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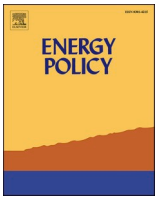

# Energy poverty alleviation by social housing providers: A qualitative investigation of targeted interventions in France, England, and the Netherlands

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ABSTRACT

Decisions made by social housing providers (SHPs) profoundly affect their tenants' energy affordability, a group characterised by above-average energy poverty rates. Concentrated deprivation in this tenure has intensified due to policy-driven 'residualisation', compelling SHPs to serve almost exclusively low-income and marginalised households. Despite this, research exploring the potential of SHPs to tackle energy poverty through targeted interventions for their most vulnerable tenants remains sparse. The 2021–2022 energy price crisis offers a unique context to investigate this issue, given its substantial impact on household energy affordability. This study delves into insights of social housing professionals through focus groups conducted in France, England, and the Netherlands. It examines their views on the effectiveness of interventions and assesses their feasibility within the respective institutional contexts. We find that SHPs generally favour retrofit prioritisation and behavioural interventions as effective means of supporting at-risk tenants, whereas alterations in rent setting or housing allocation are considered potentially impactful but often undesirable or impracticable. We identify institutional barriers and lack of data as key obstacles to SHPs' adoption of more targeted interventions. To empower SHPs in tackling energy poverty, housing policy reforms must acknowledge and address the significant impact of energy costs within total housing expenses.

## 1. Introduction

The European energy price crisis of 2022 has disproportionately burdened households with high energy needs, low incomes, and limited financial means – or agency – to retrofit their energy inefficient homes. This may lead to energy poverty, formally defined by the European Union as "*a household's lack of access to essential energy services, where such services provide basic levels and decent standards of living and health, including adequate heating, hot water, cooling, lighting, and energy to power appliances, in the relevant national context, existing national social policy and other relevant national policies, caused by a combination of factors, including at least non-affordability, insufficient disposable income, high energy expenditure and poor energy efficiency of homes*" ("Directive (EU) 2023/1791 on energy efficiency," 2023). Studies have indicated it can cause respiratory and cardiovascular issues, mental distress, and social isolation (Liddell and Morris, 2010).

In Europe, energy poverty is more prevalent among social housing tenants as compared to other tenures, a pattern that seems to persist irrespective of variations in the proportion of social housing units across countries (Desvallées, 2022; Mulder et al., 2023). Such a concentration of energy poverty within the social housing sector is, in part, an expected phenomenon, given that social housing providers (SHPs) traditionally, and in some countries evolvingly, bear the institutional responsibility of catering specifically to low-income groups and vulnerable residents (Hoekstra, 2017; Pearce and Vine, 2013). Yet, the lack of research dedicated to the unique role of SHPs in addressing energy poverty remains rather conspicuous considering these circumstances.

Energy poverty is primarily driven by inadequate energy efficiency, high energy costs, and a low income (Boardman, 1991), all of which are closely tied to social housing governance. To illustrate this: SHPs directly impact the energy efficiency tenants must contend with through initial housing allocation and subsequent renovations, mitigate their dependence on fluctuating energy prices through deployment of renewable energy sources and specific heating systems, and determine

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part of their financial burden through rental rates. Previous studies on the self-perceived role of SHPs in the energy transition have evaluated attitudes towards specific retrofit strategies (Desvallées, 2022; Sdei et al., 2015), community participation (Breukers et al., 2017), justice aspects (Broers et al., 2022), and regulatory incentives (Egmond et al., 2005). However, a comprehensive investigation into the scope for SHPs to modify their strategies or introduce new targeted interventions to effectively combat energy poverty has not yet been conducted.

To address this gap, this study aims to thoroughly investigate the perceptions and practices of social housing professionals in France, England, and the Netherlands regarding targeted interventions to mitigate energy poverty among tenants. The emphasis on 'targeting' signifies our deliberate treatment of energy poverty alleviation as a distinct challenge, rather than addressing it as a mere by-product of traditional objectives in social housing governance, such as keeping rents affordable and retrofitting dwellings. The study's objective is to move beyond merely reinforcing the urgency of these existing efforts, aiming to uncover a fuller understanding of SHPs' capacities and strategies in mitigating energy poverty.

The structure of this article is as follows: first, we provide a concise review of literature on policy targeting and explore relevant developments in the context of social housing governance. Subsequently, we detail the methodology employed in this study, highlighting the focus groups conducted with social housing professionals. Following this, we present and analyse the findings on the respective advantages and disadvantages of the identified interventions. This article concludes with a discussion on the implications of these findings and suggests recommendations for policy and practice.

## 2. Background and literature review

### 2.1. Policy targeting

Targeting involves the strategic allocation of programme benefits to those most in need, thereby reducing inequality and ensuring efficient resource utilisation (Simshauser, 2023). The literature predominantly examines the theoretical and practical costs and benefits of implementing targeted public and particularly social policies, primarily from a governmental viewpoint. In the context of energy poverty, Croon et al. (2023) for instance argue that targeted financial relief by governments during energy price spikes is climate-friendlier and less inflationary compared to universal schemes.

The initial step in policy targeting is the precise choice of a target group. This is particularly challenging in the case of a multidimensional and debated concept like energy poverty, which lacks a universally accepted definition (Moore, 2012). To address the multidimensionality of energy poverty, it is widely accepted in Europe that national-level measurement approaches should incorporate multiple complementary indicators (EPAH, 2023b). Additionally, local approaches to diagnosing the issue should actively engage stakeholders from diverse backgrounds (EPAH, 2023a). The choice of the target group then informs the selection of indicators, which in turn are crucial for identifying beneficiaries (Fizaine and Kahouli, 2019). Different use of indicators can lead to the identification of very different beneficiary groups, thereby influencing the nature and scope of the targeted interventions (Croon et al., 2023; Dubois, 2012).

Simshauser (2021) emphasises the importance of accurate data in preventing targeting errors, including the risk of providing support to non-eligible individuals (inclusion errors) or missing eligible ones (exclusion errors). Middlemiss (2017) highlights a trade-off in the pursuit of greater accuracy in identifying the 'most vulnerable' or 'most deserving' for energy poverty support: while it enhances cost-effectiveness, it may also compromise the goal of reaching all who are in need. Whether identification should occur at higher or local levels is debated, given local actors' proximity to those in need (Koďousková et al., 2023; Koďousková and Lehotský, 2021) versus their often limited financial and capacity resources.

Given the multidimensional nature of energy poverty, which complicates direct assessment, targeting actors frequently resort to using proxies for identification, including household income, energy usage data from smart meters, and geographic location (Best et al., 2021; Sareen et al., 2020). Once the target group is chosen and a tangible policy objective is established, the subsequent phase entails evaluating the most effective delivery mechanisms among the various policy instruments available to the targeting actor (Schuck and Zeckhauser, 2007). Targeted delivery mechanisms could take the form of money transfers, in-kind provision of goods or services, or even training and education (Devereux et al., 2017). In the context of energy poverty, they could for instance consist of energy allowances, social tariffs, subsidised thermal retrofits, free repairs and energy saving appliances, or energy advice services (Bessa and Gouveia, 2022). While targeting strategies are less commonly employed by semi- or non-state actors, the act of providing social housing is increasingly seen as a form of targeted in-kind shelter provision, sparking a profound ideological debate within social policy and housing policy circles regarding narrowly means tested versus more universal accessibility of social housing (Clarke et al., 2022; Poggio and Whitehead, 2017).

For governments and non-state actors alike, evaluating the impact of targeted policies is an essential component. Beyond immediate outcomes, this evaluation could encompass an assessment of the long-term sustainability and scalability of the intervention, serving as a feedback mechanism for refining and adjusting it as required (Bednar and Reames, 2020). This adaptability is particularly crucial in addressing energy poverty, where sudden increases in energy prices or general cost-of-living hardships experienced by tenants can necessitate swift action. Furthermore, emerging scientific insights, such as those regarding the vulnerability of different populations to living in cold homes or the effectiveness of specific alleviation methods, can also prompt changes in the target group or the delivery of services.

The utility of policy targeting thus lies in its ability to combat inequalities effectively and efficiently by channelling resources towards disadvantaged groups (Murray and Mills, 2014). Targeting allows for a customised and more flexible approach, tailoring interventions to the unique needs and capabilities of different groups and thereby increasing the probability of successful outcomes (Della Valle et al., 2024). For example, targeted energy conservation advice in a building with higher-than-average consumption is likely to be more effective than a generic, wide-reaching campaign. Targeting interventions holds the potential of concentrating efforts and resources on households where they can yield the most substantial impact. Therefore, a targeted approach can save costs, which allows organisations to offer more substantial support or redirect funds to other institutional goals. When targeting objectives are clear and well-communicated, they can also enhance the transparency and accountability of decision-making processes (Maestre-Andres et al., 2021).

Despite these advantages, scepticism about policy targeting remains, as expressed by scholars like Sen (1998). He identifies several potential challenges: (a) the costs incurred by beneficiaries in acquiring necessary information, (b) the expenses associated with the application process and verification of eligibility, which can lead to inefficiencies and elevated administrative costs, thereby reducing the available resources for the intended beneficiaries, (c) 'disutility and stigma' associated with being categorised as in need of assistance, (d) the creation of 'perverse incentives' that might provoke unintended behaviours among beneficiaries, and (e) the varying levels of political support determined by the specific groups of beneficiaries targeted and the nature of the implemented measures (Van de Walle, 1998). In efforts to address energy

poverty in a targeted manner, some of these challenges can now be mitigated using technology,[1] though others remain critical (Grossmann et al., 2021).

Therefore, when devising targeting methods, it is essential to consider not only their effectiveness but also their feasibility. This entails analysing two dimensions (Grosh et al., 2022): the technical dimension, which relates to administrative feasibility, including practical considerations such as identifying beneficiaries and the associated costs; and the institutional dimension, which involves political support, privacy issues, rights to target specific groups, connections with other policy interventions, and legitimacy considerations.

### 2.2. Residualisation of social housing

As previously mentioned, there is limited research regarding the use of targeting strategies by non-governmental entities, such as SHPs, in the context of energy poverty alleviation. To navigate this intricate policy landscape, it is imperative to first establish a clear understanding of their role and function within the housing and social welfare landscape.

As a starting point, it is important to define what we mean by social housing providers. Social housing is defined as a government-regulated tenure of housing in which affordable rental dwelling are administratively allocated on the basis of need with a traditional aim to improve the overall living conditions of workers and low-income residents (Granath Hansson and Lundgren, 2018; Haffner et al., 2010; Scanlon et al., 2015). Social housing is typically developed by government agencies with state support or non-profit organisations receiving favourable financing from public banks or government guarantees, and housing allowance programmes often retain affordability after construction (Czischke and van Bortel, 2018).

In various European countries, the social rental sector has been undergoing significant changes over the past several years, as demonstrated by Scanlon et al. (2015). Often, due to deliberate government policies involving reduced public funding and stricter eligibility criteria, it has not only diminished in size but it also has become more 'residualised' in nature (Hoekstra, 2017; Kholodilin et al., 2022). This term implies that available social housing is increasingly allocated to people with very low incomes and marginalised societal groups with an 'urgency status', such as refugees, individuals with mental health issues, or those recovering from personal crises like divorce. This results in a notable clustering of these groups in neighbourhoods with a high social housing density (Hoekstra, 2017).

This residualisation represents a significant contributing factor to the prevalence of energy poverty within the social rental sector and has amplified the adverse effects of the energy crisis in neighbourhoods characterised by a high density of social housing. Consequently, social housing providers are important stakeholders in efforts to alleviate energy poverty.

### 2.3. Traditional objectives of SHPs

In this section, we will outline the decision-making spectrum of social housing providers (SHPs) and start to examine its impact on the alleviation of energy poverty, by examining the sector's traditional objectives.

SHPs operate on a non-profit basis, which means that their activities are guided by a societal mission balancing various social duties rather than shareholders' interests, adhering to regulatory frameworks while exercising varying degrees of discretion in execution (Cowan and McDermont, 2021). Van Bortel et al. (2018) refer to *availability*, *affordability*, and *quality* as the universal performance criteria of social housing providers. Translating these criteria to more concrete objectives, SHPs must ensure the adequate supply of new built dwellings, fair allocation of units, affordable rents, and maintenance of building quality, while upgrading them to meet sustainability and energy efficiency standards. One can already discern the relationship between these objectives and energy poverty drivers, something we will outline comprehensively in the next subsection.

Enhancing *liveability* could be recognised as a fourth criterion, reflecting SHPs' commitment to social investments that improve the quality of life within neighbourhoods (Elsinga et al., 2020). These investments generally addresses the needs of vulnerable populations such as low-income elderly residents, individuals with disabilities, and refugees, by not only providing suitable housing but also facilitating access to supplementary social services like community centres (Van Deursen, 2023).

Reeves (2013) notes that achieving these objectives at the highest level concurrently is challenging, suggesting that due to cost constraints, SHPs are often faced with trade-offs, where prioritising resources in one area may necessitate cost savings in another, consequently, some objectives are met at the expense of others. This reality highlights the inherent compromises in fulfilling the full scope of SHPs' societal mission.

### 2.4. What can social housing providers potentially do to alleviate energy poverty?

The traditional objectives of the social housing sector are closely linked to the key drivers of energy poverty, such as a lack of sufficient financial resources, higher-than-average energy requirements, and the energy inefficiency of the dwelling, occasionally including occupant behaviour as a fourth significant factor (Kearns et al., 2019; Walker and Day, 2012). SHPs thus have the potential to significantly influence these drivers and, therefore, the energy poverty experienced by their tenants. This section, developed from the authors' collaborative brainstorming sessions, delineates potential SHP interventions that can mitigate energy poverty, as illustrated in Fig. 1.

Firstly, the influence of SHPs on tenants' income primarily manifests through rent policies. For many low-income tenants in social housing, rent burdens – the proportion of disposable income allocated to rent – have increased substantially in recent years, although not as rapidly as for those with private rental contracts (Dewilde, 2022). While operating within their financial and legal constraints, SHPs may have the capacity to alleviate this burden by adjusting rent levels or demonstrating flexibility in rent collection, particularly for those at the highest risk of energy poverty. This includes potentially capping rents based on vulnerability criteria such as a low income, substandard energy efficiency, or high energy needs, or demonstrating leniency during energy price spikes. Additionally, SHPs often offer tenants financial advice and help them navigate government benefit systems or job opportunities. Particularly in England, SHPs support tenants by providing job training programs (Finney et al., 2018). These interventions directly impact the economic well-being of tenants, thus influencing their vulnerability to energy poverty.

Secondly, the energy efficiency of housing is a critical area where SHPs exert significant influence, largely through their retrofitting and renovation strategies. These strategies, which often include updating insulation, improving heating systems, and installing solar panels, directly reduce utility costs for tenants and may decrease dependence on non-renewable energy sources (Liu et al., 2023). While SHPs typically align these renovations with climate targets and local government collaborations, they often retain discretion in prioritising renovations based on vulnerability criteria, signalling a potential to focus first on building blocks or neighbourhoods most susceptible to energy poverty (Avanzini et al., 2022). Until now, this is not common practice, and SHPs currently tend to approach retrofit provisions primarily from a techno-economic perspective (De Feijter et al., 2019). Another important consideration

[1] Appropriate use of technology and data matching could help governments to drastically reduce the costs associated with a) and b), as demonstrated by the reform of the UK's Warm Home Discount (Lausberg and Croon, 2023).

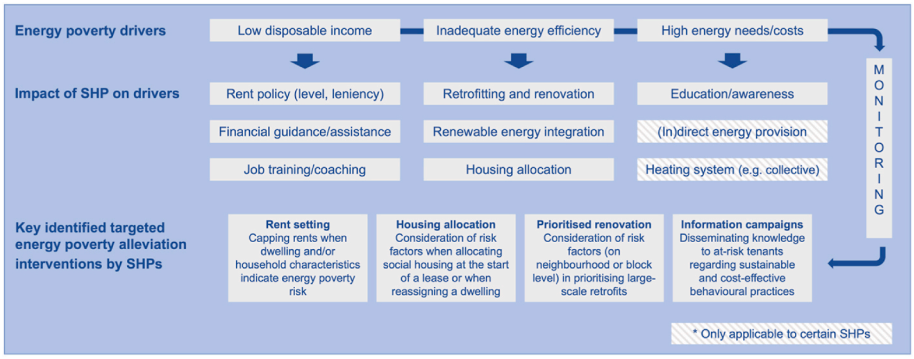


**Fig. 1.** Key energy poverty alleviation interventions in social housing based on energy poverty drivers.

is the financial burden of these retrofits, specifically whether costs are absorbed by SHPs or passed onto tenants in the form of rent increases, which again underscores the interconnectedness of SHPs' decisions with the broader issue of energy poverty (Galvin, 2023).

Thirdly, the initial allocation of dwellings can have long-term implications on experienced energy efficiency, and SHPs could strategically allocate or reallocate high-risk households to energy-efficient dwellings as a pre-emptive measure against energy poverty. Specifically, targeted (re)allocation of low-income elderly households or those with medical conditions requiring them to stay home, is perceived an effective method for reducing the likelihood of severe energy poverty. SHPs typically have some discretion in (re)assigning their respective dwellings (Preece et al., 2019), which would allow them to factor in the prospective impact of their allocation decisions on tenants' energy needs.

Finally, alleviating tenants' high energy costs may involve not just physical changes but also behavioural interventions. This can be achieved through initiatives such as providing energy advice, offering tailored guidance on sustainable and cost-cutting energy conservation measures (DellaValle and Czako, 2022; Simcock and Bouzarovski, 2023). Installing smart meters can promote awareness of energy use (Shirani et al., 2020). This is especially pertinent in buildings with collective heating systems, where individual monitoring can encourage more sustainable energy consumption practices and ensure tenants are billed only for their own usage. In some instances, SHPs act as *de facto* energy suppliers or mediators, further influencing the energy costs incurred by tenants. They may choose to absorb a portion of price hikes themselves or extend the duration over which these price increases are distributed and their substantial bargaining power as large entities may enable them to negotiate for lower prices.

In our analysis, we address the following inquiries.

1. What are the potential advantages of SHPs targeting interventions to alleviate energy poverty?
2. What are the potential disadvantages associated with targeting interventions by SHPs?
3. What practical or institutional constraints might affect the feasibility of targeting interventions in France, England, and the Netherlands as encountered or perceived by social housing professionals?

## 3. Methodology

### 3.1. Country and case selection

The empirical research consisted of six focus groups conducted in France, England, and the Netherlands. These countries were selected because of their traditionally substantial social housing sectors. Nevertheless, the nature, governance, and scope of SHPs somewhat differs between the three selected countries (Housing Europe, 2021).

In France, social rental housing constitutes 16% of housing stock and is managed by both private and public providers under strict central state regulations, with high and regionally varied eligibility income limits in order to promote mixed neighbourhoods (Amzallag and Taffin, 2010). England's approach, with social rental housing encompassing 17% of the housing stock, similarly involves a mix of public (local authorities) and private (housing associations) providers and places great emphasis on serving the lowest income groups. Dutch providers, private non-profit housing associations owning 29% of the total stock, have transitioned from a broad to a more targeted focus on the lowest income groups. They experienced great autonomy until a 2015 housing law increased central government regulation and supervision (Hoekstra, 2017).

Within the three selected countries, six major SHPs (see Table 1) were identified based on their substantial size and professionalism, positioning them to exercise thought leadership. Their size however also suggests organisational compartmentalisation, underscoring the need for involving participants from different parts of the organisation to gain diverse perspectives. Focus groups, comprising six to eight participants each, were carefully assembled with help from a liaison in each organisation, bringing together financial practitioners, real estate professionals, legal experts, and social workers to enrich discussions with multifaceted insights.

### 3.2. Focus group design

The six focus group sessions were held in the fourth quarter of 2022, guided by a semi-structured format. Focus groups were preferred over interviews for their facilitation of dynamic, interactive discussions enabling immediate validation of statements across departments, and over surveys for their capacity to produce richer, more nuanced data. The initial phase sought to establish a collective understanding of energy poverty within social housing, with participants being introduced to common definitions of energy poverty and queried about existing data and obstacles faced by their SHPs in collecting and utilising relevant information, as well as their short-term efforts in addressing the energy crisis. Following this, participants engaged in an in-depth discussion on crucial long-term interventions. These discussions were thoroughly documented to capture diverse viewpoints and suggestions.

### 3.3. Thematic coding and analysis

Following the conduction of the six focus groups, a rigorous and systematic analysis was undertaken to extract meaningful insights from the transcribed discussions. Informed by the framework that we have developed in Section 2.4, we applied a thematic coding approach to identify recurring themes, patterns, and key ideas that emerged during the focus group discussions. The primary objective of this comprehensive analysis was to identify and validate approaches that could effectively address energy poverty in social housing.

For this purpose, the analysis evaluated the desirability of proposed

**Table 1**
Characteristics of social housing providers (SHPs) participating in this study.

| Country | % social housing | % EP in social housing | SHP scope | Organisation | Stock | Governance structure |
|---|---|---|---|---|---|---|
| France | 16% (±5.9 million units) | LIHC[a]: 25.5% in 2013 (ONPE, 2019) | Countrywide | Polylogis | 145,000 | NGO |
| | | | Paris Metropolitan Area | Paris Habitat | 125,000 | Owned by City of Paris |
| England (part of the UK) | 17% (±4.2 million units) | LILEE[a]: 17.5% in 2022 (DESNZ, 2023) | England | Clarion | 125,000 | Registered provider |
| | | | Greater London | Peabody | 104,000 | Registered provider |
| Netherlands | 29% (±2.2 million units) | LIHC[a]/LILEE[a]: 19% in 2021 (Mulder et al., 2023) | Amsterdam Metropolitan Area | Ymere | 75,000 | Housing association |
| | | | Rotterdam | Havensteder | 45,000 | Housing association |

[a] Energy poverty indicators Low Income High Cost (LIHC) and Low-Income Low Energy Efficiency (LILEE).

solutions, considering their potential impact on energy poverty alleviation and compliance with SHP's overall objectives. Feasibility was assessed in terms of financial resources, data accessibility, organisational competencies (e.g., technical expertise), the autonomy of SHPs within regulatory frameworks, and the likelihood of stakeholder resistance.

## 4. Results

### 4.1. Crisis measures mitigating energy poverty

In the wake of escalating energy prices in the autumn of 2022, SHP professionals were either anticipating or already experiencing a state of crisis. Many participants acknowledged that the harsh reality of energy poverty had "*woken us up*", prompting a sense of urgency and a newfound awareness among them. In addition to existing government support,[2] it led to the implementation of diverse crisis measures tailored to the unique circumstances and regulatory frameworks of each country yet driven by a shared goal of mitigating the impact on vulnerable residents.

In France, SHPs aligned with the national 'Energy Sobriety Plan' by enforcing regulated temperature limits while fostering awareness among tenants about sustainable energy practices and offering advice on entitlements and benefits access. England saw a variety of support mechanisms, including the distribution of energy and food vouchers and the introduction of 'Warm Hubs', communal heated spaces, where tenants could gather, find comfort, and shower without fearing their energy bill. One notable approach involved an SHP, which also served as heating supplier for part of its tenants, opting to temporarily absorb heating cost increases. Dutch SHPs opted for quick, impactful interventions such as providing LED lighting, radiator foils, shower heads, and radiator fans, while exploring the introduction of Warm Hubs. Finally, SHPs in all three countries decided to accelerate investments in improving their poorest performing stock.

### 4.2. Rent setting

#### 4.2.1. Desirability

There was only limited support for targeted rent setting among all participants. They recognised the value of leniency in rent collection and suggested that rent discounts and hardship grants could provide temporary relief during challenging times for tenants, yet they emphasised that such interventions fail to tackle the underlying systemic issues of energy poverty. Indeed, this approach could negatively affect the investment and, consequently, the retrofitting capabilities of SHPs, ultimately worsening their ability to mitigate energy poverty over the long term. Participants also mentioned the risk that SHPs with outstanding rent payments might become the last creditors to be paid by tenants, due to their benevolent intentions. Moreover, there is a perception that national and local governments promptly resort to SHPs to tackle this issue, despite high energy prices being largely unrelated to SHPs' influence, as illustrated by a Dutch participant:

> *"So, your fuel costs are not related to your landlord, therefore why would your landlord give you a grant if you're struggling with your fuel payments? It is about roles and responsibilities. And what you find is the housing association picks up where the state is not meeting those needs."*

#### 4.2.2. Feasibility

This intervention raises several feasibility issues, as observed in all three countries. Theoretically, reduced rents may enhance tenants' ability to cover energy costs, but participants note there is no certainty that the freed-up funds will be dedicated to such expenses. Rather, tenants may allocate these additional resources to non-energy-related needs, such as food, clothing, and leisure. Furthermore, this intervention is at odds with the governments' housing allowance system in England, France, and the Netherlands. These allowances, which a significant portion of social rental tenants rely on, are determined by factors such as the income of the tenant and the rent level of the dwelling. As a result, lowering rents would simultaneously reduce housing allowances, effectively diminishing the net financial benefit for the tenant:

> *"If you do this, it means that the rent will go down with for example 21 Euro and the housing allowance goes down with 14 Euro. Thus, the net effect is minimal, with the state profiting more than the tenant."*

### 4.3. Housing allocation

#### 4.3.1. Desirability

The idea of targeted (re)allocation based on energy poverty risks received considerable support in all three countries. In France, social rental dwellings are primarily allocated based on a ratio of household income and estimated housing costs, the so-called *taux d'effort*. Since energy costs are included in the estimated prospective expenditure, albeit in standardised form, one may argue that energy poverty risks have already been integrated in the housing allocation system.[3] Nonetheless, some French participants see merit in more nuanced allocation mechanisms based on specific needs. For instance, they suggest allocating sun-exposed dwellings to elderly tenants, while acknowledging the potential risk of summer heat stress. Since individual preferences

[2] In 2022 and 2023, several European countries implemented comprehensive price caps and support schemes aimed at assisting their tenants amidst the energy crisis. See for an overview: https://www.bruegel.org/dataset/national-policies-shield-consumers-rising-energy-prices.

[3] The *taux d'effort* refers to a ratio that combines housing expenses (rent, housing charges, individual expenses for energy and water) with the household's income (salaries, pensions, social security benefits) to evaluate the affordability of social housing. It aims to ensure that allocated households can manage their housing costs effectively.

vary, such decisions might require personal consultation. Participants also stressed the zero-sum nature of housing distribution, highlighting that many current and prospective tenants are in a vulnerable position.

In England and the Netherlands, energy expenses are not incorporated into the criteria for housing allocation, leading to a consensus on the need for system reforms to safeguard vulnerable populations from being assigned to energy-inefficient housing. Dutch participants expressed particular dissatisfaction with the lack of consideration for energy costs in the allocation system. In the Netherlands, social housing allocation relies on a sophisticated choice-based system that enables applicants to select from available housing based on their income, age, family size, with priority given based on waiting duration. Although this system considers the ratio of income to rent, it does not take expected energy expenditures into account. A Dutch SHP once attempted to mitigate this oversight by informing applicants online with an estimation of energy costs in listings, but the practice was halted due to the minimal impact it had on applicants' choices amid long waiting periods. Dutch participants also highlighted the issue of 'empty nesters' occupying larger homes than needed, which is undesirable both from a housing market and energy poverty perspective. They advocated for incentivising moves to smaller, more energy-efficient homes through a personalised approach (*from big to warmer*).[4]

#### 4.3.2. Feasibility

French participants identify data as a significant barrier for improved targeting in housing allocation, as they note that information used for *taux d'effort* calculations is aggregated and outdated, dating from before the energy crisis. This makes the data less useful and reliable in a context characterised by high and volatile energy prices. To enhance precision of policy targeting, some French participants propose considering non-income related aspects that could affect the risk of energy poverty, such as age or disabilities. However, the ability of SHPs to incorporate these factors is constrained by formal housing allocation rules and privacy regulations. Moreover, there is concern that such approaches could complicate the housing allocation process. In England, participants stressed that strong locational preferences of (prospective) tenants would make them reluctant to be (re)located on the basis of lower energy cost. Additionally, the overall scarcity of energy-efficient housing stock substantially impedes the feasibility of this proposed intervention.

Dutch participants highlighted a significant tension between current housing policies and the objective of mitigating energy poverty. The dwelling valuation system, which informs rent pricing within the social rental sector, incorporates energy efficiency into its 'quality points', resulting in higher rents for more energy-efficient dwellings. However, the current allocation rules stipulate that the lowest-income households are assigned to the lowest rent homes, not accounting for energy costs. Although economically logical in terms of rent, this approach can exacerbate energy poverty, as the most affordable units in terms of rent often have the poorest energy performance. This could be prevented by adopting the French model in the Netherlands, which considers both income and household characteristics on one hand, and overall housing costs, including energy expenses, on the other. Participants generally supported such a reform, despite some concerns over paternalism, as tenants can presently decide for themselves how much energy they would like to consume. Furthermore, like England, acute housing shortages constrain the feasibility of reallocation, and emotional attachment further complicates these efforts:

> "*A house is also a home. It is not a commodity that can easily be changed.*"

### 4.4. Prioritised retrofitting

#### 4.4.1. Desirability

Across all countries, SHPs are prioritising the worst performing stock in their retrofit plans driven by regulatory arrangements with governments. Nevertheless, opinions differ on whether to incorporate social factors into this prioritisation. Most participants recognise the advantages of kickstarting retrofitting efforts in areas marked by significant hardship and energy poverty, but there are several principled concerns related to this matter that extend beyond the practical considerations discussed in the *Feasibility* section.

French participants expressed scepticism, partly due to a potential conflict between the goal of developing socially mixed neighbourhoods, as required by law ,[5] and prioritising retrofits for 'vulnerable' tenants. When allocating adjacent residences to heterogeneous groups based on social attributes, targeting retrofits may be less effective in alleviating energy poverty as benefits will extend to tenants without financial hardship, while simultaneously failing to reach at-risk households in more affluent neighbourhoods. Conversely, British participants were more open to prioritise retrofits for energy poor households, even if this would incur some extra expenses, but emphasise this would eventually depend on the cost-benefit-analysis. Interestingly, they point out a new 'split incentive' issue where the investments made by the SHP may not align with the greatest benefits for the residents. For instance, while solar panel installations would significantly benefit tenants, SHPs may consider them as less attractive investments compared to insulation measures due to the former's limited lifespan and less significant impact on property valuation.

Dutch participants demonstrated strong support for prioritising vulnerable households, driven by the European energy crisis and concerns over a cost-of-living crisis among tenants. Furthermore, many participants perceive significant short-term potential in the targeted deployment of so-called 'fix teams' in neighbourhoods with the highest energy poverty. These consist of skilled craftspeople conducting door-to-door installation of modest insulation measures, such as weather stripping and radiator foil, in addition to fitting LED lighting and performing hydraulic balancing of central heating systems. A participant responsible for building technology states that fix teams could serve as a temporary mitigation measure:

> "*The tenants whose homes are not scheduled for retrofit for another ten years are now contacting me, asking when it is their turn because they want solar panels and better energy performance, especially now their bills are going sky high. If you could offer them a visit from a 'fix team', it makes your message easier to sell. We assure them that the large-scale renovation will indeed take place, but there will be a temporary solution in the meantime.*"

#### 4.4.2. Feasibility

There was an overall positive outlook on the feasibility of this intervention across the three countries studied, with varying degrees of success observed among experiments conducted. Nonetheless, several significant obstacles were highlighted by participants, including short-term investment horizons, high tenant turnover rates, low engagement of vulnerable tenants, and data deficiencies.

SHPs generally employ long-term investment models based on maintenance cycles. Therefore, a sequence of retrofitting activities is

[4] Dutch SHPs promote relocating older tenants from larger single-family homes to smaller apartments through initiatives like the 'From Big to Better' program. This encourages circulation within the social rental sector and frees up larger dwellings for families with children. Since smaller dwellings generally exhibit better energy efficiency, energy poverty considerations could be further integrated into the program by specifically targeting older households residing in large energy-inefficient dwellings.

[5] The French law "Egalité et citoyénneté" (equality and citizenship) of 2017 requires SHPs, among other measures, to allocate 25 percent of dwellings in less deprived areas to households with incomes in the lowest quartile.

already in the pipeline, with scope for prioritisation limited to the margins of these pre-planned activities. Furthermore, while prioritising individual housing units is considered impractical due to financial and logistical constraints, it is deemed feasible at larger scales, such as the neighbourhood or building complex level. In fact, all SHPs cited instances where retrofitting projects were expedited due to socioeconomic needs of the neighbourhood.

The importance of cost modelling emerged consistently in the discussions among British participants. While they found prioritised retrofitting an interesting approach, they emphasised the need for *'a backing from finance'* in making decisions on policy targeting. Nevertheless, one SHP professional from England pointed out that unless the housing stock is eventually disposed of, the responsibility for such properties will endure into the future. Consequently, retrofitting expenses are bound to be incurred eventually, and short-term financial considerations should not hinder the adoption of this intervention:

> "*It just depends how long you model it over. If you're talking 30 or 60 years, you're still going to incur that cost at some point therefore you might as well deal with the residents that need it most at the beginning.*"

Moreover, participants raised concerns regarding the high turnover rate of tenants, which poses a potential risk to this intervention. Frequent turnover renders decision-making information quickly outdated; a concern shared by French professionals due to the extensive 'preparatory period' of retrofitting projects. They note that between the decision to retrofit a building and the commencement of the work, 30–40% of the tenancy contracts could be renewed. One additional challenge raised by French participants concerns the necessity of educating tenants on using the technical equipment installed during renovations. More advanced heating systems can sometimes be rather difficult to operate, leading some households unfamiliar with them to deactivate and revert to less efficient, individually controllable alternatives, possibly exacerbating energy poverty. To familiarise them with new systems, it is important to complement targeted renovation initiatives with engagement of tenants in training programmes and to develop user-friendly interfaces.

Despite these challenges, two experiments involving prioritised retrofitting were reported. One is presently underway following an early 2022 quantitative study on energy poverty among tenants, commissioned by a Dutch SHP, which has begun to influence prioritisation decisions within its renovation strategy.[6] While its primary focus is on addressing hazardous housing conditions, followed by improving the poorest performing stock (energy labels E, F, and G) as mandatory by 2028, energy poverty statistics have emerged as a third criterion for targeting retrofits and already serve as a "*crucial foundation*" for decision-making. Another experiment based on statistics was identified in England, where one SHP had already developed an energy poverty indicator in 2011 with the intention of targeting retrofits to where they are most needed. Nevertheless, the new indicator ultimately remained underutilised in prioritising retrofits due to IT issues impeding information sharing between departments and concerns regarding data reliability stemming from incomplete records beyond the start of a rental period:

> *"Until our data is more reliable and trustworthy, it's very, very difficult to say: 'Let's build a whole programme around it'."*

In France and the Netherlands, participants also stressed the availability of reliable individual-level data as essential for incorporating social characteristics into retrofitting prioritisation. While Dutch participants view it as presently feasible, acknowledging the potential requirement for external expertise, it represents a substantial obstacle in France.

### 4.5. Targeted information campaigns

#### 4.5.1. Desirability

There is widespread consensus among participants regarding the necessity of providing tailored information to tenants, particularly those at risk of energy poverty. The discussions surrounding this intervention sparked debate about the obligations of SHPs towards tenants and their role in society.

British participants mentioned that their national government's decade-long austerity measures on public services had created a void that was filled by SHPs and other civil society actors. They now perceive financial and energy assistance as a fundamental responsibility of SHPs, primarily driven by a shared feeling of moral duty to aid vulnerable tenants, particularly amidst the cost-of-living crisis. While French participants expressed strong support for behavioural interventions, some also emphasised the responsibility of their tenants. This led to disagreements among participants over tenants' agency regarding collective heating systems controlled by SHPs and billing often based on occupied square meters, resulting in discussions on the desirability of installing smart meters for individualised energy cost allocation. One perspective highlighted the 'fairness' of adopting an individualised approach and the related sustainability benefits, as tenants would be incentivised to conserve energy through the prospect of receiving lower bills. However, others cautioned about unhealthy energy rationing, arguing that collective heating systems prevent tenants from excessively restricting energy usage due to financial concerns, with one participant recalling a dramatic situation from experience:

> *"On a recent occasion, I remember a situation in which a gentleman accidentally set his mattress on fire, basically because he was using candles for heating."*

The obligation to provide tailored advice was particularly recognised after a retrofit. Participants consider it crucial to provide detailed instructions on the proper use of various installations, such as floor heating, solar water heaters, and balanced ventilation systems. Neglecting to offer such information could result in lower-than-anticipated energy savings. Furthermore, SHPs may also be motivated by self-interest to disseminate this advice, as inadequate ventilation or improper use of appliances might lead to the degradation of the property. An illustrative example that highlights this issue is the destructive cycle of moisture accumulation and energy poverty. Tenants drastically cut back on heating to save on expenses, leading to colder and subsequently damper living conditions. However, the presence of damp necessitates increased heating to restore a comfortable temperature, paradoxically elevating concerns over rising energy expenditures. Promoting tenants' energy literacy[7] by informing about the benefits of using their ventilation grilles could prevent such issues, encouraging them to keep these features open instead of sealing them to reduce expenses.

Participants across all three countries recognise that behavioural interventions can take many forms and their effectiveness may vary depending on the specific tenant group. French participants discussed a broad spectrum of interventions, including the engagement of tenants as energy ambassadors and the creation of a toll-free helpline for energy support. In England, the provision of energy support frequently incorporates financial advice, offering assistance in securing favourable energy contracts, conducting benefit assessments, and providing employment support. Dutch participants highlight the necessity of a personalised approach, acknowledging the diverse characteristics and behavioural patterns of tenants:

> "*We actually need to provide tailor-made solutions for tenants. We can't generalise them. A family is different from a single person or a couple.*"

[6] See https://www.woonbond.nl/nieuws/veel-huurders-ymere-kampen-energiearmoede.

[7] See DellaValle and Sareen (2020) for additional examples.

#### 4.5.2. Feasibility

All SHPs have implemented energy advice campaigns, ranging from universal strategies like information on websites and public spaces, to more tailored approaches such as in-person home-visits going through actual energy usage. In certain cases, these interventions were specifically targeted at segments of the housing stock identified as being at high risk of energy poverty.

Targeting behavioural advice is considered a more moderate intervention compared to basing housing allocation, rent setting, or retrofit prioritisation on social characteristics, and is therefore less hindered by concerns surrounding data accuracy. British participants refer to the warm hubs as a rather targeted way to provide behaviour advice, since they attract the most at-risk tenants. Frontline staff at one SHP have tried to introduce a 'flag' system to focus outbound advisory calls on tenants identified by certain 'risk factors', such as dependence on prepayment metres, residing in energy inefficient homes, or receiving social benefits, especially during winter months when energy poverty is most acute. However, IT and data constraints have posed significant challenges to the implementation of this system:

> "*In an ideal world, the fuel poverty score should be something that's stored in CRM. So that, if you answer the phone to someone, you get a flag to say this person is in risk of fuel poverty, perhaps direct them. That's not possible at the moment.*"

In the Netherlands, for instance, one SHP was investigating how to target its 'energy coaching' services on 'attention estates,' defined as estates with high energy consumption and poor insulation. Notably, policy targeting is informed not just by statistical data but also by insights from neighbourhood workers and local stakeholders. The SHPs also refer tenants with perceived energy poverty risk to other civil society actors that provide energy advice, including energy banks, community centres, and social organisations. One participant emphasised the effectiveness of face-to-face information delivery, with an emphasis on revisiting messages in subsequent interactions and extending outreach to community homes or places of worship:

> "*We do have a challenging target audience, people who don't understand it or are not proficient in the language. So yes, in my ideal world, we go door to door, and try to find a way in.*"

An interesting approach in France involved employing resident ambassadors to aid their neighbours. SHPs also organise awareness events, but these mostly attract residents who are already convinced or potentially receptive to the message. Participants note they struggle to engage resistant, disinterested, and notably, the vulnerable groups who are most in need of support.

Table 2 in the conclusion section summarises the main advantages and disadvantages of different interventions targeted at social housing tenants experiencing energy poverty.

## 5. Discussion

The recent surge in energy prices has brought energy poverty issues to the forefront of SHPs' agendas, making our data collection during the price peak in autumn 2022 notably timely. While it must be acknowledged that the heightened awareness during this period might have influenced SHPs' dynamics of responsibility – possibly skewing the full extent of the sector's readiness for targeted interventions – it undeniably opened a window of constructive and imaginative discussion on integrating energy poverty mitigation within SHPs' traditional objectives.

A principal rationale for participants' motivation to provide targeted assistance to vulnerable tenants stems from their first-hand encounters with the impact of the cost-of-living crisis. This is reflected in the numerous anecdotes about energy deprivation of tenants that participants in all focus groups shared. However, the sessions reveal distinct approaches to the tenant-landlord relationship, especially in terms of balancing solidarity with tenant autonomy. French SHPs seem to lean towards a more top-down approach in their efforts to address energy poverty, favouring communal heating systems over individual ones to prevent excessive energy rationing. In contrast, SHPs in the Netherlands and England rather emphasise tenant autonomy, with a preference for individual meters and supporting tenants' agency to make their own housing and heating decisions (Wahlund and Palm, 2022). This contrast suggests that while targeted interventions can be beneficial in all contexts, tailoring and differentiating approaches to meet specific needs of vulnerable tenants might be better suited for implementation by SHPs from the latter countries.

More generally, while the strategies discussed in this study reflect approaches in three European countries, we think they have a broader applicability. However, extrapolating our findings to the rest of the region requires careful consideration of the varied political, economic, and social landscapes, as well as the role of SHPs across different member states.

Another significant theme that occurs is the role of SHPs in society and their interaction with government, aspects deeply influenced by political economic and historical contexts (Lévy-Vroelant et al., 2014). In England, energy poverty has been a topic of political discourse since the energy crises of the 1970s, exacerbated by extended periods of austerity, notably in the 1980s and the 2010s, when the government reduced public spending (Middlemiss, 2017). This backdrop explains why participants from an English SHP felt compelled to pioneer the use of statistics in 2011 to identify and offer targeted support to tenants experiencing energy poverty, stepping in to fill gaps left by the government. Dutch participants willingly assist municipalities in pinpointing households for government energy allowances, highlighting the country's commitment to cooperative 'early detection' in social welfare (Van der Schoor et al., 2021).[8] Yet, their frustrations about the government imposing rent freezes also reflect a broader concern regarding the allocation of responsibilities amidst a cost-of-living crisis for which they do not feel accountable. Conversely, French SHPs express a rather positive view of their relationship with the state, readily embracing government regulations like the cap on indoor temperatures, showing a more harmonious alignment with state directives. These differences suggest that SHPs' motivation to target energy poverty support intensifies when there is a lack of confidence in state interventions. This highlights the importance of broader international comparisons in a research area that frequently concentrates on single-country studies. However, further research would be necessary to confirm the exact nature of the relations between confidence in state intervention and the motivation to adopt targeted approaches.

The willingness of SHPs to adopt targeted interventions often hinges on strategic alignment of temporal challenges and organisational objectives. This balancing act is influenced by various commitments, such as adhering to decade-long plans for building thermal upgrades and maintaining long-term social diversity in neighbourhoods. Additionally, comprehensive, long-term solutions like prioritised retrofitting and allocation reform take years to put in place and fail to address immediate crises, while short-term interventions such as rent freezes provide only temporary relief and are resource intensive. A solution that falls somewhat in the middle is the emergence of 'fix teams' in the Netherlands and elsewhere in Europe (Barrella et al., 2021). These offer fast, surface-level retrofitting to households facing energy poverty, filling the gap before extensive renovations take place, therefore presenting an intriguing area for further research. The question of investment horizons also presents an ongoing debate, with British participants highlighting that adopting a longer-term perspective would facilitate prioritising retrofits for those in need.

While it is premature to determine whether SHPs' increased commitment towards energy poverty and their engagement with

[8] Dutch SHPs are particularly equipped to do so due to their increasingly residualised nature, as discussed in 2.2.

targeted interventions will persist, the recent energy crisis might have sharpened their awareness of their significant impact in this area, as depicted in Fig. 1. For instance, internal discussions on a novel 'split incentive' dilemma – where SHPs favour retrofitting measures that boost property value, whereas tenants prefer solutions that reduce their short-term energy bills, reflects this growing consciousness (Desvallées, 2022). This awareness might not revolutionise their strategic decision-making but could shift longstanding practices rooted in a techno-economic perspective on the energy transition (De Feijter et al., 2019), steering towards more equitable, people-centred outcomes in achieving a 'just' transition. Notably, academic discourses on energy justice, such as energy communities, have yet to gain significant traction in SHPs' internal dialogues (Aruta et al., 2023).

## 6. Conclusions and policy implications

To analyse how social housing professionals in France, England, and the Netherlands perceive and utilise targeted approaches to alleviate energy poverty among tenants, we conducted six focus groups examining potential interventions, challenges faced, and perceived responsibilities by SHPs in this domain. Our study reveals a strong commitment among SHPs to combat energy poverty, spurred by the recent energy price crisis, their unique role in the social fabric, and, sometimes, governmental inaction. Participants expressed a keen enthusiasm for various targeted interventions to address energy poverty, but several limitations exist (outlined in Table 2). Here, we highlight our study's main insights and suggest policy recommendations.

Identifying the target group is a fundamental part of policy targeting, and thus, the limited data available to SHPs forms a primary challenge in addressing energy poverty. This requires a deep understanding of how energy poverty is distributed across the housing stock and a knowledge of tenants' financial capabilities and energy needs (Bridgen and Robinson, 2023). Yet, SHPs face considerable obstacles, including limited data gathering capabilities constrained by privacy laws and a general lack of specific tenant information. Some SHPs have leveraged local insights from neighbourhood workers to guide their energy advice services, highlighting the value of using intermediaries to identify 'hard-to-reach' households affected by energy poverty (Dubois and Sinea, 2023). However, for more impactful strategic decisions, such as determining retrofit priorities or reallocating vulnerable households, a more granular level of data is essential. The role of governments becomes critical here; by facilitating access to data within the confines of privacy regulations, they can empower SHPs in their efforts to combat energy poverty. The example of a Dutch SHP that successfully modelled energy poverty within its housing stock underscores the transformative potential of enhanced data accessibility. Nonetheless, the potential stigma associated with being labelled as 'energy poor' necessitates careful consideration to avoid unintended consequences (Longhurst and Hargreaves, 2019).

Moreover, our discussions with social housing professionals highlight the complexity of choosing effective delivery mechanisms. Prioritising retrofits for energy-poor tenants seems to yield significant and lasting benefits but is fraught with logistical challenges, such as lengthy preparatory phases and the risk of energy poor tenants relocating before the works commence. Reallocating at-risk households to energy-efficient dwellings is a preventive approach against energy poverty yet constrained by government regulations and a general scarcity of (energy efficient) housing, with participants critiquing it for merely tackling distributional issues without facilitating systemic change. Temporary rent reductions are viewed rather unfavourably as a means of providing immediate financial relief because they compromise the long-term ability of SHPs to perform their tasks adequately. Providing tailored energy advice to vulnerable tenants is considered a feasible and effective intervention to alleviate energy poverty. Nevertheless, further research is necessary to evaluate the impact of such interventions (Simcock and Bouzarovski, 2023) and to devise approaches for engaging tenants who may face language barriers or digital literacy challenges (Bouzarovski et al., 2022).

Finally, we underscore the importance of clearer institutional definitions of roles and responsibilities in mitigating energy poverty (Bednar and Reames, 2020). This would also necessitate a societal and political debate on whether SHPs should proactively aid in achieving a fair transition and support those in need, or concentrate on operational efficiency to fulfil other objectives, like constructing new affordable housing. Such discussions could also garner political backing for specific intervention strategies. Moreover, housing policies must account for expected energy costs when establishing allocation or rent allowance systems based on housing's 'operational' costs. While France implements this through the *taux d'effort* system, the absence of such a practice in the Netherlands often leads to vulnerable households living in energy-inefficient dwellings, inadvertently fostering energy poverty from the outset of a tenancy. Therefore, total housing costs, including likely energy costs, should be the starting point for housing policy interventions targeted at vulnerable groups, emphasising the need to align existing regulatory frameworks with energy poverty alleviation objectives.

**Table 2**
Comparison of methods for targeted energy poverty interventions in social housing.

| | Types of policy targeting by SHPs | | | |
|---|---|---|---|---|
| | Rent setting | Housing allocation | Retrofit prioritisation | Information campaigns |
| Potential advantages (desirability) | Temporarily alleviates hardship (participants prefer leniency in rent collection as a similar measure) | Precise: policies targeting vulnerability characteristics (or energy needs) at household-level<br>Considering expected energy expenses as housing costs, as practiced in France, mitigates the risks of energy poverty from the onset of tenancy | Lasting impact: addresses root cause of energy poverty | Improves household resilience and knowledge<br>Increases the gains in energy consumption reduction following renovation |
| Potential disadvantages (desirability) | Bureaucratic process, need for extra rent-setting criteria<br>May reduce housing allowance, lowering net gains for tenants<br>Undermines long-term investment capacity of SHPs | Only distributional in nature, does not address root causes<br>Neglects households' emotional attachment to homes and other factors that influence their preference for certain dwellings or areas. | Relatively inaccurate, since whole buildings or neigbourhoods are targeted with policies<br>Renovations could be more expensive or slow than with a techno-economic approach | Risk of individualising the responsibility of energy poverty<br>Lack of trust may complicate information transfer |
| Practical or institutional constraints (feasibility) | Requires (long-term) reliable household data<br>May conflict with regulations on rent setting in social housing | Requires reliable data on energy needs<br>Challenging to implement in an overheated housing market with strong demand for social housing | May conflict with long-term planning (renovation pipeline) | Difficult to reach the most vulnerable groups |

## Ethics

This study was approved by the Human Research Ethics Committee (HREC) at the Delft University of Technology on September 23rd, 2022.

## CRediT authorship contribution statement

**T.M. Croon:** Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **J.S.C.M. Hoekstra:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **U. Dubois:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

## Declaration of competing interest

The authors declare that there is no conflict of interest.

## Data availability

Data will be made available on request.

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