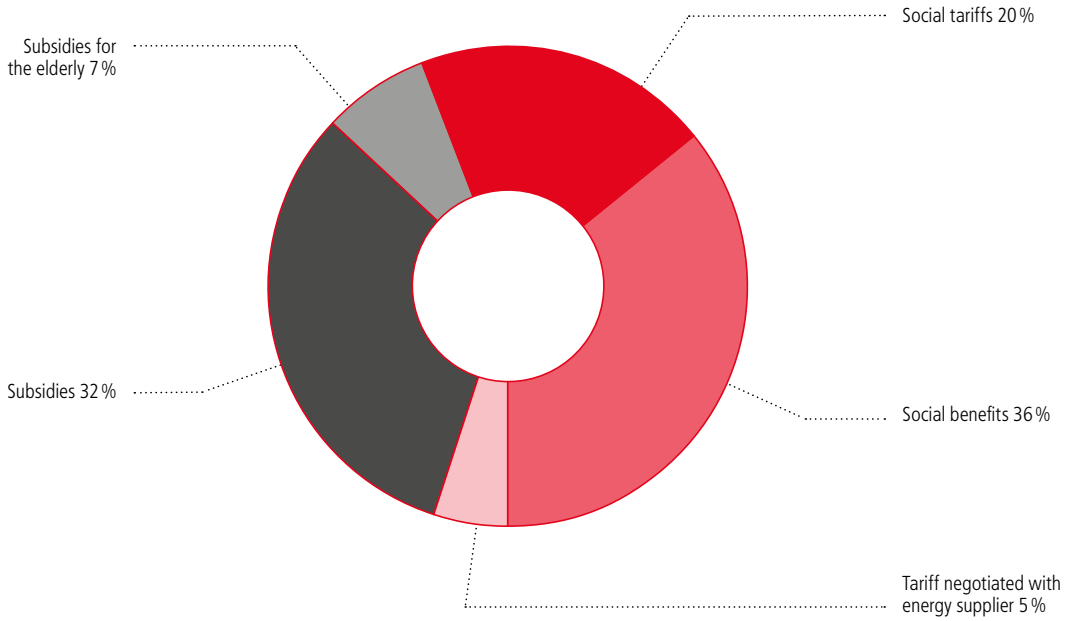
Source: Atanasiu et al. 2014, figures from Eurostat 2012, authors' presentation.

Figure 4
Main measures to counteract energy poverty in the EU member states



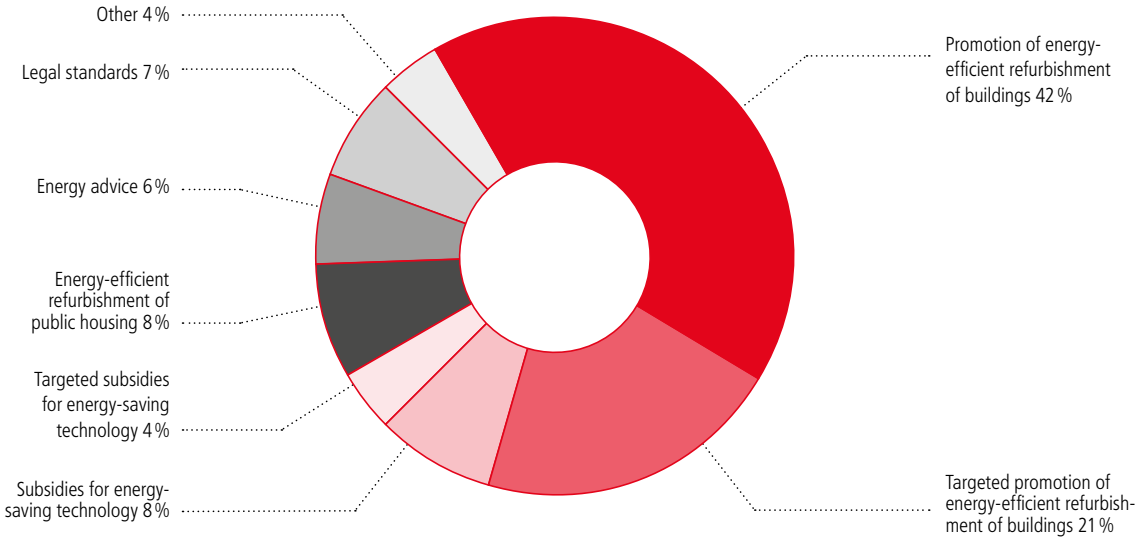
Source: Pye et al. 2015g: 61, authors' presentation.

Figure 5
Social policy measures to counteract energy poverty in the EU member states



Source: Pye et al. 2015g: 46, authors' presentation.

Figure 6
Promotion of energy efficiency in the EU member states



Source: Pye et al. 2015g: 50, authors' presentation.

3

SIMILARITIES AND DIFFERENCES BETWEEN SELECTED EUROPEAN COUNTRIES

We begin the country comparison with Germany, even if it is more of a laggard than a pioneer. While the national government has shown little in the way of initiative, the federal states and local authorities offer numerous approaches and projects worth reporting. Some of these are described in greater detail, as they illustrate the span of social problems that can be subsumed under the label "energy poverty". They also demonstrate that energy poverty is not strictly speaking a social problem.

3.1 GERMANY

Germany is no pioneer in the field of energy poverty: the national government has no coordinated plan, there is no official definition and the data situation is relatively poor. On the other hand, many state governments, local authorities and civil society organisations have taken up the issue. And there is an obvious driver in the discussion: at about 30 euro cents per kilowatt hour Germany's electricity prices are the second-highest in the European Union, after Denmark's.

This has also catapulted the topic into the German media, although it has failed as yet to make a real mark on the national political agenda. Because this study seeks to identify findings relevant to Germany, the existing situation is described in rather more detail. The subsequent country outlines spotlight some of the instruments typically deployed in the fight against energy poverty that are still lacking in Germany.

The issue in Germany is not just the cost of energy, but access, too. The relatively high number of disconnections – in 2014, 352,000 households were cut off at least briefly or restricted to minimum amounts – is a particular bone of contention.

No official data are available on the number of households affected by energy poverty or their characteristics. In the absence of an agreed definition, estimates range – depending on the indicator used – from under 14 per cent to 26 per cent.

However, even though there is no official definition and no government strategy against energy poverty, numerous instruments of direct or indirect relevance to the problem do exist. Given that Germany serves as the point of reference for this study, these are described in greater detail below.

As in most other countries, the social security system cushions some of the hardships associated with energy costs. For those receiving basic social security, an "appropriate level" of housing and heating costs are covered.

For those receiving no basic social security but who are entitled to housing benefit on the basis of low income, a federally funded heating allowance was introduced in 2009 in response to sharply rising energy prices. This housing benefit reform increased the average monthly payment from 90 to 142 euros. But in 2011, just two years later, these arrangements for heating costs were abolished again (in legislation accompanying the budget). Housing benefit was increased again in 2016, but the separate heating allowance was not restored.

Energy spending per square metre is generally higher in energy-poor households than in non-energy-poor ones, reflecting the poorer efficiency of buildings and home appliances (Strünck et al. 2016). But unlike in almost all other countries, housing quality plays almost no role at all in the German energy poverty discussion. In Germany, energy-efficiency renovations fall quite clearly under environmental and climate policy and are not associated with social policy objectives. This is not so in the case of device efficiency, however. Although the acquisition of more efficient devices could help to reduce their spending, the great expense involved makes this difficult or impossible for households at risk of poverty. Various local projects attempt to address this problem, for example in the form of cooperation between municipal utilities, consumer advice centres and charities. In December 2012, for example, the Wuppertaler Stadtwerke (public utility company in the city of Wuppertal, short WSW) launched a pilot project for "mini-contracting" for refrigerators. The target group is low-income households (low-paid workers, benefit recipients, poor pensioners, university students).

If a WSW customer from the target group is using an (old) refrigerator whose annual consumption exceeds 350 kWh they may apply to WSW directly, or they may be referred by social services or a consumer advice centre. The customer receives comprehensive energy counselling and is required to measure the old appliance's energy consumption. If it signifi-

cantly exceeds the modern standard (A++; 140 kWh/a), the customer qualifies for the project, which offers a branded appliance in class A++ with about 140 litres volume and a freezer compartment or – new from May 2014 – a larger fridge/freezer in class A++ with about 230 kWh/a and a volume of 190 plus 111 litres. They sign a credit agreement for 27 months with a monthly instalment of 10 euros for smaller fridges and 16 euros for larger ones. For its own customers WSW also grants a subsidy of 50 euros from its climate fund. The new appliance is delivered and installed and the old one taken away for proper disposal. The guarantee for the new appliance covers the entire period of the credit agreement (Mucke 2014). Once the loan has been paid off the appliance becomes the property of the customer, who also continues to benefit from the reduction in electricity instalments.

The well-established "Stromspar-Check" (Energy saving check) project run by the Deutsche Caritasverband and the Bundesverband der Energie- und Klimaschutzagenturen Deutschlands (EAD) provides financial assistance for refrigerator replacements, too, but also goes further, covering similar ground to the energy counselling offered by consumer advice centres. Stromspar-Check was launched in 2008 to advise recipients of basic social security (Arbeitslosengeld II, Sozialhilfe) and housing benefit. Its social policy objective is to alleviate the burden of electricity and heating costs on low-income households and also – by way of reducing benefit-funded spending on water and heating – to reduce the cost to local authorities. The programme is designed to cut CO_2 emissions, allowing low-income households to make a visible contribution to the German government's climate goals. As a labour market objective, the programme trains long-term unemployed for meaningful employment as efficiency advisers (so-called "Cari[tas] teams") and thus promotes reintegration in the labour market. In educational terms, the initiative seeks to sensitise low-income households to the efficient use of energy and – through the cost savings – to inspire a sense of agency.

In more than one hundred locations, efficiency advisers visit low-income households and generate cost savings, for example by installing adapters for saving electricity, heating and water and through learning effects from the advice modules. The impact of Stromspar-Check has been comprehensively evaluated (Tews 2012; Stieß/van der Land 2010).

The project "NRW bekämpft Energiearmut" (NRW fighting energy poverty) pursues a similar approach. In cooperation with local energy suppliers, Verbraucherzentrale NRW offers low-income households budgeting and legal advice for payment difficulties connected with energy bills. In order to reduce the monthly costs to households affected by energy poverty and avoid steep top-up payments after the annual meter reading, the financial/legal advice angle is combined with energy-saving advice (for example, through the Stromspar-Check run by Caritas in NRW and the Bundesverband der Energie- und Klimaschutzagenturen (eaD)). The programme has been thoroughly evaluated (Verbraucherzentrale NRW 2014).

The findings show that consumers who are in arrears generally seek professional advice only belatedly, often after notification of disconnection. Almost always, multiple causes lead to payment difficulties. Alongside rising energy prices and low income, the main causes are high energy consumption, unemployment and critical life events, exacerbated by a lack of financial and planning skills. In most cases, counselling and mediation lead to agreements to reduce payment arrears. In 86 per cent of such cases the announced disconnection is successfully avoided.

As well as reducing spending on energy through efficiency enhancements and advice, access is a central concern. For years, consumer advice centres and social organisations have been criticising the extent and practice of disconnection in Germany. Since energy is a vital necessity, the law provides for significant obstacles before electricity or gas can be disconnected on account of payment arrears, namely: arrears must amount to at least 100 euros; prior notification must be given at least four weeks in advance of the intention to disconnect and three working days before the disconnection visit itself; the decision to disconnect must be proportionate; and the consumer must be demonstrably unable to offer the energy provider any prospect of fulfilling their payment obligations. If the household contains especially vulnerable persons (such as infants or the chronically ill), the energy provider is not permitted to disconnect.

The process thus provides a series of opportunities to prevent disconnection through contact between consumer and supplier, for example by agreeing to payment in instalments.

Moreover, a number of providers already point consumers who enter arrears procedures to their own counselling services, and/or to advice services offered by, for example, consumer advice centres. Their goal is to keep the process open enough to avoid the additional costs of actually having to disconnect.

Many federal states and local authorities have pilot projects with special instalment plans, additional advice services and other measures intended to prevent disconnections. Here, energy providers generally work hand in hand with non-profit organisations.

A different and innovative approach is "load limiting". A cooperative initiative involving Rheinenergie Köln GmbH, the social services of the city of Cologne and several social advice services (including Caritas Köln) has been testing a pilot project on the effects of load limiting since September 2013, with comprehensive evaluation by the Fachhochschule Düsseldorf (Münch 2014, 2015). This involves installing smart meters in the participating households. The objective is essentially to supplement such instruments as the conventional automated arrears and disconnection procedures in the district of Kölnberg with load limiting to 1,000 watts. What that means in practice for consumers is that only a limited amount of power can be used at any one time (for example, sufficient to run a refrigerator, lights and a single oven ring on medium heat. In addition to the savings this automatically generates, this model creates intermediate steps in the arrears procedure that almost automatically lead to contact between consumer and energy provider – and social advice services – which can then help to avert disconnection.

Tables 5 to 8 provide an overview of the various instruments used in the fight against energy poverty in Germany.

In contrast to the national level, where there is no major programme that specifically tackles energy poverty, the fight against energy poverty is characterised by a multitude of pilot projects in the federal states and local authorities, as described above. But – as in other countries – the question of where the actors would identify the heart of the problem remains

rather vague. Are high energy prices the real crux? Or is the real problem for many energy-poor households one of debt? Does the energy counselling route represent a viable approach for finding joint solutions in a particular living situation? And lastly: is energy spending in households at risk of poverty actually too high or are the buildings simply inefficient? Certain indications exist, but precisely targeted energy action is not presently on the agenda in Germany. Not so in the pioneering United Kingdom, where poor home insulation has been a significant driver of political action.

Table 5
Measures to promote energy efficiency in Germany

Grants and KfW loans for energy efficiency renovation	Numerous funding programmes, but not specifically targeting low-income households; managed by various ministries.
'Mini-contracting' for more efficient household appliances	At local authority level individual energy suppliers offer low-income households affordable loans to upgrade to more efficient appliances, for example refrigerators; there is also an element of grant funding.

Source: Pye et al. 2015f, author.

Table 6
Financial support measures in Germany

Housing and heating costs for households on subsistence benefits	Local benefits agencies pay reasonable housing and heating costs for households on subsistence benefits.
Social tariffs (individual suppliers)	Individual E.On subsidiaries, CareEnergy et al. offer social tariffs for low-income working households. But tariffs are limited-term and sometimes more expensive than other providers' cheapest standard tariffs.

Source: Pye et al. 2015f, author.

Table 7
Information and advice measures in Germany

"NRW combats energy poverty", other programmes in other states	Energy debt advice from Verbraucherzentrale, in connection with the Stromsparcheck programme (Caritas and Bundesverband der Energie- und Klimaschutzagenturen Deutschlands (eaD)). Aim to avoid disconnections and further debt and to plan future energy consumption. Funding from the Consumer Protection Ministry NRW, implemented by Verbraucherzentrale NRW. Similar programmes in Bavaria.
Energy advice	Regular energy advice from state consumer advice centres, funded by federal Environment Ministry, implemented by Caritas in collaboration with other organisations.
Enery saving check (Stromspar-Check)	Mobile energy counselling for low-income households, exchange of refrigerators, installment of efficient energy systems; financed by the Federal Environment Ministry (Bundesumweltministerium), implemented by the Caritas in cooperation with other organisations.

Source: Pye et al. 2015f, author.

Table 8
Consumer protection measures in Germany

Regulation of disconnections	Unpaid bills must be at least 100 euros; disconnection must be announced four weeks in advance, notice of implementation three working days in advance. Disconnection must be proportionate; no disconnections where household includes chronically ill, infants or other vulnerable members.
1000 Watt solution for Cologne	Smart meters installed in 660 households. In case of arrears electricity supply is restricted to 1000 W and energy counselling offered. Intermediate stages in arrears procedure to avoid disconnections altogether. Run by city of Cologne, in cooperation with the Hochschule Düsseldorf and Caritas.

Source: Pye et al. 2015f, author.

3.2 UNITED KINGDOM

The United Kingdom is Europe's pioneer in the fight against energy poverty. The discussion began in the early 1980s, sparked by reports of senior citizens dying in inadequately heated homes. The latest report from the National Energy Administration (NEA) estimates that between 2015 and 2030 about 125,000 people will die from the consequences of sub-standard home heating (NEA 2015). The United Kingdom experiences far more annual heating days than most other European countries (Schumacher et al. 2015).

Much of the impetus to address the issue academically and politically originates from the United Kingdom. Brenda Boardman laid the foundations and John Hills has developed what is to date the most advanced indicator for measuring energy poverty (Boardman 1988, 2010; Hills 2012). According to Hills' Low-Income-High-Cost indicator (see also chapter 1.1), 4 million of Britain's 27 million households experience energy poverty. In other words, 15 per cent of households are classified as energy-poor, with Northern Ireland, Scotland and Wales worst affected in relative terms.

The British regulator Ofgem is one of only a handful of regulators in Europe that is attempting to define vulnerable consumers, in their case as being "significantly less able than a typical consumer to protect or represent their interests in the energy market" (Ofgem 2013). This might mean that vulnerable consumers are less capable than others of asserting their needs and interests in the energy market, or that they are significantly more likely to suffer harm or disadvantage. The definition is very broad and demonstrates that the regulator is examining concrete situations rather than defining particular target groups.

The British government has identified the inadequate quality of many homes as a central cause of energy poverty. Two policy responses stand out: home insulation programmes and direct heating subsidies in winter. It must be remembered that home ownership is significantly higher in the United Kingdom than in Germany, for example, so programmes promoting improvements to building efficiency benefit occupiers directly. However, more recently, British governments have switched to placing greater responsibility on the energy providers themselves. The Energy Company Obligation seeks to motivate energy providers to improve energy efficiency in socially disadvantaged areas.

Energy efficiency initiatives focus on the quality of the buildings themselves, and especially on insulation and heating. The latest concerted programme (2014) cemented the Hills indicator as the official yardstick. The government uses available data to identify and count households whose necessary energy costs exceed the median. Households that fall below the official poverty line after their necessary energy costs have been subtracted from their income are classed as energy-poor. The regional concentration of energy-poor households is also determined. Measures to improve energy efficiency then prioritise estates where energy-poor households are concentrated. The target is for energy-poor households to be brought up to the same level of efficiency as average households by 2030 (HM Government 2015). The United Kingdom initially embarked on this trajectory with the Warm Front Scheme, which was succeeded in 2013 by the new Affordable Warmth Scheme.

As in the other countries compared in this study, the various instruments can be classified roughly in the following categories:

- promoting energy efficiency;
- financial support;
- information and advice;
- consumer protection.

Public awareness is greatest for measures affecting homes and buildings, the most important of which are summarised in Table 9.

But direct support payments and benefits for needy households are also well established. Here the British welfare state distinguishes particularly strongly between target groups (Table 10).

Consumer awareness and behaviour also feature prominently, with public information campaigns encouraging conscious use of energy and publicising ways of saving energy (Table 11).

As well as voluntary information offers, the government has also implemented binding consumer rights. In relation to disconnections and other measures, some of these go further than the usual standards in countries such as Germany (Table 12).

Alongside these measures, the regulator Ofgem – which has a strong consumer protection mandate – is required to conduct systematic monitoring. Energy providers are also obliged to exchange extensive information and data with the regulator. Today, the British government's policy is to make the energy providers primarily responsible for fighting energy poverty. Given the considerable efficiency deficits in the housing stock, this is a dubious proposition.

Even though the United Kingdom has forged a pioneering path, the British experience also demonstrates how hard it is to pin down the problem of energy. Even under comparatively favourable political conditions, it has not proved possible to develop effective measures that achieve their targets. The absolute number of energy-poor households in the United Kingdom has remained relatively constant for years and important data needed to make effective use of the official Low-Income-High-Cost indicator are lacking (Schumacher et al. 2015).

Experts also criticise particular measures, especially those intended to improve energy efficiency. These reach only about half of the households affected by energy poverty, they report (Platt et al. 2013). They also state that energy providers have only weak incentives to invest in the most effective measures and tend to risk regulatory fines instead.

Other reports point out that measures for entire estates are more effective than household-level action (Preston et al. 2014). This, they say, is more a matter for local authorities and NGOs than for energy providers.

Another issue is the prepayment meters frequently upheld as an effective means of preventing disconnections. Prepayment increases the transparency of consumption and cost and as such can both prevent the accumulation of significant arrears and incentivise better use of energy. But consumer organisations have discovered that a growing minority of households are, as it were, blocking their own access to energy supply by failing to purchase credit for their prepayment me-

Table 9
Measures to promote energy efficiency in the United Kingdom

Energy Company Obligation (ECO)	Energy suppliers are required to support the delivery of measures in "hard to treat" households. Designed so that energy efficiency measures can be paid for by the resulting savings on energy bills.
Provision under Energy Act 2011	Provision that from April 2018 landlords will not be permitted to rent out any property that does not meet a minimum energy performance rating. Use of these regulation making powers is conditional on there being no net or up-front costs to landlords.
Decent Homes Programme	In place since 2000, ensures that social housing achieves a minimum standard against four criteria, including providing a reasonable degree of thermal comfort.
Home Energy Conservation Act (HECA)	Local authorities are required to report every two years, setting out the energy conservation measures that the authority considers practicable, cost-effective and likely to result in significant improvement in the energy efficiency of residential accommodation in its area.
Department of Energy and Climate Change (DECC) Local Authority Competition	Competition open to all local authorities. Goals are to help reduce fuel poverty, boost energy efficiency and encourage collective switching and purchasing across the country.

Source: Pye et al. 2015a, author.

Table 10
Financial support measures in the United Kingdom

Warm Home Discount (WHD) Scheme	Provides direct support with energy bills for low income households (around 150 annually to around 2 million households. Many of these households receive their WHD automatically through the sharing of data between energy companies and the Department for Work and Pensions (DWP).
Winter fuel payment	Annual payment of up to 350 for pensioner households
Cold weather payment	Payment during periods of severely cold weather to pensioners who receive pension credit or people on income-related benefits

Source: Pye et al. 2015a, author.

Table 11
Information and advice measures in the United Kingdom

Energy Best Deal	Coordinated by Citizen's Advice, and supported by Ofgem and utilities; aims to make people aware of the savings that can be made by switching fuel providers, to provide information about the help available and to inform consumers about energy efficiency.
Big Energy Saving Week	Campaign week organised jointly by Citizens Advice, the government, Energy Saving Trust, Age UK and other voluntary and charitable organisations.
Market Cheapest Deal	Campaign communicating the cheapest deal available in the market.
Home Heat Helpline	Free helpline for vulnerable consumers.

Source: Pye et al. 2015a, author.

Table 12
Consumer protection measures in the United Kingdom

Debt Assignment Protocol	Customers who use a prepayment meter can transfer their debt when they switch supplier.
Disconnection Safeguards	In the event of a looming inability to pay, suppliers have an obligation to offer to install a prepayment meter to enable a consumer to repay the debt and avoid the need for disconnection. Suppliers are also prohibited from disconnecting certain customers during the winter months.
Citizens Advice consumer helpline and Extra Help Unit	Information and assistance with complaints for customers who have been disconnected or are at risk of disconnection.

Source: Pye et al. 2015a, author.

ters because they don't have sufficient money available (Vyas 2014). Nor can prepayment meters prevent households from being disconnected. Moreover, prepayment meters are often tied to expensive tariffs (Preston et al. 2014).

The well-known Winter Fuel Payment for senior citizens also draws consistent criticism, as it is paid as a lump sum to most senior citizens without verifying how serious their energy poverty is. It is estimated that only 10 per cent of pensioner households suffer energy poverty (Department of Energy and Climate Change 2015).

It is conspicuous that the British approaches focus very strongly on housing quality, and on reducing prices through competition. They seek to spur the latter by encouraging socially disadvantaged households to change providers. In Germany, that approach would fail in many cases because energy-poor households are often trapped in the expensive standard tariffs and negative credit ratings (Schufa) make it hard to switch.

British organisations and governments were the first to put energy poverty on the agenda and the first to develop measuring instruments and responses. But this also has something to do with the specific difficulties posed by modernising infrastructure in British settlement structures and building types that sometimes are unable to keep pace with modern infrastructure.

The British example also demonstrates that such instruments are not always effective, that the policy tools are institutionally fragmented and that both the extent and causes of energy poverty can be diffuse.

3.3 FRANCE

Energy poverty has been an explicit issue in France since 2007; but the first special programmes to reduce the energy debts of private households date back to the 1980s.

France is in the rather unusual position of having its largest providers still in state-ownership. Accordingly, the liberalisation context takes somewhat of a backseat compared to state responsibility.

French energy prices lie below the EU average but have risen disproportionately in recent years, above all because – like in Germany – additional levies have been introduced to fund the energy transition and social initiatives such as special tariffs.

As elsewhere, France long treated energy poverty as a consequence of classic income poverty. It was seen as the job of the social security system to ensure that households were able to pay their energy bills. By now, the government has come to treat access to energy as a kind of basic right, and in 2000 actually created a "right to energy", partly in response to rising energy prices.

As in Germany, the discussion grew in the context of the energy transition, whose trajectory in France is rather different than in Germany. The term "energy poverty" first appears in proposed legislation in 2010 (Dubois 2012). The 10-per cent rule, under which anyone spending more than 10 per cent of their disposable income on energy is energy-poor, is widely used, in association with a qualitative criterion: those who experience particular difficulty satisfying their basic domestic energy needs are energy-poor. In French, the term "precarious" is used rather than "poor" in order to distinguish the phenomenon clearly from income poverty.

Today, French institutions also use similar income/spending indicators to the British. These indicate that 20 per cent of households are energy-poor (Nolay 2014). Recently, data on energy consumption of buildings have also been included, revealing that one-third of France's housing stock has very poor energy-efficiency standards, with the north of the country worst affected. This unsatisfactory situation is similar to that of the United Kingdom.

The government's "Habiter mieux" (Better Living) programme of 2010 introduced the first building efficiency measures tailored specifically to the needs of low-income households. Such action adapted to living conditions is strongly supported by civil society initiatives, as in the United Kingdom. But the largest programmes are run by the welfare state: one-off grants to households with energy debts, and social tariffs, where state electricity and gas providers automatically offer a cheaper tariff to households below a defined level of income.

Habiter mieux and social tariffs are the two most prominent instruments directed against energy poverty. They symbolise the French government's equivocation as to whether the true causes lie in energy spending or in the low incomes of energy-poor households. Alongside these two central programmes there are also other measures. Many of these are not directed explicitly towards energy poverty, but are environmentally or socially motivated, such as rent subsidies and tax breaks for renovations. Tables 13–16 list programmes introduced specifically to combat energy poverty (Pye et al. 2015e).

In a state as centralised as France it is astonishing how many of the measures operate at the local level or are implemented in collaboration between various agencies. There are also serious efforts to target efficiency improvements towards low-income households.

The biggest point of criticism, however, is the bluntness of the instruments. Especially in the field of building efficiency there are indications that low-income households benefit only partially. Even the explicitly socially-driven Habiter mieux programme has mutated into a middle class project. Its target group is vague and the programme is tapped above all by landlords (Crémieux 2014). On the other hand, the programme's institutional design is unusual in centralist France, as it grants local administrations a degree of latitude to identify target groups and create instruments. And the local authorities do indeed concentrate on low-income households rather than applying the national definition of energy poverty. Although the instruments mostly reach property owners and rarely tenants (Dubois 2012), improvements are discernible: half the households participating in the programme to date have been able to realise savings. And more than two-thirds of respondents in one survey said they were no longer cold at home in winter (Schumacher et al. 2015).

It would also appear that the social tariffs tend to fail to reach their target group of low-income tenant households. One condition for receiving social tariffs is for the applicant to be registered with a specific health insurance fund, which not all potential recipients are. Of the four million officially entitled, only about one million in fact claim the social tariffs

Table 13
Measures to promote energy efficiency in France

Habiter mieux ('Living better')	Programme co-funded by public funds (€500 million in state funding; renovations must improve energy efficiency by at least 25 per cent; bundles various types of subsidy; managed at local level (department) through the signing of a 'local contract of commitment to fight energy poverty'.
Grants for energy efficiency works for low-income landlords	Managed by National Housing Agency. Targeted towards very modest/modest income households, up to a €20,000 ceiling.
Social funds for support for energy management	Local social agencies and ANAH identify vulnerable households to improve thermal insulation. Aims to finance thermal renovation works in vulnerable households that cannot benefit from ANAH support.
'Roofs first' Programme	Additional social housing programme; 10 per cent of budget for new construction, 90 per cent for renovation, both with modern energy standards; EDF contributes along with the Abbé Pierre Foundation, the state, ANAH and local authorities.
'Energy Solidarity Pact' programme	Supports the realization of priority works to improve housing energy performance in vulnerable households, run by the Ministry of Environment and Energy.
Renewable Heating Fund	Supports the installation of renewable heating solutions; housing associations can benefit from it.

Source: Pye et al. 2015e, author.

Table 14
Financial support measures in France

Lump sum for rental expenses	Part of Personal Housing Assistance (APL), to cover part of heating and electricity expenses. Up to €760/year. Administered by social insurance.
Support with energy debts	Financial assistance to pay energy debts, administered by local authorities.
Payment of energy debts	Catholic charity organisations pays energy debts of low-income households
Social Tariff for Primary Energy Demand	Lump-sum rebate on electricity subscription; automatically applied to households with chronically sick members, others are subject to income limits; managed by central government and health insurance operators.
Special Solidarity Gas Tariff	Rebate on gas subscription, comparable to Social Tariff for Primary Energy Demand.
Reduced VAT rate on heat networks	Housing organisations apply to Ministry of Housing for reduction.

Source: Pye et al. 2015e, author.

Table 15
Information and advice measures in France

Energy solidarity package	National energy suppliers and local social agencies arrange energy advisers for vulnerable households; energy-saving technologies are installed.
Energy efficiency ambassadors	Volunteers advise vulnerable households in social housing.

Source: Pye et al. 2015e, author.

Table 16
Consumer protection measures in France

'Winter truce'	Customers eligible for subsistence benefits may not be disconnected during the winter months.
Disconnection safeguards	When a household has asked for support from the social agency, energy suppliers are prohibited from disconnecting for a period of time.
Supplier of last resort for gas	There is a supplier of last resort for gas that is obligated to connect households.

Source: Pye et al. 2015e, author.

(Nolay 2014). Moreover, an average monthly saving of 8 euros improves the economic situation of such households only marginally. More broadly, the absolute income threshold discriminates against precarious households that do not receive benefits. In France, too, the diversity of initiatives and their lack of targeting raise the question of how effectively energy poverty is being tackled.

3.4 DENMARK

Unlike France, Denmark was quick to privatise its energy provider, but still retains some state-owned enterprises. Its energy prices are among the highest in the EU, largely due to taxes and levies. Denmark has a long record of promoting renewables and programmes to improve the building efficiency are equally widespread. But these measures are driven by energy policy and climate concerns, with social objectives fairly marginal.

Danish governments have not, to date, put energy poverty on the agenda as an issue in its own right, asserting that problems with energy costs are covered by the existing social security systems. In a report to the EU, the national regulatory authority argues:

"Vulnerable customers are handled through the social security system. Safeguards are implemented in the energy reg-

Table 17
Measures to promote energy efficiency in Denmark

Replacement of old oil-fired burners	Households with oil-fired burners that they want to replace with modern systems can apply for a grant; managed by the Energy Ministry.
Promotion of energy modernisation	Grants for renewal of windows, rooves and heating systems, managed by the Energy Ministry.

Source: Pye et al. 2015d, author.

Table 18
Financial support measures in Denmark

Heating allowance for pensioners	If heating expenses exceed a certain ceiling, a heating allowance is granted to cover up to three-quarters of the total cost; gradually reduced as income rises; managed by the central government.

Source: Pye et al. 2015d, author.

Table 19
Information and advice measures in Denmark

Information on energy efficiency for NGOs	Energy Service Denmark provides information on energy efficiency and energy services to citizen-based organisations.
Energy saving programme for electricity companies	Electricity companies are obliged to set aside a budget for broad information activities that can supplement their own activities. Funds were used mainly to provide support for three main NGOs.

Source: Pye et al. 2015d, author.

Table 20
Consumer protection measures in Denmark

Protection of district heating consumers against unfair prices or contractual terms	The regulator ensures that district heating suppliers comply with the terms of the non-profit network company governing the district heating market.
Simplified bills	Consumers can apply for a simplified energy bill; prescribed by the regulator.
Disconnection safeguard	Electricity can be cut off after two reminders. The supplier must notify the social services if there are children in the household.

Source: Pye et al. 2015d, author.

ulation to protect consumers. This means that consumers are protected by general requirements for disconnection, price of connection, payment conditions as well as all household customers are eligible to receive electricity or natural gas at regulated prices. [...] Lastly a single point of contact for the end-user is established by the Energy Supplies Complaint Board." (Danish Energy Regulatory Authority 2014).

As early as the 1980s, Denmark set up a programme to promote energy-efficient renovations and replace obsolescent heating systems. The programme was motivated more by energy and economic concerns than environmental or social ones. The Danish heating market is also unusual in that about 60 per cent of households are connected to district heating systems. In Denmark, this form of heating is generally cheaper than household gas heating because it uses combined heat and power technology, with a mix of renewables, natural gas, coal and oil (Gram-Hanssen/Haunstrup Christensen 2011).

Half of all Danish households already have smart meters. Even in Denmark, about 1 per cent of households have their electricity disconnected in any given year. But it takes on average 90 days from first notification to actual disconnection, which is relatively long in European comparison (ACER/CEER 2014). At first glance, the number of instruments suggests strong engagement, but in fact they include very few measures explicitly addressing energy poverty. The goals are rather effective competition, general consumer standards and energy efficiency.

Nevertheless, some of these market regulation measures are intended specifically to protect vulnerable consumers. For example, there are basic supply tariffs and moves to make it easier to compare tariffs. The Danish welfare state channels specific financial support only to senior citizens, who receive heating allowances similar to those in the United Kingdom. Most efficiency measures operate without social policy objectives, serving instead above all to develop industrial solutions to enhance the quality of the housing stock. The listings below include only measures that directly or indirectly address the problem of energy poverty.

Denmark is one of the European countries in which energy poverty appears not to be a problem of political or public relevance. The existing competition rules and consumer protection standards are regarded as adequate arrangements. Efficiency measures are designed above all to promote general infrastructure modernisation.

3.5 BELGIUM

For some years now, rising energy costs have been fuelling the poverty debate in Belgium. Initiatives to reduce costs for low-income households do exist – over and above those designed to stabilise income – including in particular spending on electricity and heating. The discussion has been set in motion by civil society organisations, and there even is a national network (RAPPEL).

In the meantime, the debate has persuaded the government to introduce relatively drastic measures. In 2013, it froze energy prices for a year, despite the reservations of numerous competition experts; the Belgian energy market is not yet fully privatised. One year later, it cut the rate of VAT on energy for private households from 21 to 6 per cent. As well as energy prices in general, the relatively poor housing stock is also targeted: low-income tenants in particular tend to live in buildings with outdated heating systems, and surprisingly many heat with electricity.

Table 21
Measures to promote energy efficiency in Belgium

Renovation Bonus (Flanders)	Grant amount depends on income levels; managed by local housing administration.
Penalties for non-isolated roofs (Flanders)	Residential dwellings that lack sufficient roof insulation are declared 'unsuitable for habitation' and, as a consequence, subject to a fine; overseen by the regional government.
Social roof insulation project (Flanders)	Grants for roof insulation for tenants/landlords on the private rental market including social assistance, generally necessary to reach an agreement between the tenants and the landlord. This grant applies only to beneficiaries of social tariffs, FRCE/FRGE, households equipped with prepayment meters, social housing tenants or tenants of a very low-rent dwelling, or households under threat of disconnection; managed by the Federation of Energy Saving Companies.
Energy bonus (Brussels and Wallonia)	Supports energy saving investments such as insulation, change of boiler or double glazing; amount depends on household income; managed by the local environment agency.
Social Green Loan (Brussels), ECOPACK (Wallonia)	Enables households to benefit from a zero interest loan for energy saving modernisation; 85 per cent of households are eligible (Brussels); managed by the local environment agency.
MEBAR II (Wallonia)	Grant limited to 1,400 every five years for low-income households supports investments in improvements of the energy infrastructure. Environmental criteria are not strict, managed by local housing and energy agency.
'Energy for all' project	Regular call for proposals of innovative projects to fight energy poverty; selected projects receive a grant and benefit from training carried out by the NGO Ashoka; managed by the Roi Baudouin Foundation.

Source: Pye et al. 2015d, author.

Table 22
Financial support measures in Belgium

Specific Social Tariff for Gas and Electricity	Regulated national tariff from commercial suppliers, applies automatically to all protected consumers; 30 per cent lower than the market tariff; funded through federal budget, including special tax on gas; more generous criteria at regional level.
Social Fund Heating for Fuel Oil	Lump sum support for heating costs for vulnerable households; managed by local social services.
Social Fund Gas and Electricity	Supplies local social services with personnel and money to support households with unpaid energy bills; money is used to cover arrears; managed by central government.
Coverage of energy costs	Local social services can cover up to 100 per cent of the cost of replacing especially inefficient technologies in low-income households.
Power4you initiative	Social-ecological initiative by NGOs to offer renewable energy at affordable prices.

Source: Pye et al. 2015b, author.

Table 23
Information and advice measures in Belgium

Energy savers project	Energy advisers visit low-income households, funded by energy suppliers; managed by the Federation of Energy Saving Companies.
Energy challenge	Short-term projects in which households learn to reduce their energy consumption; managed by local authorities.
Energy audits	Energy suppliers must provide energy advice to the most vulnerable 2 per cent of households.
Social energy guidance	Social services offer an energy audit to vulnerable households.
Energy mentors (Wallonia)	Unemployed people trained to provide support to households willing to make energy efficiency improvements.
Preventive Action Plans on social energy guidance (Wallonia)	Preventive counselling to guide precarious households in improving their homes' energy performance.

Source: Pye et al. 2015d, author.

Table 24
Consumer protection measures in Belgium

Continuity of service	Customers who do not pay their energy bills benefit from a 60-day delay after the last notice of payment default before they can legally be dropped by their supplier, the regulating agency is responsible.
Supplier of last resort mechanism	If a dropped customer does not enter into a new contract with another supplier, they are automatically supplied by the local supplier of last resort. Unless the customer is protected, this new supplier charges them a higher tariff than what is available on the private market in order to encourage them to return to the market; the regulating agency is responsible.
Prepayment meters	Customers who are in payment default with the supplier of last resort receive prepayment meters with an emergency reserve. The mechanism is funded by DSO, suppliers and consumers; social services can provide prepaid cards.
'Winter truce'	Decisions to cut people off (taken by the judicial authorities) can be suspended during winter.

Source: Pye et al. 2015d, author.

While official policies operate without a recognised definition of energy poverty, there are attempts to identify vulnerable groups. National energy market legislation contains provisions for "protected consumers", who include households on basic social security benefits, people with disabilities and households in social housing with gas heating. The chosen categories are, to an extent arbitrary, and exclude other groups, such as low-paid workers in classic rented accommodation. Certain Belgian regions have therefore started to include additional groups, such as indebted and low-income households (Huybrechs et al. 2011).

Housing quality is a crucial aspect. Almost one-third of homes in Belgium were built before the Second World War, and the social housing stock is relatively small. However, most measures tackling energy poverty focus primarily on energy supply rather than infrastructure. The most important approaches are social tariffs and prepayment meters. Another instrument, which provided a basic amount of energy free of charge, was abandoned in 2013.

It is noticeable that the different regions of the country pursue different concepts. Flanders seeks to improve consumer protection in liberalised energy markets. The Brussels region works to guarantee access to energy, while Wallonia prioritises reducing the energy debts of private households. Altogether, Belgium has developed a broad spectrum of instruments, even more so than France. Belgium also has numerous efficiency measures that focus on low-income households. This sets it apart from both Denmark and Germany, where such programmes are not targeted.

Some of the measures target people whom national law defines as particularly vulnerable. However, this does not take broader circumstances in the household into account. The definition of households entitled to apply for efficiency projects is generally different again. Certain groups are hard to reach, such as low-income tenants, who are especially dependent on their landlords.

The ambivalent nature of prepayment meters is also seen in Belgium: They can be a means to avoid the consequences of disconnection and guarantee a minimum supply. This depends on the household's budget, however, not its needs. Moreover, energy debts remain in place regardless of the presence of a prepayment meter.

Certain social security provisions can be counter-productive. For example, benefit rules that cap coverage of energy consumption punish households living in the worst-insulated housing.

3.6 BULGARIA

Bulgaria has one of the highest poverty rates in the European Union: about half of all households are classed as poor. Energy poverty here is just one facet of a broader social and economic problem. Nevertheless, Bulgaria's gas prices are among the highest in the EU, leading many households to heat with electricity instead. This is unusual in Europe today and occurs because the country's electricity prices are still among the continent's lowest.

Further, unlike in most Western European countries, liberalisation is only gradually taking hold in Bulgaria's energy sector. The home ownership statistics are also striking, with almost 90 per cent of the population being owner-occupiers. But the quality of the buildings leaves much to be desired. The few measures explicitly addressing energy poverty include heating allowances for recipients of basic social security, but these represent only 8 per cent of households. And the allowances are so parsimonious that a family can generally afford to heat only one room. The regular SILC survey (European Union Statistics on Income and Living Conditions) identifies Bulgaria as particularly problematic, finding that two-thirds of the population have to restrict the heating of their homes in winter (Schumacher et al. 2015).

The government is concentrating on reducing the general level of poverty, and major programmes to improve housing quality do not yet exist. Given that a large proportion of heating systems are outdated and that gas is so expensive, the energy balance of the housing stock is generally poor.

The decisive starting point for instruments to tackle energy poverty is to address poverty in general. As in Romania and elsewhere in south-eastern Europe, the very high general poverty rate leads governments to try to first increase incomes. But the poor state of housing compounds the woes of the marginalised and leads to broader constraints than just energy poverty.

Table 25
Measures to promote energy efficiency in Bulgaria

National Housing Strategy	Various measures to improve housing quality; managed by the Ministry of Regional Development and Public Works.
National housing renewal programme	Programme to improve energy efficiency of residential buildings, managed by the central government, based on the cooperation of owners' associations and energy efficiency service companies.

Quelle: Pye et al. 2015c, eigene Darstellung.

Table 26
Financial support measures in Bulgaria

Winter Supplement Programme	Provides support for socially vulnerable households to help them with their heating expenditure; amount depends on type of heating; managed by the Ministry of Labour and Social Policy.
Other energy assistance schemes	Reduction of night-time electricity tariff for those not connected to district heating in winter months; managed by the central government.

Quelle: Pye et al. 2015c, eigene Darstellung.

4

POLICY OPTIONS FOR GERMANY

The approaches applied in the fight against energy poverty are similar across countries, the outcomes less so because circumstances are so different. Only the British government has an official definition of energy poverty, using the Low-Income-High-Cost indicator to identify affected households (Schumacher et al. 2015). The country comparison supplies a number of general findings, from which lessons for the German situation can be drawn.

4.1 EXPERIENCES AND OUTCOMES IN EUROPEAN COMPARISON

Rising energy prices, low incomes and energy-inefficient buildings are identified as central causes of energy poverty. As far as energy costs are concerned, the member states play a contradictory role. On the one hand, the (partly-)privatised energy market is increasingly immune to state intervention on pricing, at least where energy providers are already primarily privately owned. In countries with state-owned energy providers, on the other hand, government interest in maintaining stable revenues generates political resistance to general price reductions. Instead, many countries have, unlike Germany, introduced social tariffs. More exotic arrangements – such as the Belgian price controls – are the exception. As a rule, social tariffs are organised as publicly subsidised energy provider tariffs. Unlike benefits, social tariffs very precisely target energy spending and reduce it effectively. However, since social tariffs are not usually degressive, they create a sharp distinction between benefit recipients and low-paid workers.

On the other hand, states themselves impose heavy levies on energy, especially in Germany, as Figure 7 shows.

It is therefore absolutely justified to identify the state as a central cost driver. There are certainly many good reasons behind this, including environmental and climate-led choices, but the distributive effects of high energy prices generate social costs elsewhere.

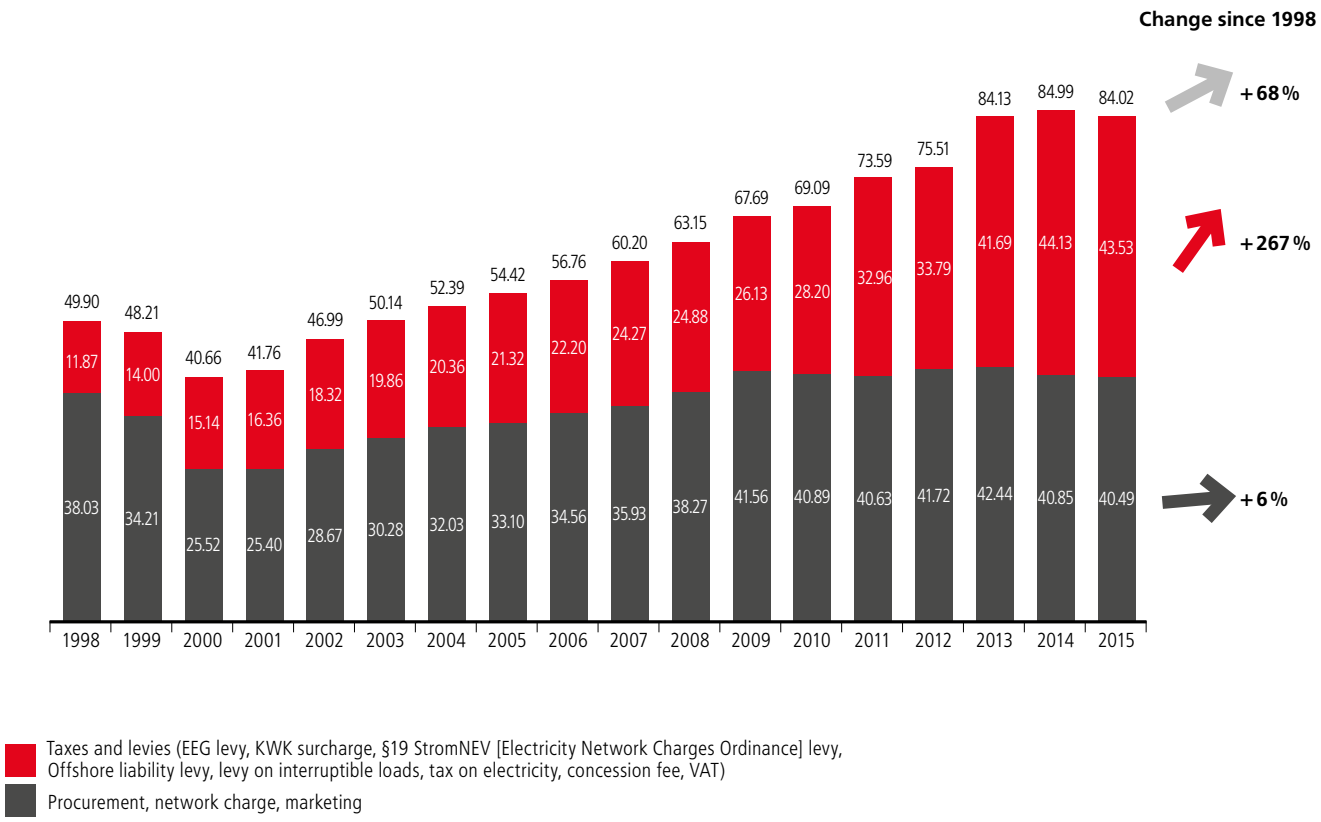
Income trends are also crucial. The higher the poverty rate in a European country, the more energy poverty is eclipsed by general income poverty. In Bulgaria, it would at first glance seem superfluous to tackle energy poverty separately, when so many households have such low incomes. On the other hand, the proportion of households which are unable to heat their home adequately is also disconcerting. While this is primarily a function of low income, it is the combination of low income and poor housing that puts so many people's health in jeopardy. Better buildings would ameliorate this alarming effect, which can certainly be classed as energy poverty. In other words, instruments to fight energy poverty do not necessarily need to tackle the causes, but can also treat the symptoms. The latter include the inability to access adequate energy-supply, which is a clear indicator of energy poverty.

Income support measures play a role in all the countries studied. Some target energy directly, by granting subsidies such as heating cost allowances; others take the form of welfare benefits securing a minimum standard of living. Three separate problems arise here. Firstly, welfare benefits do not always cover the real costs of energy, especially in periods of rapidly rising prices. Secondly, they leave the cost structure of energy supply unaltered, unlike, for example, social tariffs. There may even be counter-productive effects, if benefits function to stabilise energy prices. Thirdly, the system disadvantages low-paid workers living off incomes just above the threshold for basic social security. The effectiveness of direct financial assistance for energy-poor households varies. In countries with high poverty rates, such as Bulgaria, they can have a relatively large effect. In richer countries, deadweight effects arise, as with the heavily criticised British winter fuel payment.

Unlike income support, improving building efficiency can actually reduce energy costs. It plays a significant role in the European countries studied. With their Warm Front Scheme, British governments have been working for years to improve energy efficiency in housing for low-income households. In Eastern European countries such as Bulgaria most buildings still have outdated and costly heating systems.

In all the countries studied, the measures reported by governments themselves include programmes designed to improve energy efficiency. Here, too, problems are discernible. For one thing, most such programmes pursue general climate objectives, and focussing them on households at risk of poverty is often difficult in practice. For another thing, certain patterns of ownership in the housing market may create in-

Figure 7
Average monthly electricity costs, euros (3,500 kilowatt hours annual energy consumption)



Source: BDEW, 02/2015.

centive traps: landlords will invest more in energy efficiency only if they profit from the gains, but it is their tenants who first feel the benefits of lower energy costs. While this increases the value of the properties in the medium to long term, in the short term the cost of the investment is added to the rent. Where this is not possible, landlords are likely to postpone such investments.

The country comparison reveals that strategies to combat energy poverty are still in their infancy. There often is a lack of clear definitions and methods for systematically identifying households. It is therefore unclear how precisely targeted the various instruments are. On the other hand, existing studies supply a number of indicators that demonstrate the magnitude of the problem:

- energy poverty is concentrated in low-income households;
- the burden of high energy prices is greatest in low-income households;
- low-income households are frequently charged disadvantageous tariffs;
- low-income households are at greater risk of energy debt;
- low-income households are more likely than other households to live in energy-inefficient buildings;
- low-income households lack the resources to invest in energy-efficient appliances.

These findings also apply to Germany (Strünck et al. 2016). But which of them are most important for fighting energy poverty remains unclear. Given that it will take time to resolve the methodological difficulties posed by defining and measuring the problem, for now only a pragmatic approach with a mix of policy instruments is available.

4.2 ADVANTAGES AND DISADVANTAGES OF POLICY MEASURES

The comparison of European countries is sobering. Although the European Union keeps the issue of energy poverty on the agenda, the lack of definitions and indicators and the fragmentation of the instruments reveal the dearth of overarching strategies. The effectiveness of particular instruments is likely to vary widely in Germany, too.

There are good reasons to doubt whether energy efficiency is truly "the key to fighting energy poverty" (Kopatz 2013: 258, translated). For that to be the case, efficiency-enhancing measures would have to be very precisely targeted and better than cost-neutral for the affected households. Stricter energy efficiency standards for buildings and appliances are desirable for all kinds of reasons, but they are unlikely to benefit households at risk of poverty in the short to medium term. Few energy-poor households live in the newest, and therefore most energy-efficient, buildings. At the same time, energy-poor

households bear significantly higher average energy costs per square metre, which is only compensated by their homes being smaller on average (Strünck et al. 2016). And in the absence of subsidy programmes, the cost savings of more efficient appliances kick in only over the longer term.

In Germany, income and energy prices are therefore the most important points of attack, which means that energy policy remains relevant alongside social policy. Energy policy is also especially relevant because energy prices in Germany are especially strongly influenced by the state, through environmental and climate-driven levies and new subsidy systems, such as the Renewable Energy Act. If this creates social imbalances, the welfare state should not necessarily be primarily responsible for picking up the pieces. Solutions in other policy fields will be more effective – and will potentially also lead to more distributional equality.

4.2.1 ENERGY POLICY

Energy policy has an indirect influence on prices and energy supply. The energy mix in Germany has already changed noticeably, and the state remains the main driver of energy prices, especially for electricity. Low-income households in particular have few possibilities to economise, especially in the absence of savings for the necessary outlays. The discussion about reforming the Renewable Energy Act to relieve the burden on households at risk of poverty is therefore certainly relevant. Various studies analysing the impact the renewable energy levy, which is supposed to fund the Energiewende (energy transition), has on low income households, have called for changes (Heindl/Schuessler 2015; Kreider/Sommer 2016). This would include financing the Energiewende more strongly through taxation rather than the present arrangement, which relies largely on levies on the electricity price. Apart from reducing the electricity tax, the proposal to grant a free basic allowance of 1,000 kilowatt hours – which would especially benefit low-income households – remains under discussion (Neuhoff et al. 2012). Tariff structures have also attracted attention. The social tariffs that exist in many countries are frequently rejected in Germany on environmental grounds.

Social tariffs from energy providers

Social tariffs for households in need address the issue indirectly via energy prices, whereas the German welfare state is fixated on the income side. Specific household spending problems are individualised or delegated to debt counselling. As such it would also be worthwhile to systematically address the spending side using instruments more commonly associated with energy policy than with social policy. This would also have the side-effect of boosting acceptance of the Energiewende (energy transition).

The question of how social tariffs are funded is a decisive aspect. Such a measure need not involve redistribution between customers. It could also be funded out of taxation and thus better targeted than welfare benefits. Social tariffs would not be out of place. Other infrastructure essentials, such as housing, are already subsidised in order to compensate the structural disadvantages of low-income households. However, social tariffs will not automatically be the cheapest tariffs in the market: competition does not necessarily channel benefits to vulnerable consumers.

Many find themselves trapped in expensive standard tariffs. While these guarantee a minimum service to all, price competition has little impact in this sector and households with debts and negative credit ratings (Schufa) have few possibilities to switch. This counter-productive state of affairs could be tackled by strengthening competition via energy legislation. It would also be conceivable to award the basic supply in an auction process taking into account additional services such as preventive energy counselling and transparency in billing.

The consumer advice centres have proposed further improvements, such as linear tariffs without volume discounts, which would expand the incentives to reduce consumption (Verbraucherzentrale NRW 2014). It must be said, however, that the room for savings in energy-poor households is tight and generally already exploited to the maximum. In practical terms, such households are unable to influence the energy efficiency of the building they live in. Here, the state still has much broader possibilities than it has made use of in Germany to date.

Anyway, as empirical research confirms (Strünck et al. 2016), households at risk of poverty are particularly unlikely to be wasting energy. To that extent, the popular argument that social tariffs would weaken the incentives to save energy does not really hold.

Avoiding disconnections

The procedures for disconnection are another aspect of energy legislation. Although there are already a number of exemptions, clear rules on vulnerable consumers are lacking, as is a more precise definition of alternatives to disconnection.

In practice, however, energy providers are already permitted to make their own assessment of proportionality, and do so in practice. Consumer advocates have long been demanding alternatives such as instalment plans, deferments and prepayment (Verbraucherzentrale NRW 2014). But the legislation governing the energy industry could also define who counts as vulnerable and what proportionality really means even more clearly.

Prepayment meters, which are widely used in the United Kingdom, can also help. The technical version of prepayment offers a number of advantages, but also has drawbacks. Contrary to a widely held prejudice, prepayment meters cannot completely prevent disconnection. If credit is not topped up, no or only a minimal amount of electricity will flow. Further, in the United Kingdom it is common for households to, in effect, "disconnect themselves" if their budget will not stretch to cover their energy needs (Vyas 2014).

However, prepayment meters can help households to maintain an overview of their energy consumption. Ultimately, they can also ensure that a household avoids accumulating energy debts that multiply the costs. The resistance to prepayment meters among most German energy providers stems from the relatively high costs. If these are charged to the consumer, the overall cost to the low-income household is greater.

The discussion about the usefulness of prepayment meters will be revisited in coming years with the planned roll-out of smart meters (Schneidewindt/Sieverding 2015). If volume

effects keep the cost to consumers small, prepayment would become a useful instrument. But it does not address the causes of energy poverty. In cases where low income constitutes these causes, social security systems come in.

4.2.2 SOCIAL POLICY

In Germany social policy quantitatively plays the largest role in fighting energy poverty. The basic social security systems assume the costs of housing and heating; the cost of electricity is included in the personal allowances. However, there has been steady criticism from poverty researchers and political parties that the personal and additional allowances are insufficient (Becker 2013). One could also argue that the lowest wages are still too low. That, however, points towards the fundamental debate on the minimum wage, collective bargaining and the low-wage sector, which must be left to one side here.

Raising minimum benefits

Receipt of minimum benefits is no protection against energy poverty, although there is a close connection. Social welfare organisations criticise the small amount of electricity calculated in the personal allowances, saying that it "falls about 27 per cent short of actual spending" (Rat für Nachhaltige Entwicklung 2014, translated).

"To close this gap the personal allowance would have to be raised by €9.26/month. That represents a significant sum of money in relation to the monthly allowance of €391 for a single person. According to Schneider, the measure would cost about €1 billion annually, and the number of beneficiaries would increase from 800,000 to one million." (Rat für Nachhaltige Entwicklung 2014, translated)

The Catholic charity Deutsche Caritasverband has also calculated that the amount allocated to electricity in the monthly personal allowance would need to be raised by 20 per cent or by about 7.50 euros (Deutscher Caritasverband 2015). Quite apart from the energy costs in the minimum benefits, there are many other good arguments for increasing the personal allowances. According to calculations by the Hans-Böckler-Stiftung, the level of minimum benefits falls about 45 euros short of actual needs (Becker 2015).

The costs of housing and heating are another starting point. Coverage of "appropriate" housing and heating costs does not, in practice, always cover minimum needs. Court rulings indicate that the calculations are often based on unrealistic heating costs, or that recipients are placed in housing that is only "cheap" at first glance. Greater account should therefore be taken of building efficiency when defining "appropriate heating costs". Nor is it helpful that the benefits agencies always seek to place clients in the supposedly cheapest housing. Here, there needs to be greater awareness of housing quality and the functioning of housing markets.

Local authorities take very different decisions about what is "appropriate". Most apply caps on the basis of size or number of occupants. The criteria and concepts used in connection to this are opaque and confusing. Flat-rate reimbursement of heating costs is no longer permitted after a ruling of the Federal Social Court, but there are local authorities that reimburse actual heating costs.

Finally, there are those who are entitled to minimum benefits but for whatever reason fail to claim them. This is a fundamental problem of social security systems. In a study of unclaimed benefits for the Federal Ministry of Health and Social Security published in 2003, Becker and Hauser conclude that "for every recipient of minimum benefits there are at least two, more likely three who are entitled but not claiming" (Becker/Hauser 2003). Although nearly fifteen years have passed since the study was published, it can be expected that today, too many people still fail to claim benefits they are entitled to.

Reform of housing benefit

It is also important to keep an eye on the margins of the social security systems, including households receiving housing benefit. Here, the state could make decisive improvements. Firstly the scope of housing benefit could be expanded to include more under-resourced individuals. Findings from an empirical study demonstrate that households in precarious income situations are especially likely to live in less efficient buildings. This is also reflected in the differences in energy costs per square metre (Strünck et al. 2016).

Such extension would offer other benefits, too. For example, housing benefit recipients are also entitled to participate in other programmes, such as the efficiency advice initiatives (Stromsparcheck) run by the Federal Ministry of the Environment. Through the housing benefit office they also have regular contact with and access to the benefits system, where staff may inform them about further assistance and other programmes ("door-opener" function).

Secondly, people have to be mobilised to actually assert their right to extended minimum benefits:

"Only a little over half the population in the bottom decile receives basic social security, student grants/loans (Bafög) or housing benefit. In the second decile, about half of which is classed as at risk of poverty (in terms of the customary definition of relative poverty as less than 60 per cent of median income), the figure is still 28 per cent. These take-up rates reflect the widespread issue of benefits not being claimed by many of those who would be entitled". (Neuhoff et al. 2012: 6, translated)

Simplifying bureaucracy and supplying more and better information are the solutions here. Target groups need to be contacted directly.

Thirdly, price increases for heating and electricity could be better accounted for in the calculation of housing benefit (cf. Neuhoff et al. 2012: 8). Energy prices – which are known to represent a decisive component of housing costs – are still not adequately included in housing benefit calculations.

This has been criticised by the Association of German Cities, for example:

"Although the draft legislation factors in the rise in heating costs since 2009 on a one-off basis, this does nothing to address the ongoing increases in heating costs that especially burden low-income households." (Deutscher Städtetag 2015, translated)

The latest housing benefit reform of January 2016 has brought about incremental improvements in this respect.

4.2.3 ENVIRONMENTAL AND CLIMATE POLICY

In countries such as the United Kingdom, France and Denmark, measures against energy poverty presently concentrate on building efficiency. In Germany, research has long been directed towards questions of efficiency (Tews 2014). Unfortunately there are only small-scale studies and circumstantial evidence on the distributive effects of building and appliance standards, but no representative data.

Efficient household appliances appear to be a smaller problem than outdated heating systems. Nevertheless, appliance replacement programmes, such as the "mini-contracting" run by certain municipal utilities, represent a viable option for distributing the efficiency benefits of new technologies more widely. But even these programmes have their pitfalls if they cause new debts to accumulate. Such approaches make sense only if the energy bill remains at least cost-neutral. They would also need to be rolled out at scale to take full effect.

Building standards are a more significant factor. The Deutsche Energieagentur estimates that 65 per cent of façades are uninsulated and 60 per cent of windows poorly insulated. Furthermore, it reports, 80 per cent of gas- and oil-fired heating systems are outdated (Deutsche Energieagentur 2014).

Possibilities to target funding for energy-efficiency renovations to particular groups exist. The problem in many cities currently is that if the rent is kept unchanged, renovation is not profitable for the landlord; and in an environment of rising prices, the poorest households fail to benefit from the efficiency gains as they are no longer able to afford the increased base rent. The central problem thus remains the incentive trap in a rental market of the kind found in Germany: initially, only tenants benefit from lower energy costs, even if the value of the property increases over the longer term. Given that the costs of such investments are therefore normally added to the rent, the subsidy would have to be large enough to ensure that the rent increase is at least cost-neutral for tenant households. The mix of grants and low-interest loans currently used in Germany cannot achieve that. If social goals were to be prioritised on par with economic and climate goals, the programmes would have to be significantly expanded and more precisely targeted.

With good reason, the French "Habiter mieux" programme concentrates on low-income owner-occupiers, where the incentive trap does not apply. Instead, the lower energy costs benefit the occupier directly. There would, however, be indirect possibilities to defuse the incentive trap, for example for households on basic social security. One possible starting point would be to take energy consumption into account when assessing the suitability of a particular property for recipients of minimum benefits (Malottki 2012). The city of Bielefeld adopted a pioneering policy in 2007: the lower the energy consumption, the higher the permissible basic rent per square metre. This allows a benefit recipient to rent a slightly more expensive property if its energy consumption is lower:

"Energy-efficient renovation and a corresponding building energy certificate are the precondition for accepting a higher price per square metre. This so-called Bielefeld climate bonus can be up to a maximum of 0.65 euros/m² above the otherwise acceptable price." (Tews 2013: 44, translated)

This also gives landlords an incentive to renovate rented properties. Law-makers could also make rent that includes heating the yardstick for benefits.

General scope exists for landlords to combine energy efficiency measures with other work on their buildings and thus to minimise wage- and other costs (Kopatz 2013). The many local authorities and cooperative housing associations already have other possibilities and objectives and take a long-term perspective in their operations. Through model projects they could also persuade other market participants that such measures will enhance the value of their properties. Housing policy can establish a new framework for these and other measures.

Closer cooperation between the different housing organisations is also conceivable. Smaller organisations find it hard to realise cost advantages from renovations. Commissioning larger organisations to conduct total refurbishments can significantly reduce costs.

4.2.4 HOUSING POLICY

Quite apart from tenancy law, local authorities enjoy greater scope and influence than is often assumed. Thus, even if – based on the evidence to date – the latest rent control initiative (Mietpreisbremse) has contradictory effects, other approaches exist, too. Especially in expensive cities, local councils are increasingly adopting planning policies that oblige investors to include a certain proportion of low-price homes and social housing when they build larger complexes. The main energy standards are then identical for the entire building; only the size, aspect and features of the flats vary.

Where local authorities own their own social housing they are also able to offer affordable housing with good energy standards and modern heating technology to socially disadvantaged tenants. But this obvious instrument is available only to those local authorities that have refrained from selling off their housing stock in recent years. The private housing market on its own will be unable to achieve the combination of ambitious climate targets and new social challenges.

Urban segregation processes are almost impossible to control. When low-income tenants move into an affordable neighbourhood with a heterogeneous ownership structure, the influence of politics on the development of rents including heating is limited. But programmes such as "Soziale Stadt" (social city) could more strongly prioritise energy poverty and create instruments for a socially equitable climate policy. That would require national and state governments to create a suitable funding framework.

Housing and urban development policy is also the starting point for practicable measurement of energy poverty. As the European comparison shows, identification of vulnerable households is largely a matter for the local level. In cooperation with civil society actors, local authorities can help in identifying quarters in which the risk of energy poverty is particularly high because of various spatial and socio-economic variables.

4.2.5 CONSUMER PROTECTION AND ADVICE

Disconnections make energy poverty visible. It could be said that a disconnection represents the criterion for 'absolute in-

come poverty', where access to energy is completely lacking for a period. The crucial consumer protection measure is therefore to regulate disconnections – including consideration of the possibility of banning them altogether.

Certain measures crop up repeatedly in the discussion, in particular the installation of prepayment meters and smart meters. If the imposition of considerable additional costs can be avoided, they can help to prevent debt – even if they do nothing to address the underlying causes.

Aside from these technical measures, whose costs can also be charged to households, other approaches exist. The Verbraucherzentrale NRW advocates various solutions that the energy providers could potentially adopt themselves (Verbraucherzentrale NRW 2014).

For example, instalments could be adjusted to actual energy consumption. Large annual top-up payments are one important reason why households fall into arrears, since they make it more difficult for people to keep an eye on their energy consumption. The additional charges imposed in arrears procedures could also be reconsidered and the procedures themselves made more transparent.

Energy pricing is another starting point. Although many low-income households are (forced to be) economical with energy, the system of standing charges and variable components fails to reward such behaviour. The tariff architecture is certainly not ecological either. There have been calls for a linear tariff in response to this.

In terms of energy prices, competition is often of little use to indebted households, as they are unable to switch from the expensive standard tariff to other alternatives. And the standard tariff is largely immune to market pressures. Consumer protection groups therefore argue for the adoption of a regulatory regime for standard tariffs, to permit indebted households to also benefit from competition.

Consumer advice can also influence household behaviour. Counselling can help people to manage their debt, to avoid going into debt entirely and also to discover further efficiency reserves in their home. As with any advice service, there is the problem of who makes use of such services, as only those who have already recognised the problem seek advice. But other mechanisms are available for reaching households in need, in cooperation between energy providers, benefits agencies and consumer advice centres.

5

CONCLUSIONS

According to most experts, the lessons of the country comparison – drawn from the few available studies on energy poverty – are clear. Alongside general action to fight (income) poverty, the EU and its member states should modernise the housing infrastructure and tighten efficiency standards for household appliances and energy supply (Pye et al. 2015g; Schumacher et al. 2015). They also state that market liberalisation has had socially undesirable side-effects, which the member states need to address by reforming their energy industry legislation. What they generally fail to mention is that through levies governments themselves heavily influence the energy costs of private households.

All European states experience difficulties identifying households affected by energy poverty and differentiating it from general income poverty. Assertions concerning increasing prevalence and differences between countries must therefore be treated with caution. But as far as the effects of energy prices are concerned, the social imbalance is hard to miss: low-income households are disproportionately disadvantaged (Kreider/Sommer 2016).

Making the basic necessity of energy cheaper for households in need and sharing efficiency gains more broadly: despite all the differences in detail, this appears to be the identifiable pattern in Europe. However, neither of these approaches is especially popular in Germany. Social tariffs are seen as an instrument of energy policy rather than of social security. And they are reputed to weaken the incentives to save energy, although that is a fairly theoretical debate. Alternatives such as a tax- and levy-free basic energy supply are still regarded as outlandish.

Programmes promoting energy-efficiency renovations, on the other hand, are not target-group-specific, as they are principally concerned with climate protection. Both instruments – a cheap basic energy supply and a socially sensitive renovation programme – could usefully supplement the existing approaches.

However, the impacts of the respective instruments are limited, and would need to be buttressed by additional measures. In order to keep them out of poverty, the energy costs of endangered households would have to be halved, on average (Strünck et al. 2016). Currently, that does not appear realistic in view of the high state levies on energy (Bontrup/Marquardt 2014). But it would be one more reason to think about tax-funded support for the Energy Transition (Energiewende), possibly in the form of a basic supply, supplemented by targeted energy-efficiency renovations.

The situation in the German housing market is different from that in most other European countries, however. Many local authorities have sold off most of their public housing stock, while the German housing market is slanted towards rental housing. Large-scale refurbishment of public housing stocks, of the kind that has created significant efficiency benefits in France, England and Belgium, encounter limits here. Nonetheless, new funding arrangements could be established to offer benefits, above all to vulnerable households.

One central cause of energy poverty is (too) low income. However, the country comparison shows that affordable essentials such as energy and housing are just as important as income distribution. The energy poverty discussion in Germany therefore also directs attention to the spending of private households. Low-income households are more likely to save on necessary energy than to waste it. Making the Energiewende (energy transformation) socially acceptable would thus create no conflict with environmental goals.

It remains an open question whether energy poverty is a social problem in its own right (in Germany). To date, politics, business and academia have tended to neglect the energy consumption of private households. Decades of supply-driven research and policy advice have left a huge vacuum and as a consequence, it is difficult to obtain evidence for policy instruments intended to help vulnerable households. The problem of energy poverty supplies good reasons to rectify that deficit.

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Abbreviations

DECC	Department of Energy and Climate Change
DERA	Danish Energy Regulatory Authority
ECO	Energy Company Obligation
EDF	Électricité de France
EPEE	European fuel Poverty and Energy Efficiency
EU-SILC	European Statistic on Income and Living Conditions
EVS	Einkommens- und Verbrauchsstichprobe (Income and Consumption Survey)
HECA	Home Energy Conservation Act
LIHC	Low-income-high-cost indicator
NEA	National Energy Administration
SOEP	Sozio-Ökonomisches Panel (Socio-Economic Panel)
WHD	Warm Home Discount
WSW	Wuppertaler Stadtwerke (municipal utility)

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