

MASARYK UNIVERSITY

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Energy poverty: Causes, effects and policy solutions

Commentary to Habilitation Thesis

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Abstract

Over the years, there has been a noticeable increase in energy availability. However, energy poverty, which is defined as the lack of socially and materially adequate levels of domestic energy services, continues to persist globally, including within the European Union. The situation of energy-poor households could worsen if they are left behind in the ongoing low-carbon energy transition or overlooked due to the absence or inadequacy of public policies. This thesis, using the Czech Republic as a case study, aims to enhance our comprehension of energy poverty and critically examine policies in this realm.

Drawing from an interpretivist perspective and employing primarily exploratory research methods, this study encompasses several theoretical approaches and analytical frameworks. It promotes a holistic outlook on energy poverty, which may uncover hidden causes and effects specific to the local context. For instance, it delves into the non-material aspects playing a role in household energy poverty, as well as the numerous pathways leading to energy vulnerability and poverty in Czech municipalities. Local research adds depth and meaning to quantitative indicators, and reveals what may remain out of scope.

The thesis also adds to the discursive side of energy poverty, a perspective often overlooked in research. By presenting different stakeholder perspectives at various levels, it shows how conflicting views complicate effective solutions to energy poverty. An illustrative example is the comparison between the real-life experiences of vulnerable households and the official narratives surrounding energy poverty. Moreover, through the analysis of how energy poverty is framed, this thesis offers initial insights into the policymaking process and its potential implications in this field. Finally, it critically examines and evaluates emerging policies aimed directly or indirectly at addressing energy poverty and vulnerability. It demonstrates that these policies do not fully realize their potential in addressing the issue.

Ultimately, this thesis points to several future research areas, including energy poverty governance, further work on integrating different research methods, and active engagement of target groups and key stakeholders to refine policy design, among other crucial avenues of inquiry.

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1. Introduction

Over time, due to technological development and powerful political and economic forces among others, energy availability has been on the rise (Bridge et al., 2018). Humanity has become accustomed to its constant flow and energy has become an integral part of our society (Hoppe et al., 2016). Energy sources, key instrumental goods, became material prerequisites for meeting human needs and demands (Bridge et al., 2018; Brugger, 2016; Sovacool et al., 2014). They are transformed into various useful forms such as fuels or heat and finally provide energy services such as heating, lighting, communication/information, or transportation (Bridge et al., 2018). As such, energy services are indispensable facilitators and protectors of goods that we consider essential to achieve human well-being, including better health, greater knowledge and education. Energy services even affect social status, social cohesion or political representation, as much daily communication now takes place through electrically powered devices or intensive domestic and international transport (Brugger, 2016). Moreover, as energy-intensive modern industrial economies have spread around the world through globalisation (Sovacool et al., 2014), the majority of the world's population now lives in a world where human needs can only be met through the provision of energy services. This raised scholarly debates about energy as a fundamental right (Brugger, 2016; Sovacool et al., 2014).

Unfortunately, 759 million people around the world were short of access to electricity and about 2.6 billion people lacked access to modern technologies for cooking and heating in 2019 (International Energy Agency, 2021). Despite past transitions to modern energy sources, much of the population in the Global South still relies on polluting fuels and technologies with negative health, social and environmental consequences. Nevertheless, energy poverty also affects the Global North. In the European Union (EU), an estimated 40 million people are considered energy poor, mostly, but not exclusively, due to unaffordability of energy services and inadequately heated (cooled) homes (Bouzarovski & Thomson, 2019).

Energy poverty is typically defined, as „a socially and materially necessitated level of domestic energy services“ (Bouzarovski & Petrova, 2015, p. 31). Such a definition recognises that a household requires a certain standard of domestic energy services for a decent way of life, while acknowledging that the required level may vary depending on the socio-cultural context and the actual needs and practices of the household. The traditional triad of low incomes, high energy costs, and low energy efficiency is usually considered to be the cause of inadequate energy services at the domestic level. But existing research has already significantly expanded the list of causal factors (see Chapter 2) from those arising from the political, economic or social settings in a given society to those less visible in the private sphere of a given household (Gillard et al., 2017; Middlemiss, 2022).

Inadequate access to energy services is accompanied by a number of symptomatic factors including doing without energy, indebtedness linked to energy bills, and the „heat or eat“ dilemma (Bartiaux et al., 2021; Einfeld & Seebauer, 2022; Grevisse & Brynart, 2011; Karpinska & Śmiech, 2020). As far as the consequences are concerned, living in energy poverty affects health due to insufficiently heated or cooled homes, and leads to mental health problems as „residential environment stops acting as a place of comfort, shelter and security and turns into an additional burden and concern for its inhabitants“ (Bouzarovski et al., 2016, p. 1153). This may aggravate feelings of isolation or social exclusion (Bouzarovski et al., 2016) and result in multiple „vicious circles“ at the household level (see Chapter 2). Ultimately, energy poverty can present difficulties in „participating in the lifestyles, customs and activities which define membership of society“ (Buzar, 2007b, p. 1910) and, when widespread, even

have macroeconomic consequences (Poputoaia & Bouzarovski, 2010), as recently experienced by the EU during the energy crisis. The crisis also revealed a larger population that is energy vulnerable, meaning they could easily face energy deprivation if external (internal) conditions change and they fall into energy poverty.

The current situation therefore demands action and raises many questions about how to sustainably deliver energy services to all households and make them less vulnerable (Sovacool et al., 2014; Wood & Roelich, 2019). The Sustainable Development Goals (SDGs), adopted by 193 developed and developing countries in 2015, are perhaps the most visible global initiative to realise this call. Also known as the 2030 Agenda for Sustainable Development, the goals for the first time include a specific target to ensure access to affordable, reliable, sustainable and modern energy for all (Goal 7). While not without criticism for being too „techno-materially oriented“ (Munro et al., 2017; Samarakoon, 2019), for many a separate goal focussed on energy access signals a broader recognition of the centrality of energy in achieving other goals and overcoming some of the pressing challenges the world faces today, including poverty eradication, gender equality, or adaptation to climate change (International Energy Agency, 2017). SDGs are thus an „important normative pursuit“ (Samarakoon, 2019, p. 1) in this broader endeavour.

One of the features that SDG 7 encompasses is a quest for inclusivity (Lippert & Sareen, 2023). In the EU, the issue of inclusion (represented by the EU’s determination to „leave no one behind“) has gradually become an integral part of its transitional efforts, with the aim to come up with more accountable solutions in terms of greater access to clean, sustainable and affordable energy (Primc et al., 2021). Existing research confirms that energy poverty is highly unevenly distributed across the EU. It follows a west-east, but also a north-south divide, where Mediterranean and Central and Eastern European Member States (MS) are the most affected (Bouzarovski & Tirado Herrero, 2017b). There is a strong assumption among researchers that the energy transition may exacerbate existing inequalities between regions, states or urban areas if the uneven socio-spatial distribution of the issue is not taken into account (Bouzarovski & Simcock, 2017; Bouzarovski & Tirado Herrero, 2017b; Golubchikov & O’Sullivan, 2020; O’Sullivan et al., 2020).

Above mentioned ideas consequently raised energy poverty to the top of the EU agenda. The European Commission (EC) sets the targets and provides guidance to the MS on how to define, measure and tackle energy poverty, as well as how to protect vulnerable households from falling into the condition (Bouzarovski, 2018b). The main source of the EU energy poverty policies, the Third Energy Package (2009/72/EC and 2009/73/EC), was reinforced by a sequence of additional legislation (Bouzarovski et al., 2021). From the latest initiatives, the European Green Deal ties energy poverty to the idea of „just and fair“ energy and climate transitions, „through designing measures for households unable to afford key energy services, financing renovation schemes, and reducing energy bills“ (Widuto, 2022, p. 2). The Fit for 55 package presents greenhouse gas emissions reduction and social fairness as twin goals to be achieved in the European future. Its aim is to identify the main factors contributing to energy poverty, while also considering structural approaches to mitigate vulnerabilities and address underlying inequalities (Directorate-General for Energy, n.d.). Additionally, numerous research projects have been initiated and jointly funded by the EC (among others, Pye & Dobbins, 2015; Rademaekers et al., 2016). The outcomes of these projects are intended to provide MS with essential insights for shaping their domestic endeavours in addressing this problem. Energy Poverty Advisory Hub (EPAH) now serves as a chief platform of energy poverty expertise within the EU intended to serve various stakeholders (Directorate-General for Energy, 2022).

Overall, an important social and environmental discourse has emerged at EU level, as articulated in the recent critical examination of the „right to energy debate“ (Jiglau et al., 2023). At the same time, new ideas are competing with the EU’s traditional market mechanism, with still unclear outcomes. Moreover, the question of how to tackle energy poverty and vulnerability is still largely in the hands of individual MS, which are not always aware, able and willing to provide the necessary support to affected households (see Jiglau et al., 2023, p. 8).

The efforts to provide sustainable energy services to all households therefore also raise the question of which political structures are responsible for the provision of energy services or, conversely, for the governance of energy poverty (Sovacool et al., 2014). After the turn of the century the emergence of new challenges has led to the return of a more „interventionist paradigm“ in the energy field (Bridge et al., 2018; Goldthau, 2012). Amidst the evolving energy landscape, markets retained their significance; however, they were no longer unchallenged in terms of their ability to achieve crucial energy objectives. Subsequent developments have demonstrated their potential shortcomings in ensuring reliable supplies at affordable prices. Indeed, the years after 2000 have witnessed numerous instances of potential supply disruptions due to geopolitical rivalries and notable power failures attributed to aging infrastructure. Furthermore, markets’ capacity to ensure „universal energy access“ has come under scrutiny, and their ability to adequately incorporate negative externalities such as greenhouse gas emissions and climate change has been questioned. This has led to a revived emphasis put on the role of the state and subnational governments as „stakeholders of public interest“ in the post-2000 era (Bridge et al., 2018; Goldthau, 2012; Hall et al., 2013; Haney & Pollitt, 2013). As noted by Hoppe et al. (2016), where markets might prove insufficient in resolving critical energy-related issues, governments are expected to intervene. Overall, energy landscapes are inherently political (Bridge et al., 2018), as „all aspects having to do with energy consumption, energy distribution, and energy production are to a large extent determined by governmental policies“ (Hoppe et al., 2016, p. 12).

It is therefore assumed that accelerating the „energy access“ imperative requires a stronger role for the state and its institutions in designing, implementing, monitoring and evaluating effective public policies. The current state of energy poverty policies differs significantly between MS, however (Bouzarovski, 2014; Bouzarovski et al., 2021; Pye & Dobbins, 2015). As underlined by Bouzarovski et al. (2021, p. 2), the disparities among MS are „reflected in the quality and extent of the mitigation programmes and strategies within this domain“. Not all nations are inherently in agreement with the objectives set forth by the EC. In fact, scholars have demonstrated that there were even endeavours to impede or oppose the ambitions on the EU level (Bouzarovski et al., 2016; Jiglău et al., 2021; LaBelle, 2017).

This brings us to a crucial point. Whilst considered necessary to solve some of the current problems in the energy sector, public policies can themselves be a contributing factor to energy poverty, mainly if they do not recognize or mis-recognize the phenomenon. Non-existent or sub-optimal policies can „(re)produce the condition’s material or energy affordability inequalities“ (Bouzarovski & Simcock, 2017, p. 645). Ultimately, long-term neglect of certain areas, either geographically (uneven socio-spatial distribution of benefits and burdens stemming from the energy sector) or in terms of procedures and policies, may create discontent and endanger legitimacy of the state (Bazilian et al., 2014), while populist discourses and measures implemented for this purpose only, if successfully raised

to the highest political level, may ultimately trap households in energy poverty, as shown e.g. by the Hungarian case study (Bouzarovski et al., 2016; Jiglău, 2021).

As a result, scholars have subjected institutional and normative settings, politics, and policies in the energy poverty realm to critical scrutiny. For example, Grossmann & Kahlheber (2018) see energy deprivation from an „intersectional perspective“. Next to the households' socio-demographic conditions as the problem defining characteristic, they critically examine policies and domains, whose settings can create or exacerbate the phenomena (welfare policies, energy, and housing markets). Similarly, Samarakoon (2019, p. 7-8) takes a critical view of the „political and social structures that govern decisions about energy systems.“ At the same time the author underlines the positive role of informed institutions that can minimise the energy decisions' negative environmental and social impacts. In a similar vein, Heffron & McCauley (2017) suggest the use of „restorative justice“ as a practical tool to prevent harmful actions towards local communities, society, and the environment. Overall, vis-à-vis pressing issues in the energy area, for Hoppe et al. (2016) there is much to study for scholars of policy studies. They suggest examining various types of energy policies and their impacts, aiming to offer guidance to policymakers in shaping or redesigning these policies. It is therefore worth exploring how MS deal with the energy poverty agenda.

In the Czech Republic, an energy poverty working group was established at the ministerial level as early as in 2015 (David & Koďousková, 2023). Despite expectations, however, bureaucrats were quite uncertain about certain aspects of this complex phenomenon and held various different positions (Koďousková & Lehotský, 2021a). The country stood before the task of defining energy poverty officially, creating tools for its assessment and monitoring, and implementing policies specifically designed to combat the issue (Bouzarovski & Thomson, 2020). Social policies, subsidy programs, and consumer protection policies partially addressed the problem, but it wasn't until autumn 2021 that it gained significant political and media attention due to factors such as rising energy prices and the bankruptcy of several energy service providers, which had adverse effects on vulnerable households. These external events have sparked discussions about the various challenges faced by energy-poor and vulnerable households in meeting their energy needs, emphasizing the importance of developing suitable policies in this context (David & Koďousková, 2024).

Central and Eastern Europe (CEE), including the Czech Republic, has also been under-represented in qualitative energy poverty analyses until recently (Palma & Gouveia, 2022). Although academia had considerably progressed in the examination of regional specificities (Bouzarovski, 2018a), there were only a few studies which exclusively focused on Czechia by 2019, at the time I began my research (Bouzarovski et al., 2017; Bouzarovski & Thomson, 2018; Petrova & Simcock, 2019). Moreover, the country assessments mostly derived from statistical data, common indicators or newly created models (Bouzarovski & Tirado Herrero, 2017a; Karásek & Pojar, 2018) or gathered data in the capital city of Prague, as for example in the case of Bouzarovski & Thomson (2018). Only the ground-breaking work by Buzar (2007a) was more complex. Overall, although the scholars provided the desired initial understanding of the problem, we lacked more nuanced picture of national specificities and the issue's socio-spatial distribution. The problem also deserved an in-depth focus on contributing factors within the private sphere of affected Czech households (outside Prague). Above all, there were also no contributions on the discursive side of the phenomenon. Yet, how energy poverty is perceived by different actors at different levels shapes the overall picture of the problem, which may have a positive

or negative impact on its successful treatment. Finally, the examination of current policies that directly or indirectly address the issue was rather limited, although they can be an important part of the problem itself as well as its solution. The Czech Republic therefore represented an ideal case study for examining energy poverty its causes, effects and policy solutions.

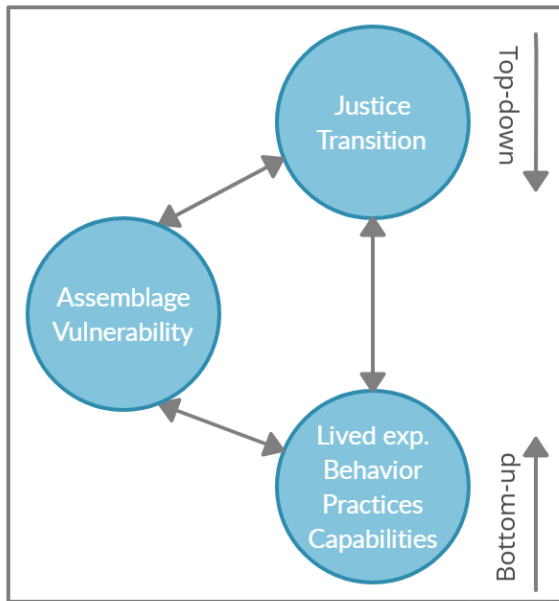
The overarching aim of my research is two-fold. Firstly, using the Czech (and to a lesser extent the Slovak) case, and through exploratory research, predominantly embedded in the interpretivist perspective, I seek to advance our understanding of energy poverty. Although the focus is on a single case study and in-depth understanding, a number of empirical and methodological lessons can be drawn from the research. Simultaneously, I undertake a critical examination and normative evaluation of emerging policies and processes, both direct and indirect, that target energy poverty and vulnerability. How are current policies serving the needs of energy poor and the imperative of preventing and tackling energy poverty? Despite acknowledging the limitations of the Czech and Slovak case studies, I derive insightful findings, broader recommendations, and policy implications that are potentially transferable to other contexts.

My research objectives therefore primarily focus on empirical work. I utilize established theories and methodologies to gather and analyse new data, to explore and interpret this pressing social issue as summarized in Chapter 2. Triangulation of theoretical and analytical approaches, enables a more comprehensive view of the problem, which can then be translated into more effective policy making. To a lesser extent, I also contribute to research methods within the field of energy poverty (Sovacool et al., 2018) for instance, by introducing a mixed-method approach combining quantitative and qualitative analysis. Next to structural and agential factors, I highlight the discursive side of the phenomena, often overlooked in the energy poverty research.

2. Theoretical foundations and research methods

With the dual aim of achieving a nuanced understanding of energy poverty and critically examining policies and practices that directly and indirectly address the phenomena, I employed a wide range of theoretical approaches, conceptual frameworks and analytical tools. The following diagram (Figure 1) summarizes major perspectives. The schema resulted from a conceptual review of the most common theoretical approaches to energy poverty in the academic literature, which I worked on with my colleagues and subsequently presented to the researchers and practitioners in the field (Kodůusková et al., 2021). What the perspectives have in common is their ambition to clarify or explain the problem (explanatory force); and to provide some road map for how to conduct empirical research (applicability) (Sovacool & Hess, 2017). These theories thus provide essential insights into what to investigate and how to interpret the data. In my research I apply them as guiding tools to examine the nuanced features of energy poverty. Furthermore, I employ the energy justice perspective to critically assess and normatively evaluate existing policies. This approach, characterized by its top-down orientation and heightened emphasis on ethical and moral considerations (as detailed below), aligns well with this goal. In this chapter, I provide a concise overview of the key theoretical perspectives. More detailed debates can be found in the listed manuscripts below (David & Kodůusková, 2023; Kodůusková et al., 2023; Kodůusková & Bořuta, 2022).

Figure 1: Theoretical clusters in the field of energy poverty and their dialogue



Source: Derived from (Kodousková et al., 2021)

The first cluster encompasses the mid-range perspectives of assemblage and vulnerability, which offer a comprehensive viewpoint and foundation for the subject understanding. Both approaches seek to move the analysis of energy poverty beyond a purely economic perspective and the traditional focus on household's income, energy prices and energy efficiency. They take into account a plethora of structural and agential factors, that may cause a household to fall into or be trapped in energy poverty (Kodousková et al., 2021).

The assemblage approach is rooted in relational geography, yet it also draws inspiration from theoretical frameworks in science and technology studies, such as actor-network theory, and incorporates insights from critical theory, such as urban political ecology (Buzar, 2007b; Day & Walker, 2013; Harrison, 2013; Harrison & Popke, 2011; summarized in Kodousková et al., 2021). For example Harrison & Popke (2011, p. 950), understand energy poverty as „a geographical assemblage of networked relations of various kinds, including flows of energy, infrastructures of production and distribution, the properties of the built environment, and the social and economic networks that sustain communities“. Their research not only examines material and social factors and how they interact, but also considers time and space as crucial concepts. From one perspective, the assemblage approach examines energy poverty as a convergence of historical developments, current circumstances, and future aspirations. This examination reveals exposes a range of path dependencies and lock-ins that have played a role in shaping the existing conditions among other elements (Kodousková et al., 2021). In terms of the role of space, stemming from a relational perspective, it offers a broader view that considers technological networks and broader political and economic processes extending beyond the specific focal point of analysis. For example, energy poverty can be influenced by local heating preferences as well as world oil prices and subsequent volatilities in LPG affordability (Harrison & Popke, 2011). Overall, the assemblage perspective explores how the networks of actors and materialities described above come together in situations of energy poverty.

The vulnerability approach also considers the dimensions of time and space, albeit in a slightly different manner. It emphasizes that energy poverty is not a static condition, but has a dynamic nature. A household can enter into it and become trapped, but it can also escape from it through changes in internal and external factors (Bouzarovski et al., 2018; Bouzarovski & Thomson, 2018; Grossmann & Kahlheber, 2018; Middlemiss et al., 2019). The approach thus „highlights the distinction between energy poverty as a descriptor of a state at a given point of time, on the one hand, and vulnerability as a set of conditions that characterize the emergence and persistence of deprivation, on the other“ (Bouzarovski et al., 2018, p. 3). In this context, it delves deeper into the probability of a household falling into energy poverty. What began as an „system of provision paradigm“ underlying vulnerability factors and their constituent elements along the energy supply chain toward household needs and practices (Bouzarovski & Petrova, 2015) has gradually evolved into one of the most prominent approaches in the energy poverty research. It concentrates not only on shifts in vulnerability factors over time, but also on their socio-spatial distribution (see Kořousková et al., 2023). Scholars within this cluster typically consolidate features that are likely to increase vulnerability into multidimensional indices striving to pinpoint „hotspots“ where local action is needed (Gouveia et al., 2019; Robinson et al., 2019; R. Walker et al., 2013). Furthermore, researchers underline that transitional processes unaware of the issue can exacerbate pre-existing disparities (Bouzarovski et al., 2017; Bouzarovski & Tirado Herrero, 2017b; Golubchikov & O’Sullivan, 2020).

Foundational ideas identified in the first cluster (focus on transitional settings and emphasis on the lived realities of affected households) were later extended by other approaches (Kořousková et al., 2021). The energy justice perspective primarily examines the structural processes and conditions that give rise to various forms of injustice, including energy poverty, often approaching the domestic energy deprivation from a systemic institutional „top down“ level. This provides an analytical framework that is broadly applicable to the energy sector, as well as a decision support tool to „assist energy planners in making more informed energy choices“ (Sovacool & Dworkin, 2015, p. 435). The framework typically comprises separate but interrelated and reinforcing principles (Jenkins et al., 2016; Sovacool & Dworkin, 2015; G. Walker & Day, 2012). The even distribution of energy system costs and externalities across society („burdens“); equitable access to modern energy systems and services („benefits“); and assurance that energy decision-making respects due process and representation („procedures“). Furthermore, marginalized or vulnerable populations should receive special consideration („recognition“) (McCauley, 2018). Using the framework to critically examine past and proposed policies should avoid misleading trajectories that lead to unjust outcomes. The energy justice perspective therefore questions the prevailing economic and technocratic perspectives (often driving transition efforts) and introduces ethical and moral concepts for examining questions concerning the energy lifecycle (see Kořousková & Bořuta, 2022).

Finally, the approaches in the third cluster tend to delve deeper into the actual lived realities of people experiencing energy poverty, taking a more „bottom-up“ approach to the issue. It pays attention to their daily experiences, perceptions and interactions. It can therefore identify what remains invisible as being hidden in households“ private spheres (Dubois, 2021) including various material and non-material factors contributing to energy poverty and vulnerability (see David & Kořousková, 2023). Most importantly, diverse „vicious circles“ (related to health, behaviour, emotions or social relations) may play a role not only as consequences of energy poverty, but also as its drivers (DellaValle, 2019; Hernández, 2016; Longhurst & Hargreaves, 2019; Oliveras et al., 2021; Porto Valente et al., 2022). As an example, recent research has drawn attention to the role of trust. Lack of confidence in

institutions can prevent households from seeking help and deny them potential benefits (Grossmann et al., 2021). This could additionally diminish a household's ability to adapt and result in less-than-ideal solutions (David & Koďousková, 2023). This cluster thus pays a great deal of attention to the coping strategies of the household or, more generally, its ability to deal with the circumstances of energy poverty (Stojilovska et al., 2021). As a consequence, this branch of research typically focuses on households, whose agency is limited by various obstacles and barriers (elderly, young adults, lone parents, social housing tenants...) and who are often overlooked, for example, in housing and energy policies (Middlemiss, 2022; Papantonis et al., 2022; Robinson et al., 2019; Snell et al., 2015; Sunikka-Blank & Galvin, 2021; Willand & Horne, 2018). Scholars in this cluster offer frameworks and tools to capture drivers and interactions on household level calling for more nuanced mitigation policies.

Apparently, all of the theoretical perspectives mentioned above understand energy poverty as a multidimensional phenomenon that cuts across multiple domains. However, we also see major differences in terms of the theories' primary focus (Sovacool et al., 2018) and how they contribute to the larger „structure/culture/agency“ debate (McAnulla, 2002). The debate is probably most visible in those approaches that focus on the lived realities of the energy poor, where the agency of the household is under scrutiny. Although individuals are definitely not considered to be without the ability to act and may even reshape social institutions (Malakar et al., 2018b; Middlemiss et al., 2019), the message here is that capacity for action may be substantially impeded by both individual circumstances and the macro sociocultural context and technological infrastructure (Sovacool et al., 2018). In terms of the former, individuals may be constrained by the condition of scarcity and under emotional load, which leads to suboptimal solutions or even contributes to energy poverty (DellaValle, 2019; Longhurst & Hargreaves, 2019). In case of the latter, social norms may also serve as strong cognitive shortcuts which result in individuals tending to reproduce routine practices embedded in the local sociocultural settings, including behaviours leading to energy poverty (Malakar et al., 2018a, 2018b). The holistic approaches of assemblage and vulnerability consider a broad spectrum of socio-material elements, actors, and networks across different scales, acknowledging their performative roles and attributing agency to multiple factors. Finally, whilst the energy justice perspective focuses mainly on the institutional, technical and social structures that underpin energy systems and how these can (re-) produce vulnerabilities that lead to energy poverty, it adds a normative perspective. It aims to assess „whether a technology, practice, policy or other unit of analysis is a net positive or negative for society or individuals“ (Sovacool et al., 2018, p. 15). Therefore, it has the potential to reveal power relations, the (re)production of distributional, procedural and recognitional inequities in a given society and, more generally, systemic impacts on (vulnerable) households.

In my research I adopt a hybrid perspective. I take into account „the complex interactions among agency and structure“ (Sovacool et al., 2018, p. 15). Moreover, I add on the discursive side of the phenomena, which is often left out of research on energy poverty (Koďousková & Lehotský, 2021). In accordance with the interpretivist paradigm, I share the view that reality is, to some extent, socially constructed (Sovacool et al., 2018). I consider language as a powerful tool that structures and organizes the terms in which we understand social reality, a site „in which social meanings are formed and reproduced, social identities are shaped, and social facts are established“ (Tonkiss, 2012). Consequently, I attach significance to the analysis and interpretation of individuals' subjective perspectives and actions within their own contexts (Sovacool et al., 2018). Overall, the way in which energy poverty and vulnerability are perceived by different actors can have a profound impact on the

understanding of the problem and on how it is (successfully or not) addressed and managed (David & Koďousková, 2023).

Adhering to the interpretivist paradigm, the predominant research methods and techniques I employ are qualitative in nature. I utilize methods such as framing analysis, content analysis, or thematic analysis, and work largely inductively with primary data (semi-structured interviews or documents representing national-level policies). In many cases, the data were derived from interviews with hard-to-reach stakeholders (national and sub-national governments, energy-poor households). In one particular instance (Koďousková et al., 2023), I adopted a mixed-method approach, using a two-phase exploratory research design that combined and integrated both quantitative and qualitative analysis. The papers listed below provide a more detailed description of the research designs used in my work.

Although in most cases I am the leading author, my research was always carried out in collaboration with one or more of my colleagues. For the sake of clarity, in the following chapter I give a brief summary of the papers that form the basis of the habilitation thesis. I always indicate, both in percentages and by assigning individual research activities to each researcher, how I contributed to the research.

3. The manuscripts constituting the thesis

Paper 1

Hidden energy poverty: The case of the Czech Republic

KOĐOUSKOVÁ, Hedvika and Lukáš LEHOTSKÝ. Hidden Energy Poverty: The Case of the Czech Republic. In George Jigla, Anca Sinea, Ute Dubois, Philipp Biermann. Perspectives on Energy Poverty in Post-Communist Europe. 1st ed. London: Routledge, 2021. p. 173-194. Routledge Explorations in Energy Studies. ISBN 978-0-367-43052-8. doi:10.4324/9781003000976-12.

Abstract: The Czech Republic does not seem to be affected by energy poverty to a great extent. The overall prevalence of energy poverty in the country, as measured by both consensual and expenditure-based indicators, appears to be low compared to most other EU Member States. Although the Czech situation compares favourably with the rest of the EU, this should not lead us to conclude that energy poverty is a minor problem in the country. Our thesis is that, despite good overall results, certain sections of the population are more energy deprived. We argue that due to the „hidden“ nature of energy poverty, there is a risk that those specific groups of the population who are in fact experiencing high levels of energy deprivation may be systematically overlooked or misrecognized in government policies. There is evidence that two types of policies (related to the housing needs and energy efficiency of the housing stock) are reasonably well placed to address the problem. So far, however, these policies have not realised their full potential. As such, they do not mitigate the phenomenon, but rather facilitate the growth of inequalities in the accessibility and affordability of energy services.

Authorship contribution statement:

Main author: Hedvika Koďousková (50%), supervision, conceptualization, investigation, writing.

Co-author: Lukáš Lehotský (50%), investigation, writing.

Paper 2

Energy poverty in the Czech Republic: Individual responsibility or structural issue?

KOŽOUSKOVÁ, Hedvika and Lukáš LEHOTSKÝ. Energy poverty in the Czech Republic: Individual responsibility or structural issue? *Energy Research & Social Science*. Amsterdam: Elsevier, 2021, vol. 72, February, p. 1-9. ISSN 2214-6296. doi:10.1016/j.erss.2020.101877.

Abstract: Although energy poverty is now high on the EU agenda, pressing Member States to adopt targeted policies, there are considerable differences in the state of play across individual countries. In this context, it is worth investigating how this agenda translates into policy. We aim to contribute to this underrepresented strand of research in the energy poverty domain by focusing on the discursive side. This paper starts with the theoretical assumption that bureaucrats are especially important in the initial stages of new policy formation. It further presupposes framing as a process that typically occurs in tackling the complex reality of an emerging policy problem. We have chosen the Czech Republic as a case study as it does not currently have any official energy poverty policies though a working group on the ministerial level has been tasked to define the issue in the Czech context. The research reveals how relevant Czech bureaucrats frame the question of energy poverty. We identify three distinctive frames. Whereas two frames follow the broader ideological debate on poverty (individualizing vs. structural view), the third builds on the concept of vulnerability. None of the frames is clearly predominant. Besides their conflicting views about the causes of energy poverty, responsibilities and policies, there are also disagreements over the appropriate level (national or regional) of governance and a widely held belief that external research actors should shed more light on the issue. The complexity of the discussion may complicate finding a common approach.

Authorship contribution statement:

Main author: Hedvika Kožousková (50%), supervision, conceptualization, investigation, writing.

Co-author: Lukáš Lehotský (50%), methodology, formal analysis, resources, visualization, writing.

Paper 3

Energy poverty in Slovakia: Officially defined, but misrepresented in major policies

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Abstract: Slovakia is one of the few countries with an official energy poverty definition. Nevertheless, it is listed among the ten most lagging EU Member States in terms of progress in alleviating energy poverty. There are also concerns about the fairness of measures to combat it. This paper builds on the energy justice perspective and a spatially sensitive evaluation to critically analyse Slovak policies directly and indirectly tackling the issue. Do they reflect the three fundamental pillars of energy justice? And, given the issue's uneven socio-spatial occurrence in the country, are these policies designed and implemented to reduce pre-existing inequalities? We reveal that the multidimensional

nature and specificities of energy poverty in Slovakia remain misrecognized in major policies. Moreover, there are shortcomings in the policies’ distributional and participatory aspects. Most importantly, social welfare benefits are hard to access for energy-poor households, as are energy efficiency support schemes. Though some policies address dimensions linked to the issue, energy poverty’s uneven incidence is not reflected. We conclude by pointing to the untapped potential of major policies in solving the problem.

Authorship contribution statement:

Main author: Hedvika Koďousková (60%), conceptualization, methodology, visualization, writing.

Co-author: Dominik Bořuta (40%), investigation, resources, writing.

Paper 4

Official narratives vs. lived experiences: Contrasting views on energy poverty in the Czech Republic

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Abstract: In the Czech Republic, energy poverty assessments have primarily relied on traditional indicators. Despite performing well compared to other countries in the region, there is a risk that those suffering from energy poverty are misrecognized and receive insufficient support. This research aims to bring a missing perspective on households’ lived experiences and connect it to official narratives on energy poverty. We examine the interplay among material, non-material factors in households’ experiences, and external „contextual soup“, and reveal major challenges. The contrast between households’ experiences and prevailing assumptions about energy poverty may pose difficulties finding a workable solution. However, in the face of the current energy crisis, we call for a joint effort between the state and non-state sectors to find appropriate tools to address the growing risk of households falling into and being trapped in energy poverty.

Authorship contribution statement:

Main author: Dominik David (60%), supervision, investigation, resources, writing.

Co-author: Hedvika Koďousková (40%), conceptualization, methodology, visualization, writing.

Paper 5

Energy transition for the rich and energy poverty for the rest? Mapping and explaining district heating transition, energy poverty, and vulnerability in Czechia

KOĐOUSKOVÁ, Hedvika, Adriana ILAVSKÁ, Tereza STAŠÁKOVÁ, Dominik DAVID and Jan OSIČKA. Energy transition for the rich and energy poverty for the rest? Mapping and explaining district heating transition, energy poverty, and vulnerability in Czechia. *Energy Research & Social Science*. Amsterdam: Elsevier, 2023, vol. 100, June, p. 1-14. ISSN 2214-6296. doi:10.1016/j.erss.2023.103128.

Abstract: This paper considers the planned transformation of the district heating sector as an opportunity to protect households from energy poverty, while also acknowledging the potential for increased susceptibility. We aim to contribute to energy vulnerability research through a two-phased sequential explanatory research design, which is uncommon in energy poverty research. In the first stage, we develop an index to reveal the detailed socio-spatial distribution of urban energy vulnerability in Czechia. This index can be used as a primary tool for targeted regional and local policies. In the second stage, we confirm the validity and disaggregation of the index through local research. In addition, this process uncovers vulnerabilities not captured by the index or that add meaning and depth to known vulnerability factors. We identify multiple pathways of energy vulnerability stemming from socioeconomic and material-technical factors, as well as combinations thereof. Our research shows that urban energy vulnerability is rooted at different levels, ranging from the household to the state, and is influenced both by past deregulation/liberalisation efforts and rising energy prices, which can jeopardize planned projects. Our analysis highlights the crucial role of district heating systems in urban energy vulnerability, their socio-economic fragility, and their inherently political nature.

Authorship contribution statement:

Main author: Hedvika Koďousková (53%), supervision, project administration/funding acquisition, conceptualization, methodology, investigation, writing.

Co-author: Adriana Ilavská (20%), methodology, investigation, resources, formal analysis, data curation, visualization.

Co-author: Tereza Stašáková (12%), conceptualization, investigation.

Co-author: Dominik David (10%), investigation.

Co-author: Jan Osička (5%), conceptualization, writing.

4. Major findings and concluding remarks

In the realm of energy poverty, my research had two primary objectives. Firstly, I conducted exploratory research primarily focused on the Czech context, with some attention to Slovakia, to deepen our comprehension of energy poverty and vulnerability. Additionally, I employed various tools for exploring and interpreting this critical social issue. Simultaneously, I engaged in a critical assessment and normative evaluation of emerging policies and processes aimed at addressing energy poverty and vulnerability. The following section provides a summary of key empirical and methodological findings, outlines policy implications, and suggests some future directions for this field.

4.1 Empirical and methodological findings

At its core, my work advocates a comprehensive approach that integrates various methodologies and embraces an interpretivist perspective in addition to the conventional quantitative analysis of energy poverty. Traditional metrics, encompassing both objective and subjective indicators, offer valuable initial insights into the state of energy poverty within a given area. However, since these indices are

based on well-established indicators, they may fall short in capturing other factors that contribute to energy poverty and vulnerability within the local context and its specificities. Consequently, these analyses may prove incomplete for informed policymaking in this domain.

For example, the first paper by Koďousková & Lehotský (2021b), mostly relied on secondary sources and statistical data to evaluate the extent and basic characteristics of energy poverty in the Czech Republic. Our findings confirmed that energy poverty is not evenly distributed across society. While overall energy poverty rates, measured by both objective and subjective national indicators, appeared low, certain demographic groups and household types, such as low-income households, single parents, and the elderly, experienced high levels of energy deprivation. An interesting finding emerged regarding Czech pensioners. Despite facing significant housing and energy costs, they view energy debts negatively and prioritize housing and energy expenses over essentials like food or healthcare. Gender also plays a role in energy poverty, particularly among elderly individuals living alone or single parents, who are predominantly women (Koďousková & Lehotský, 2021b).

While statistical data provided valuable insights, they proved insufficient for a comprehensive understanding of the factors underlying household's energy poverty and its uneven distribution across society. To bridge this gap, we integrated the previously missing perspective of affected households in the Czech Republic. In the research conducted by David & Koďousková (2023), we directed our attention towards the less obvious (non-material) aspects of energy poverty within the private sphere of households. This encompassed their perceptions, norms, and practices. Furthermore, we examined their interactions, ranging from immediate support networks to NGOs and government institutions. This approach allowed us to identify factors contributing to energy poverty while simultaneously evaluating household agency and identifying both facilitators and barriers to addressing the issue.

As far as major findings are concerned, unsurprisingly, material factors, including inefficient housing, heating, and appliances, played a role in the experiences of energy-poor households. They had to allocate a significant portion of their income to energy expenses but still struggled to adequately heat their homes. These households were not unaware of their energy consumption. Nonetheless, their efforts to conserve energy and implement small energy efficiency measures were insufficient to improve their situation. Fundamental changes in the built environment are therefore necessary to alleviate energy poverty, but regrettably, in their current form, out of the reach for energy poor (see below).

Less obviously, a complex interplay between household norms and external influences complicated the issue. Amongst our respondents, we observed feelings of shame or stigma, certain resistance to outside help, and a lack of trust in government institutions. Notably, energy-poor households tended to downplay the poor quality of their dwelling and were reluctant to consider moving. This emotional attachment to the place of living, common to all ages, seems linked to fears of losing local support networks. Households also feared personal failure, given the insurmountable barriers to improving their housing situation by moving. This leads us to the second part of the problem. The Czech context, characterized by a lack of affordable and energy-efficient housing and rising energy prices, presents challenges that go beyond the agency of energy-poor households. The absence of specific policies to address energy poverty contribute to the issue. We believe that a comprehensive approach involving engagement with these households are needed to overcome the combination of entrenched norms and external influences. We recommend a collaborative approach involving both government and non-profit sectors further discussed below.

Clearly, whilst statistical data and area-based analysis provide initial insights, qualitative research is essential for uncovering the less visible causes of energy poverty and vulnerability and barriers to their solution. Our study on the socio-spatial distribution of energy vulnerability in the Czech Republic confirms this assumption (Kodůusková et al., 2023). In this study, we combined quantitative data from the „energy vulnerability index“ with interviews of representatives from the most vulnerable municipalities. Index data, visualized into maps, revealed uneven presence of energy vulnerability, with the worst-performing locations primarily in the northwest and northeast. Some individual cities near regional borders also faced significant challenges. Nevertheless, it is worth noting that the index’s breakdown into its socio-economic and material-technical indicator groups also yield valuable insights. Municipalities grappling with severe socio-economic challenges cluster in the northwest and northeast, followed by cities in four eastern regions. Conversely, cities facing poor material-technical conditions are distributed more evenly across the map. Furthermore, when delving into the most affected areas, we encounter geographically proximate municipalities with widely divergent index performances. Overall, the index underscores the existence of multiple energy vulnerability pathways.

For a more holistic understanding, we therefore employed localized inquiry. It unveiled vulnerabilities that elude the index’s scope or enriched our understanding of already well-established vulnerability factors. To name some of them, we identified the presence of a „downward spiral of energy vulnerability“ in socially excluded areas and underprivileged urban neighbourhoods characterized by deteriorating building conditions, heat and hot water cut-offs, people switching to more expensive devices, cycles of indebtedness. Local actors also reported on the growing vulnerability of the middle class and small entrepreneurs, which is not reflected in the indicators of the index. Some of mentioned vulnerabilities result from past (e.g., housing sector deregulation and liberalization), while others stem from escalating energy prices. For example, rising energy expenses could jeopardize future municipal projects aimed at enhancing energy efficiency. To sum up, while energy vulnerability index is as a valuable informative tool, it provides a relatively static perspective on the issue. In contrast, the local enquiry portrays energy vulnerability as an inherently dynamic phenomenon with many non-obvious features, intricately tied to various trends, and a trend it itself. Integrating both quantitative and qualitative assessments can provide valuable insights not only into where to focus potential interventions, but also which elements of a problem to target.

The above-mentioned studies suggest a diversity of perspectives from various actors at different levels. Incoherence of even conflicting views may complicate energy poverty’s effective solution. A striking example from our research centres around the comparison of vulnerable households’ real-life experiences with the official narratives on energy poverty (David & Kodůusková, 2023). In Kodůusková & Lehotský (2021a), we uncovered three primary energy poverty narratives within the ranks of ministerial bureaucrats, none of which enjoyed clear dominance. In a nutshell, the first two narratives align with the broader ideological debate on poverty; the third is built around the issue of energy vulnerability. The first narrative attributes the causes of energy poverty and its potential solutions to individual responsibility, while the second to the wider institutional and infrastructural settings. In terms of proposed solutions, the „information deficit model“ and increased access to state subsidy programs clash with uncertainties surrounding „technocratic approaches“ and the call for individually tailored remedies. This ideological divide leads to conflicting perspectives on the scope and nature of state social policies, ranging from stringent to relatively generous measures.

Interestingly, the lived realities of our respondents challenge the assumptions of the „individual responsibility frame“. Our study (David & Kodůusková, 2023) has not observed irresponsible

behaviour, such as wastefulness, excessive heating, or reckless spending, which the narrative posits as a key cause. The norms within energy-poor households do play a role in perpetuating the issue, albeit not in the manner portrayed by the narrative. While an information deficit may have a role to play, it is not primarily due to a lack of awareness or unjustifiable concerns about administrative complexities, but rather, feelings of shame, and a lack of trust in state institutions mentioned above that discourage households to seek assistance. These findings align with those of an Australian study that found households „not sufficiently confident, self-deserving, pre-disposed or resourced in the various ways required to proactively access energy services support“ (Willand & Horne, 2018). As a consequence, if the „individual responsibility narrative“ prevails in designing new policies, they may fall short of effectively addressing the challenges faced by energy poor households.

We therefore also see the significance of employing discursive analysis in energy poverty research, as it offers valuable insights into the policymaking process and its potential outcomes. In our previous work (Kodůusková & Lehotský, 2021a), we argue that examining the agenda-setting phase is pivotal for a deeper comprehension in this area. In cases where there is a lack of pre-existing policies (such as in the Czech context), but external pressure exists to design and implement functional energy poverty solutions (e.g., from the EU level), policymakers are essentially starting from scratch. To gain the necessary expertise, they often turn to specialized civil servants, such as bureaucrats, responsible for collecting data, preparing reports, and creating initial policy proposals (Berling & Bueger, 2015; Fischer, 2009; Workman et al., 2017). This expertise often involves simplifying the complexity of reality through interpretive schemas or „framing,“ which highlights specific elements while downplaying others (Hajer & Laws, 2008).

As mentioned earlier, among Czech bureaucrats, we identified conflicting ideological perspectives none of them clearly predominant. Furthermore, our findings indicate that the institutions in question often have an unclear understanding of the issue. In fact, bureaucrats responsible for overseeing the matter frequently expressed doubts about certain aspects of the problem and believed that additional expertise from external research institution is needed. This starkly contrasts with our initial assumption that bureaucracy plays a central role in defining the issue. It therefore appears likely that actors beyond the ministries and governmental agencies will co-shape the still emerging future of Czech energy poverty policies.

This leads us to the second focal point of my study, which is the examination of policies themselves. During our research, the Czech Republic and Slovakia, had no policies or measures directly targeting energy poverty or preventing vulnerable households from falling into this condition. However, a number of indirect measures have been implemented. In the course of our research, we contend that these policies do not fully realize their potential in solving the issue. Instead, they contribute to unequal access to energy services among households. In the light of recent developments, such as rising energy prices, the bankruptcy of energy suppliers and supply uncertainties due to the war in Ukraine, some of these policies were subsequently adjusted to increase the number of potential beneficiaries and to better serve households. But the fundamental design of the policies remained unchanged.

In Kodůusková & Lehotský (2021b), we analysed two major policies. The first deals with housing needs, providing housing allowances for rent and/or energy costs to prevent energy poverty among low-income households. However, there are still marginalized populations living in dire conditions due to

a lack of social housing or high debts (including energy debts), leading to illicit housing practices known as „poverty entrepreneurship“ and giving rise to the „energy paradox,“ where the least affluent households bear the heaviest housing costs. The second policy focuses on improving housing energy efficiency. Although they serve the mainstream public well, these programs are often complex and challenging for potential beneficiaries to navigate. They typically involve financial grants that require a set of eligibility criteria and co-financing. If approved, the grantee must cover the initial investment costs (e.g., boiler installation or retrofitting) and is only later reimbursed upon completion. Therefore, energy efficiency subsidies are often inaccessible to energy-poor and vulnerable households. Unfortunately, this situation reinforces inequalities in access to energy services and energy poverty’s structural nature in the Czech Republic. The risk prevails that households currently excluded from support programs are at even greater risk of not being involved into future initiatives aiming to foster low-carbon transition. Interviews with sub-national officials confirm the still unresolved nature of above mentioned issues (Kodůusková et al., 2023). Some promising practices include boiler replacement pilot schemes for low-income households with greater involvement of sub-national governments, local housing initiatives with social support, and city-led efforts to mediate between energy providers and debt-prone tenants (Kodůusková & Lehotský, 2021b).

Slovakia’s policies indirectly addressing energy poverty exhibit similar characteristics, as analysed in Kodůusková & Bořuta (2022) using the energy justice principles. The framework, encompassing recognition, distribution, participation, and spatial sensitivity, revealed shortcomings and untapped potential in the policies. Firstly, they fail to recognize energy poverty as a distinct and urgent issue within their domains, risking the misrecognition or complete oversight of energy poverty and its specificities in Slovakia (Dokupilová & Filčák, 2021). Secondly, the lack of emphasis on energy poor households results in their limited access to social benefits and energy-efficient housing solutions. Finally, specialized programs, information dissemination, and guidance for affected households are absent, hindering their active engagement. In terms of spatial consideration, some plans and strategies address aspects related to energy poverty but do not directly acknowledge its uneven distribution. Notably, the colder climate and socio-economic disparities in certain Slovak regions, which can exacerbate energy poverty for already vulnerable families, remain unaddressed in these policies, further underscoring overall inadequate representation of the issue.

4.2 Policy implications

An analysis of how energy poverty is framed at the official level reveals that government officials responsible for overseeing this issue are uncertain about specific aspects of the problem. They believe that further analysis is necessary to address this question effectively. Our research reveals, that while quantitative analysis, based on well-established indicators, can provide valuable initial insights, it falls short in uncovering hidden aspects of the problem. These hidden factors often reside within the private spheres of affected households or arise from a unique combination of socio-material factors at the local level. Furthermore, the resolution of energy poverty relies heavily on how various stakeholders perceive the issue. Differences in comprehending the fundamental nature of the problem can complicate finding a practical solution.

In terms of policy implications, it is crucial to design and implement policies that take into account the uneven socio-spatial distribution of energy poverty. Creating maps that illustrate the socio-spatial distribution of energy vulnerability can serve as a fundamental tool for more targeted regional and

local remedies (Kodůusková et al., 2023). Priority should be given to regions or localities identified as the most energy vulnerable. Our on-going research indicates that many of the most affected clusters have perceived prolonged neglect by the state (Kodůusková & David, 2023). This neglect can significantly erode confidence in state policies and the legitimacy of the state as a whole (Jiglău, 2021), particularly during energy crises when these areas face additional burdens, such as energy price hikes or loss of energy suppliers. To rebuild trust, the state must acknowledge regional and local disparities, pay greater attention to local specificities and social inequalities, and foster communication and cooperation with subnational actors. Fully recognizing the uneven socio-spatial incidence of the issue should be followed by the development of long-term goals and strategies to address it.

This leads us to the second point, emphasizing the importance of involving the target group and key stakeholders in the policy-making process. If the voices of affected households and subnational officials and local actors are not sought and considered, the state misses out on the rich experience of energy poverty and vulnerability that originates from the affected individuals themselves. This experience is crucial for the improved design of relevant policies. Given the multidimensional and cross-sectional nature of the issue, interdepartmental cooperation, including the active involvement of regional and local institutions, seems necessary. These institutions can transfer valuable knowledge, values, and stories from the local level to national decision-makers (Jenkins et al., 2016). Engaging these stakeholders in ministerial-level working groups can facilitate information dissemination and the development of coherent policies (Kodůusková & David, 2023).

Increasing opportunities for energy-poor households to participate in existing and intended support schemes is also important. It includes addressing the identity aspects and overcoming social barriers such as feelings of shame, stigma, and mistrust. We advocate for tailored solutions that can effectively address both the material and non-material aspects of the problem. To accomplish this, it requires a collective effort involving various stakeholders. For example, it involves aligning the financial support provided by the state, like social benefits and subsidy programs, with increased participation of local actors, such as subnational officials, social workers, NGOs. These stakeholders can play a pivotal role in several ways. They can help eliminate the stigma associated with energy poverty among households, thereby promoting greater utilization of available social benefits. Furthermore, they can contribute to refining the focus of programs aimed at supporting energy-efficient housing. If the state makes these programs more adaptive, subnational officials may help prioritize actions like insulation for the homes of low-income households in one region, while in another, the emphasis may shift towards the construction of energy-efficient starter homes or social housing. In summary, our central message underscores the value of community engagement and collaboration in the effort to address energy poverty.

In practical terms, scholars identify four key strategies for addressing energy poverty (Kyprianou et al., 2019), among them protection against disconnection, social benefits, subsidy programs for energy efficiency and renewable energy, and information provision. In the Czech Republic, these measures exist but fall short of effectively addressing the issue. Firstly, protection against disconnections, exemplified by the 2021 bankruptcy of Bohemia Energy, whilst preventing disconnections, failed to protect against unaffordable deposit payments, especially impacting energy-vulnerable households (David & Kodůusková, 2024). Secondly, social benefits, including energy and housing allowances, are underutilized due to stigma, preventing eligible individuals from claiming them (David & Kodůusková, 2023). Thirdly, subsidy programs for energy efficiency and renewable energy benefit the general population but struggle to effectively reach and engage energy-poor households, who face barriers

such as limited savings and difficulties to navigate complex support schemes (Kodůusková & Bořuta, 2022; Kodůusková & Lehotský, 2021b). The information campaigns, although recently initiated, lack a specific focus on energy poverty and primarily target energy consumption patterns. However, our previous research has indicated that energy-poor households are already quite energy-conscious within the boundaries of their dwellings technical state (David & Kodůusková, 2024; Kodůusková & Bořuta, 2022). In summary, addressing energy poverty comprehensively in the Czech Republic requires substantial efforts in these four areas, along with tackling the shortage of energy-efficient (social) housing and monitoring rental housing standards, especially in deprived neighbourhoods (Kodůusková et al., 2023). The solutions suggested by our research are based on a comprehensive understanding of energy poverty, the importance of recognising its uneven socio-spatial distribution, prioritising areas identified as most energy vulnerable, and involving stakeholders and target groups in the policy-making and implementation process.

4.3 Future directions and the thesis limits

The above findings show that while much has been researched in the field of energy poverty, there is room for further investigation into the characteristics of the problem and the policies that aim to address it. I propose three key areas for future research.

Repeatedly, our studies have raised questions regarding the energy poverty governance (Kodůusková et al., 2023; Kodůusková & Bořuta, 2022; Kodůusková & Lehotský, 2021a). It is imperative to focus not only on the nature of energy poverty policies and measures but also on the allocation of responsibility for their design, implementation, monitoring, and evaluation. It appears that harnessing government financial assistance and subsidies, in combination with the capacity of the non-profit sector and local actors, to identify the most vulnerable households and provide non-financial support, may help address not only obvious but also less visible factors rooted in household norms and practices (David & Kodůusková, 2023). However, little is known about the perspectives of sub-state actors themselves on this issue. Our ongoing interpretivist research is dedicated to understanding municipalities' ability and willingness to address it.

Secondly, with regards to methodology, I strongly advocate for a more extensive exploration of mixed-method assessments within the domain of energy poverty. Our research findings, as reported by Kodůusková et al. (2023), point to the need for further work on integrating quantitative and qualitative analysis. For instance, we intend to develop of a functional typology focusing on „local pathways to energy vulnerability,“ which not only ensures that policies are accurately targeted but also that they properly reflect the unique local contexts and problems. Whilst the index may provide insights into the geographical areas with the highest vulnerability, by conducting local surveys, we can delve deeper into specific attributes, aiding in the evolution and enhancement of this typology. Additionally, it appears feasible to deconstruct indices based on specific factors, as exemplified in the gender-specific evaluation conducted in England (Robinson, 2019).

Lastly, while household surveys provide valuable insights into the energy poverty causes and consequences, they may also be used, to refine policy design. Although Hoppe et al. (2016) emphasize the importance of involving the target group and key stakeholders in the policy-making process, a German study (Hanke et al., 2023) highlights the current exclusion of energy-poor households from the energy transition narrative. Recently established programs like the „New Green for Savings Light“ in the Czech Republic, designed for low-income households, pensioners, and households with

disabilities, therefore warrant scrutiny from the eligible household's point of view. The results can further enrich our understanding of how to design policies that are effective in meeting the twin goals of energy access and sustainable development.

Allow me to conclude by acknowledging the limitations of my research. The primary objective of my study was exploratory, aimed at enhancing our comprehension of energy poverty and vulnerability. Simultaneously, I conducted a critical assessment and normative evaluation of emerging policies designed to combat it. Consequently, I did not endeavour to provide an exhaustive explanation of the underlying aspects of the problem nor the policies designed to address it. For instance, my work falls short of clarifying the link between policies and the political order and the policy-making process. More specifically, although we have identified several energy poverty narratives on the official level (Kodřousková & Lehotský, 2021a) we have not delved into the tracing of the ideological foundations underpinning these frames nor the dynamics among major actors. Consequently, whilst some scholars caution against attempting to encompass all three contributions - theoretical, empirical, and methodological - deeming such research prone to confusion or incoherence (Sovacool et al., 2018), my research did not harbour theoretical ambitions in terms of new theory building or refinement. However, by applying several frameworks and tools, my research has shown that recent theoretical contributions are immensely valuable in advancing knowledge and addressing this critical social issue.

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