

Overcoming energy poverty in childhood from a policy perspective

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Analysis

Keywords:

Posted Date: July 29th, 2022

DOI: <https://doi.org/10.21203/rs.3.rs-1768396/v1>

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Abstract

It is proven that children experience specific impacts on their mental and physical health as well as their educational attainment as a result of living in energy poverty. International guidelines and requirements underline the right of every child to an adequate standard of living and the need for all policy to take children into account. This paper aims to understand the extent to which energy policies target children in energy poverty and acknowledge their differential needs and impacts. The paper is based on a study of EU-SILC data and the analysis of policy documents across the 28 countries that by the end of 2019 formed the European Union. The analysis reveals how energy policies mostly consider children only within the context of their families, tending to provide greater support to larger families, while data suggests single parent families are at higher risk of energy poverty. Generally, children tend to be seen as passive subjects in energy policy, are not involved in its development, and their own perspectives and needs are neglected.

1. Main

Energy poverty is a complex and multidimensional problem, defined as the inability of a household to secure a socially and materially required level of energy services in the home¹. Brenda Boardman, in her seminal research, triggered a consensus about its main drivers being energy prices, energy-inefficient households, and low-income households². This framework then extended to six vulnerability factors identified by Bouzarovski and Petrova (2015)³, including access, affordability, flexibility, energy efficiency, needs and practices. Other contributions claim that the conceptual frame of energy poverty is too technical and at risk of overlooking lived experiences⁴, providing insights into the everyday lives of the energy poor and enabling more comprehensive analysis of policy impacts and development of more viable interventions⁵. There has been a shift away from viewing energy poor households as homogenous towards recognising the distinct ways in which different households – and different persons within a household – are affected. For instance, research has been conducted on gender, the elderly, single parent households and disabled people⁶⁻¹⁵, recognising differential impacts and experiences of energy poverty between different members of households.. The discussion on the impact on children and its policy implications is still emerging.

Overlooking the distinct experiences of children in energy poverty prevents policymakers from taking into account differential needs and overcoming discrimination of a specific group that, due to their dependence on adults, face greater difficulties in claiming their rights¹⁶. Different international guidelines and requirements, such as the UN convention on the Rights of the Child (1989), the Recommendation on Investing in Children (2013), a WHO-UNICEF-Lancet Commission (2020)¹⁷ or the European Strategy for the Rights of the Child (2021) have underlined the right of every child to an adequate standard of living (1989, 2021), the need to guarantee children's participation, the role of States to provide assistance and support, to address situations of energy poverty among children (2013), and on the requirement for all policy to take account of children, especially children in a vulnerable situation or environment¹⁷. Yet, there is no nation state which has a comprehensive approach on how to consider children's interests in multisectoral public policies.

This paper reveals how, even when specific impacts of energy poverty on children have been acknowledged, there is still a lack of recognition of their differential needs in relation to energy,

climate and social policies, with a relevance for energy poverty alleviation. Energy policies targeting children are rare, and when they exist, they tend to place children under the broader category of their family or household unit, even when prior research on energy poverty related to age, gender or disability^{6-9,12,13} demonstrates how every member of a household will be impacted differently.

We begin this paper with a literature review presenting the existing evidence on the differential and distinct impacts that energy poverty has on children. We then use various data sources including EU Statistics on Income and Living Conditions (SILC) data, National Energy Climate Plans (NECPs) and public policy reviews, to establish in EU+UK nations: first, whether there are public policies aimed at alleviating energy poverty during childhood, second how these policies conceptualise children (e.g., as citizens, as members of a family or household unit), and third, the extent to which children have been involved in the elaboration of such policies.

2. Growing up in energy poverty

Recent research conducted in the UK, Ireland, Northern America, Spain and New Zealand¹⁸⁻³³ evidences the distinct impacts of energy poverty on children, focussing primarily on physical health impacts^{11,18,25,27,30,33,34}. Children are known to spend more time at home than adults^{19,23}, so housing conditions are likely to affect them more. Findings point to poor families reducing their expenditures on food in response to cold weather³⁵⁻³⁷, an association between living in cold houses and hospital visits²⁶ and poorer respiratory health^{26,27,30}.

Mental health impacts have also been identified by the literature in association with children in energy poverty. Financial stress¹⁸ and increased likelihood of depression in parents²⁸ are also likely to affect children's wellbeing³⁸. In particular, teenagers living in energy poverty report psychological stress and seem to be at a higher risk of mental health problems and engaging in risky behaviours such as alcohol abuse, drug abuse and violence^{26,34}. Other causes of mental health issues include the need for intimacy that accompanies the adolescent period (more complex when the housing conditions are not adequate), and difficulties accessing social technologies and forging good relationships between peers²⁶.

Impacts are also likely to extend beyond health, as hinted by a smaller number of studies. Early research³⁹ has shown that energy poverty can be associated with poorer educational attainment, days off school, bullying and stigma and social isolation. Indeed, academic performance can be an important channel through which energy poverty affects children's wellbeing^{29,31}.

The presence of children in the household also influences family energy consumption behaviour and is key to the development of child-oriented energy policies. We know that families have different patterns of energy use (quantity and times of use) and that energy use is deeply entwined with daily routine and coping strategies for families⁴. Understanding this distinct behaviour and taking account of it represents an important element of sensitising energy policy to the distinct needs of children⁴⁰.

In fact, much of the apparent lack of knowledge about the reality of children's energy consumption and their subjective wellbeing in relation to energy poverty is due to an absence of active involvement of children in research and policy making. O'Sullivan (2017)²⁴ provides a rare example of an energy poverty study involving teenagers. It found that cold housing has significant effects on their day-to-day lives outside and inside the home and revealed awareness on the part of teenagers of the financial stress their families were under.

Overall, there exists a strong body of evidence to suggest that the impacts of energy poverty experienced by children and their specific energy behaviours related to care and family routines are

distinct from those of other household members and therefore warrant explicit research and policy attention directly involving children.

3. Children in energy poverty: a secondary data study

As stated previously, there are no specific EU indicators on children in energy poverty. However, the two main indicators commonly used to quantify the phenomenon are found within the EU SILC statistics. The two main indicators: inability to keep home adequately warm and arrears on utility bills, can be disaggregated by household typology, allowing us to understand the ways in which children might be affected by energy poverty according to their family composition.

As developed in the methods section, we propose a cluster analysis, based on the work developed by Recalde et al. (2019)⁴¹ in the creation of a structural energy poverty vulnerability (SEPV) index. The clusters are presented in figure 1 and serve as a basis for presenting the developments of the indicators mentioned above (figures 2 et 3).

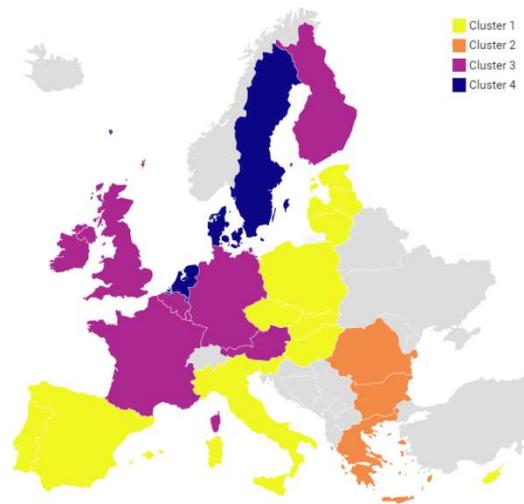


Figure 1. SEPV Index 4-Cluster distribution across EU-27 based on Recalde et al. (2019)⁴¹

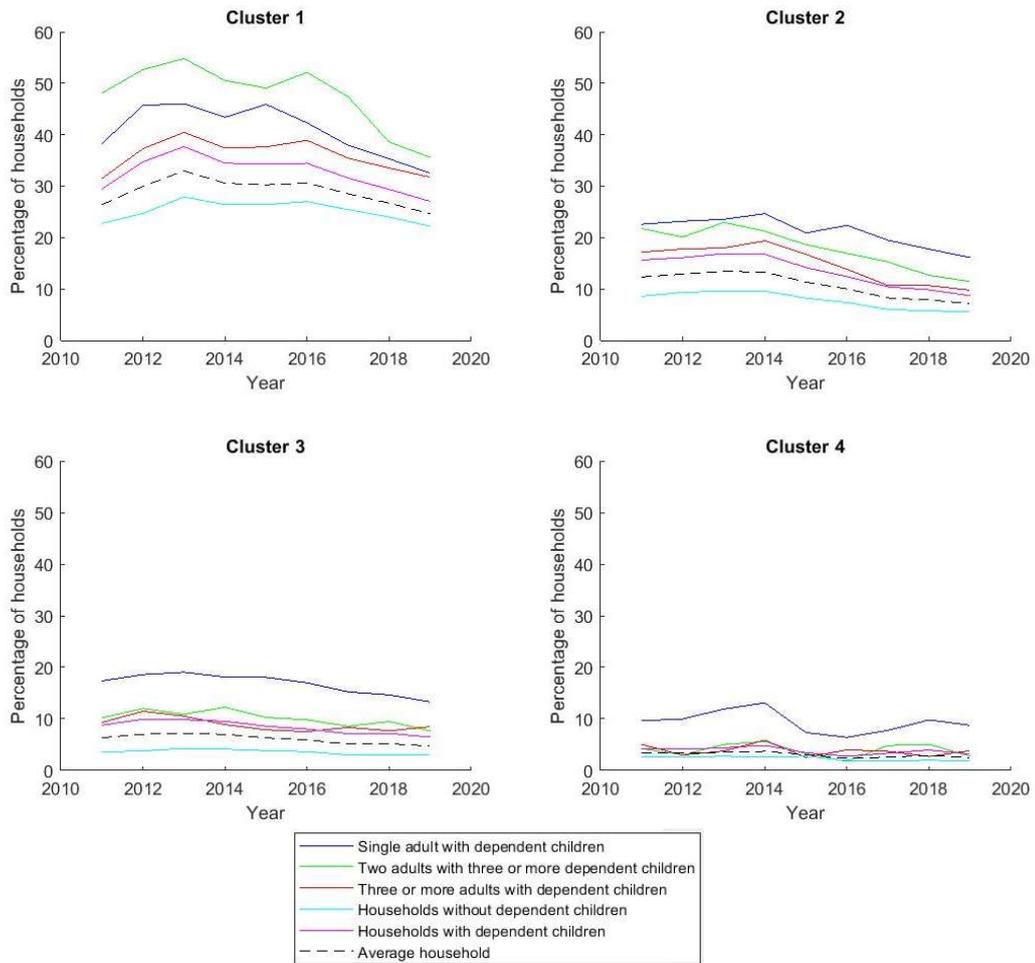


Figure 2. Arrears in utility bills for different household types, in the four energy poverty cluster areas defined by Recalde et al.⁴¹ between 2011 and 2019

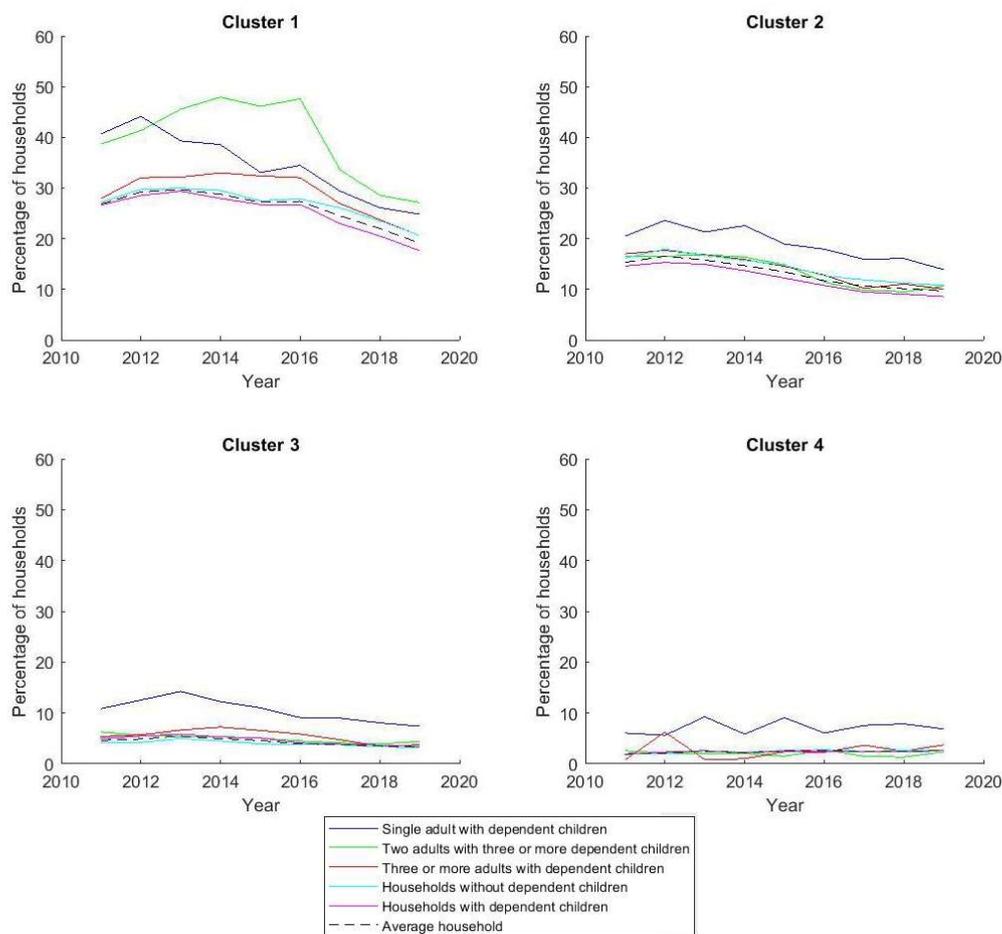


Figure 3. Inability to keep home adequately warm for different household types, in the four energy poverty cluster areas defined by Recalde et al.⁴¹ between 2011 and 2019

This analysis yields a number of relevant considerations. It can be observed how clusters 1-3 show a decreasing trend in both indicators, while cluster 4 shows some fluctuations from a constant base. It can be said that, in general, instead of converging, the lines representing the different family typologies evolve in parallel, which can be explained by the lack of specific policies addressing the specificities of each group.

Also, households with dependent children seem to have a higher tendency to accumulate utility debt (Fig.2), while the percentages of families reporting inability to keep their homes warm (Fig.3) appears to be lower. Although further study of this behaviour is needed, this analysis supports prior studies on energy behaviour which point to a tendency amongst families with children to prioritise reaching a comfortable temperature even if debts are incurred or other sacrifices made, such as reducing food intake^{36,42}, leisure expenditure or extreme food cost management.

Furthermore, according to the data, one of the factors influencing the risk of being in energy poverty during childhood is household composition. As a matter of fact, the percentage of single parents with arrears on utility bills and inability to keep the house warm is higher than that of average households in almost all EU countries (Fig.1). This high risk among single parents' households has also been confirmed by recent literature on intersectionality in energy poverty data. These studies also found a strong association between single parent households and being in arrears on utility bills⁷, while highlighting a gender impact, which several authors have also reinforced^{6,9,13}, as a majority of single parent households are headed by women (78,6% in 2019)⁴³.

Disaggregated data also point to a higher risk of energy poverty among larger families (i.e., children in households with three or more siblings) especially in Romania, Bulgaria and Greece and, significantly in at least 16 countries (as detailed in supplementary information), in intergenerational households (three or more adults with dependent children). Countries like Croatia, Bulgaria, Malta or Slovakia, where intergenerational households are prevalent, show concerning outcomes regarding arrears on utility bills.

4. Public policy outcomes

Considering the emerging evidence on the distinct nature of childhood energy poverty, a third strand to our analysis is necessary to assess the extent to which public policies acknowledge these groups as being at higher risk of energy poverty and propose measures to alleviate it. Energy poverty policy making occurs at different levels (national, regional or local). Our analysis therefore attempts to cover the different levels, starting with an overview of the energy policy commitments that the various European states have set out in their NECPs. Therefore, we will provide the context in which they situate -if they do so at all- energy poverty regarding children.

4.1 National Energy and Climate Plans

NECPs were introduced by the Regulation on the governance of the energy union and climate action (EU)2018/1999, agreed as part of the package adopted in 2019. Even if energy poverty is covered to some extent in most of the plans, they demonstrate multiple interpretations of the problem^{44,45}. In fact, although NECPs are required to address energy poverty mitigation, a significant number of them fail to do so or only commit to designing future strategies. For the most part, they still do not provide an assessment of the number or type of households affected by energy poverty and many lack specific targets and objectives.

For the purpose of this article, we have analysed the final 28 NECPs delivered to the European Union at the end of 2019 using a keyword search system, as explained in the methods section, to find out how often and where they refer to children. We differentiate three approaches here, associated with the energy justice framework^{46,47}: if they acknowledge specific impacts on children (recognition justice), whether specific measures for families with children are detailed (distributional justice) and in which ways children or young people have been consulted or informed during the elaboration of the document (procedural justice). Results are shown in table 1.

	Acknowledgment of specific impacts on children / families with children	Support measures or programs targeting families (highlight when mentioning children is specified)	Children or young people consulted or informed
Austria		<i>Support instruments for families. Not children specific.</i>	
Belgium	Pollution impacts on children Single-parent family is a risk factor for EP	<i>Energy loan to save energy. Not children specific.</i>	Opinion from Flemish Youth Council gathered
Bulgaria		<i>Targeted Heating allowance during cold months. Not children specific.</i>	
Cyprus	Large families with low income as vulnerable customers of electricity.	Benefits for large families with low incomes	Workshops and bilateral meetings with youth organisations
Czech Republic	Pollution impacts on children's health	<i>Housing allowance. Not children specific.</i>	
Denmark		Special supplementary housing benefit. Large families mentioned.	
Germany		Infants as special circumstance against supply disconnection due to payment arrears	
Hungary	Large families living in single-family houses in small municipalities as a vulnerable consumer group	Subscription based electricity connection scheme for at least one room in families with small children.	Establishing an energy and climate literate society focusing on younger generations
Ireland	A study from C.Liddell cites on the impacts of energy poverty on children	Energy efficiency retrofits improve health, particularly prevalent among children. Programs targeting lone parents with young children.	
Italy		Electricity and gas social bonus favouring larger families (more than three dependent children)	
Latvia	Pollution impacts on children's health	Electricity for a reduced rate for families taking care from a child with disability and large families.	
Lithuania	Energy poverty affects children, single parents.	<i>Reimbursement of domestic heating and water costs. Not children specific.</i>	
Luxembourg		<i>Allocation de vie chère et première énergie. Not children specific.</i>	Students actively involved in the consultation
Malta		<i>Energy benefits Not children specific.</i>	
Portugal	Energy poverty impact school performance and social isolation of young people	<i>Automatic recognition system to assign social tariff. Not children specific.</i>	Make young people aware of climate change / air quality.
Romania		<i>Home heating grant. Not children specific.</i>	
Slovakia			Raising energy efficiency awareness among children and young people.
Slovenia			Open call to young people to be involved in the NECP process.
Spain		Social energy bonus. Particular attention to households with children.	
United Kingdom	Wales vulnerable household when there is a child or young person under 16	<i>Different regional approaches Not children specific.</i>	

Table 1. Analysis of 28 final NECPS delivered by EU countries + UK for evidence of its references to children.

Of the 28 reviewed NECPs, there are eight which do not mention children or families in their energy poverty assessments or current public policies. In fact, only nine recognise to some extent the specific impact of energy poverty -or pollution- on children, or emphasize the vulnerability of certain family typologies such as larger families (Cyprus, Hungary) or single parent families (Belgium and Lithuania). Only Wales in the UK acknowledges any household with a child under 16 as a vulnerable family.

Regarding support measures targeting families, even if the majority of the countries mention policy support instruments for households in energy poverty, only eight of them identify children - always in the context of their household - as beneficiaries. Support for large families is specified in five of these countries, while lone parents are only mentioned in one (Ireland).

Concerning children's involvement in policy development, only four countries refer to gathering young people's views in the elaboration of the document, while three allude to the future involvement of children or young people in energy and climate subjects.

Special mention should be made of the NECP for the Netherlands, which refers to child poverty, while stating that energy poverty is only one aspect of this, and pointing out that this needs to be addressed by broader social policy. Following previous research outcomes^{44,48}, this approach is another manifestation of mis-recognition overlooking the fact that energy poverty can affect different households to those in poverty more broadly and has distinct drivers that are also different from those associated with poverty, although there is some overlap. This lack of recognition risks ignoring children in energy poverty because of a bias in its definition that will never allow them to access public policies.

4.2 Policy case studies

Considering that the NECPS mostly provide a state-wide overview of energy poverty definitions, measurements and policies, it is necessary to deepen our assessment to include a more detailed analysis of other national and regional approaches involving energy policy and children. In order to do so, we will look at three different policy instruments -national or regional strategies, financial and support schemes, energy supply protection- in Spain (and Catalonia), Ireland and the United Kingdom (specifically Scotland and England). These regions and countries have been identified as those having advanced energy poverty policy developments which contain child-specific measures.

4.2.1 National and regional strategies mentioning children

European countries work at different speeds in terms of progress towards official strategies to alleviate energy poverty. The UK, which has a long history of recognising energy poverty as a distinct policy issue, published the first Fuel Poverty strategy in 2001, recognising the specific impacts that cold homes have on children. However, the 2001 strategy didn't use equivalised incomes, so underestimated the risk of families with children suffering energy poverty. The succeeding 2010 strategy introduced equivalised incomes and mentioned children as a specifically vulnerable group to the effects of energy poverty; however, children's references still appeared to be rather symbolic⁴⁹ and not accompanied by specific policies.

England's 2021 fuel poverty strategy, *Sustainable warmth: protecting vulnerable households in England*, reinforces the association between vulnerability and being younger than school age, which only targets a specific group of children. The prior 2015 strategy, *Cutting the cost of keeping warm*, committed to monitor children under 16 in fuel poverty as a key indicator, mainly based on energy efficiency of their home, neglecting a range of other drivers of energy poverty proven to affect children. It is significant that progress on recognition of and distinct impacts on children has been non-linear, as the 2015 strategy makes a stronger commitment to monitor the impacts on children than the 2021 strategy does.

The Scottish Fuel Poverty Act, supported unanimously by the regional Parliament in 2019, explicitly mentions household childcare costs in its definition and has gone through a Child Rights and Wellbeing Impact Assessment. This Assessment looks at how the Fuel Poverty Act takes into account children’s interests and how it may affect children, providing an estimate of the number of children -and children with long term illnesses or disabilities- affected by energy poverty. Nonetheless, no children or young adults directly responded to the online consultation process and the assessment was conducted by organisations that work with or represent children.

As for Spain, its *National Strategy against Energy Poverty*, active until 2024, recognises the special vulnerability of children to energy poverty and provides data disaggregated by family composition collected in the EU-SILC.

None of the strategies examined provide data focused on the percentage of children in energy poverty nor outlines specific policies or strategies targeting this group, despite defining them as vulnerable. As far as children being involved in policy making or even being consulted, there is no evidence of this whatsoever in the energy poverty policy development process.

4.2.1 Policy instruments targeting children

Here we consider how children are targeted in energy poverty policy. We are interested in the extent to which energy policy making involves or even considers child participation, as well as when energy policy recognizes children themselves (children-oriented) rather than locating them within their familial context (family-oriented). For this purpose, we adapt the conceptual framework proposed by Daly (2020)⁵⁰ in her studies of EU policy developments and children rights and entitlements, summarized in table 2. We start from her description of the general categories children-oriented and family-oriented to classify the public policies studied, as shown in table 3.

		Children-oriented	
Family-oriented		Children-centred	Children-focused
Primary focus	Adults	Child and adults	Child and adults
Direct or indirect engagement with children	Indirect	Direct- recognition of children as a direct group with needs	Direct- recognition of children as capable of defining their own needs
The entitlement	Income support for family	Resources- income and services	Resources (income and services) and participation
The desired outcome	Sufficiency of family income	Recognition and resourcing of children	Children’s empowerment

Table 2. Adaptation from Daly’s Three social policy approaches to Children⁵⁰

	<i>Financial /Support schemes</i>	<i>Supply protection</i>
<i>Children focused</i>	Child Winter Allowance (Scotland) Warmth and Wellbeing Scheme (Ireland)	Disconnection forbidden in families with social bonus and children under 16 (Spain) Energy dependent status (Catalonia)
<i>Family oriented</i>	Social Bonus (Spain) Cold Weather Payment, Warm homes discount (UK)	Priority services register (UK)

Table 3. Classification of energy poverty policies on the basis of the adaptation of Daly's Three Social Policy approaches to Children

Concerning policy instruments, there is significant emphasis within the case study countries on providing financial assistance to households in energy poverty in the form of cheques or discounts on bills. For instance, the social bonus in Spain offers a direct discount on the electricity consumption part of the bill. The income thresholds to access the social bonus increase according to the number of children living in a household, but families with three or more children have direct access to it without any income restriction. This calls into question the principle of universality, suggesting that some children are more deserving than others, depending on their family composition. It also ignores the well-established⁷ reference around how single parent households are disproportionately affected by energy poverty.

Regarding the UK, financial instruments include the Winter Fuel Payment, oriented mainly towards older people; the Cold Weather Payment, active when temperatures under 0 °C are reached for seven consecutive days and targeting -among others- disabled children and children under five; and the Warm Homes Discount, which again prioritises older people in its core groups but low-income families may be eligible in a limited broader group budget.

Scotland has also a financial scheme to support disabled children in energy poverty, the Child Winter Heating Assistance, introduced in 2020. To qualify for the assistance, children should also qualify for the highest rate of the care component of Child Disability Payment, the highest rate of the care component of Disability Living Allowance for children or the enhanced daily living rate of personal Independence Payment and be under 19 years old. This policy targeting disabled children is consistent with recent research findings stating the need for more energy policy acknowledging disabled people's specific needs⁸ and it is formulated based on the child as a subject rather than the family.

A remarkable approach tested in Ireland is the Warmth and Wellbeing Scheme in Dublin, which prioritises financial support to improve energy efficiency in households with children under 12 years with a respiratory condition and where their guardian is in receipt of fuel allowance or a single parent benefit. This programme highlights the situation of single parent families, is addressed to the children as subject of the benefits and is consistent with research findings that cold home negatively impact the respiratory health of childrens⁵¹.

There are also public policies in the above-mentioned countries that aim to protect access to electricity for vulnerable children in energy poverty. Spanish legislation, for instance, bans disconnections from the electricity grid in homes with the social bonus in which a child under 16 years of age lives. While it is true that in order to obtain this protection the family must be in receipt of the

social bonus - which is advantageous for large families - the need to protect the supply for all children under 16 years of age is introduced.

Specifically, in Catalonia the law 24/2015 (art. 52) forbids disconnection of families beyond a certain income threshold, which increases according to the number of children living in the house. Also, the health care public system can provide with an energy dependent status any child (or adult) with disabilities or illnesses requiring continued energy services; this status prevents them from being disconnected.

Regarding the UK, energy suppliers and network operators provide families with children under five with access to the priority services register, which ensures families with support in case of planned cuts and priority support in emergencies, among other support services. However, this access is not automatized, so it is up to the families to be aware of its existence and to proactively request it.

It is essential to highlight that no public energy policies were identified which could be classified under Daly's category of children-centred, as none include the perspective that children are capable of deciding on their own needs, none involve children in the definition of the policy and none consider children's empowerment. Ultimately, the analysis corroborates that public energy policies mostly take a family-centred approach and when they do take a children-centred perspective, they fail to design policy from children's own perspective and needs.

Conclusions and recommendations

A major difficulty in analysing the interactions between energy poverty and childhood, especially how it is addressed by public policy, is the lack of sufficient data to determine which children are actually living in energy poverty which represents a failure in itself. Notwithstanding, a growing body of research warns us about how a domestic energy deprivation can have specific impacts on children's physical health, mental health and educational development^{11,18,25,27,30,33,34}. More effort is therefore needed to generate specific data on children that reflects their particular situation and not only in relation to their family composition. For example, coordinate with education and health services to broaden the detection of child energy poverty and deepen the study of its impacts or increase efforts to develop indicators that draw on children's own views and experiences rather than through their main breadwinner.

In this sense, the majority of references to children in public policies are family-oriented, in the sense that they aim to improve the well-being of a specific type of family, with a relevant focus on large families. Even so, we detect inconsistencies between energy poverty data disaggregated by family type - which tend to show a higher risk among single-parent families - and public policies on energy poverty targeting larger families. In this case, public policies should take more account of the association between fuel poverty and single-parent families and generate specific policies in this regard.

In addition, financial assistance aimed at alleviating energy poverty in families often relies on households being eligible and claiming for it. This is detrimental to children because, in the absence of such decisions, they are even more dependent on adult caregivers to improve their situation. Initiatives such as the automatic social bonus in Portugal may be an option to remove this barrier to accessing subsidies.

Probably the most salient conclusion of this study is that, as the long-term impacts of energy poverty on children are recognised, as well as the need for child-centred policies and investment¹⁷, such

policies are still lacking in practice. Children tend to be mostly seen as passive subjects in energy public policy, and are not involved in its development. Future policy should target them directly, as active citizens able to be involved in policy generation related to issues affecting them. However, as they can't be engaged in the same way as adults, approaches to engagement will need to be appropriate and carefully considered.

Methods

The article brings together two different frameworks: the understanding of energy poverty within policy development and the conceptualization of children in policy elaboration. Also, as it was conceived as a review study the problem needed to be approached from different angles, requiring different methods.

A necessary step in developing the analysis was a review of existing literature to highlight published evidence on the specific impacts of childhood energy poverty, both physical and mental, and on educational development. From this foundation, the following activities were undertaken:

EU-SILC analysis.

The data analysis is based on the two main indicators contained in the EU-SILC European survey to measure energy poverty: inability to keep the house warm and arrears in utility bills. Although the data refers to households and not specifically to children, it can be disaggregated according to family composition. The categories selected for analysis were single parents with dependent children, two adults with three or more dependent children, three or more adults with dependent children, households with children and households without children. The first three categories were chosen because they showed worse outcomes, so higher risk to be in energy poverty.

In order to avoid focusing the analysis on a single year and thus be able to visualize trends, we chose to study the period from 2011 to 2019 in the 28 countries that by the end of 2019 formed the European Union. Results from the 28 countries can be visualized as supplementary information.

We then proposed to follow the Recalde et al.⁴¹ cluster distribution for their Structural Energy Poverty Vulnerability Index across the EU-27 (the countries studied were those constituting the EU as of January 2013, so Croatia is not included). 13 different indicators were used to construct the index, and then a hierarchical cluster analysis (HCA) was conducted on the index variable. The index was validated studying the association between the country typologies obtained and the energy poverty prevalence of each country. This index was chosen because it deepens the analysis taking into account a diverse range of indicators constituting the structural determinants of the three most common drivers of energy poverty. Unfortunately, the index does not specifically cover child related indicators, which could be an interesting idea for further work concerning children in energy poverty.

Policy analysis

The analysis of the 28 final NECPS delivered by the EU countries and the UK was undertaken using a keyword search system, looking for the following words: child-, infant, minor, parent, family-, young, youth. This search allowed us to identify where children were mentioned through the documents and then propose a classification related to the energy justice framework: if the NECPs acknowledge specific impacts on children (recognition justice), whether specific measures for families with children are detailed (distributional justice) and in which ways (if any) children or young people have been consulted or informed during the elaboration of the document (procedural justice).

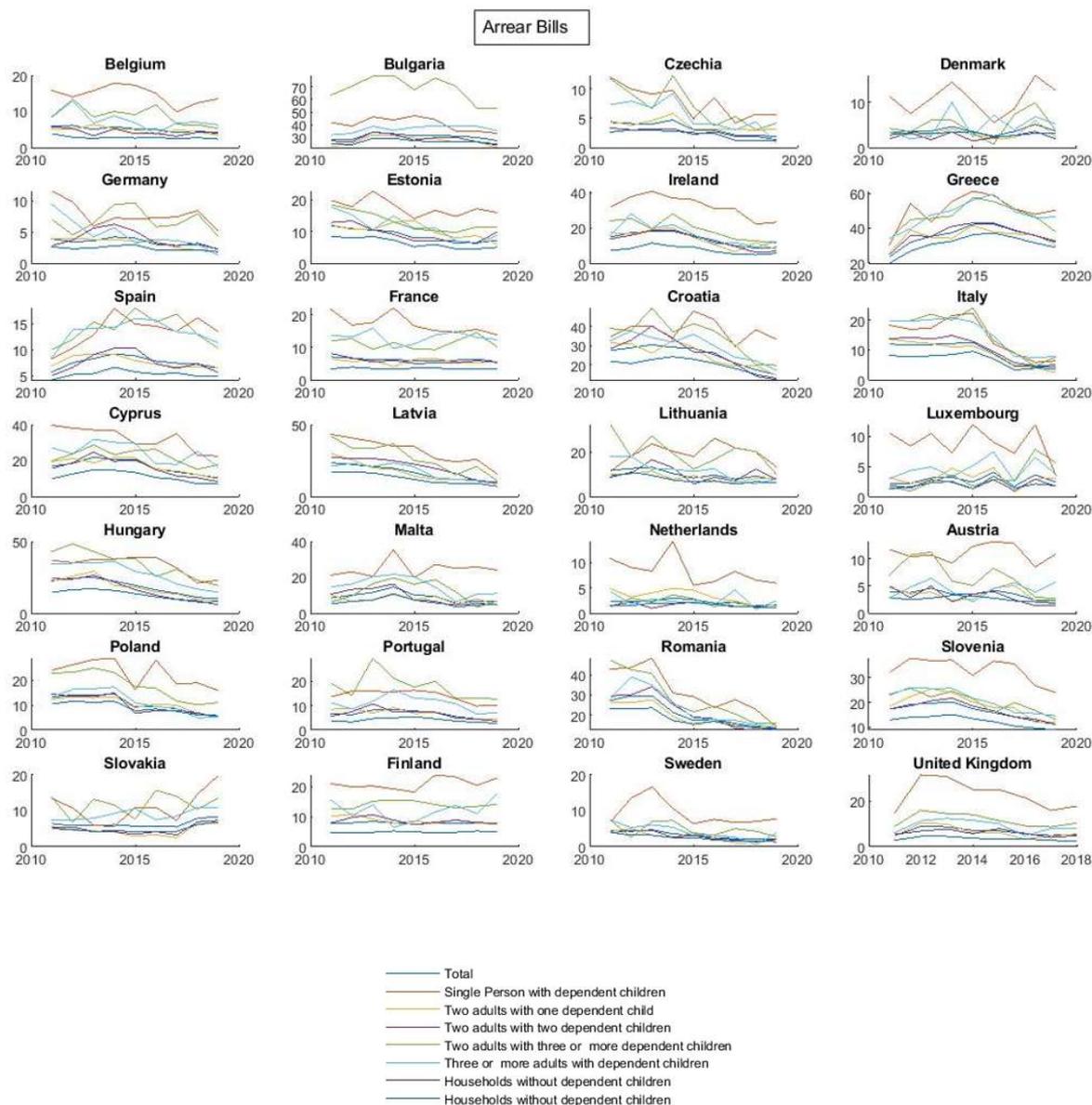
Next, in order to select relevant case studies on energy poverty policies targeting children to help deepen the analysis, we opted for two approaches: a general survey and in-depth interviews. It should be noted that the analysis of the NECPs had already provided us with indications of the degree of maturity of energy poverty policies in the different countries. However, as energy poverty policy occurs also at a regional or local level, not usually captured by NECPs, we found it was appropriate to look more deeply into the analysis of various countries.

The survey was completed by 20 energy poverty academics and practitioners and aimed to know if they were aware of experiences in literature, public policy or activism that made reference to fuel poverty and children. We then undertook in-depth interviews specifically related to energy policies targeting children among policy makers, practitioners and academics from France, Portugal, the Netherlands, the UK (England and Scotland), Hungary and Spain. Both the survey and the interviews provided information to look into national and regional policies more deeply and based on this guidance we selected case studies from Spain (and Catalonia) and the UK (England and Scotland).

Once the case studies had been chosen, it was necessary to analyse them not only in terms of the possible direct mention of children, but also to understand in more depth how children were taken into account. In order to do so, we used Daly's Three Social Approaches to Children⁵⁰, specifically the aspects related to family centred and children centred policy.

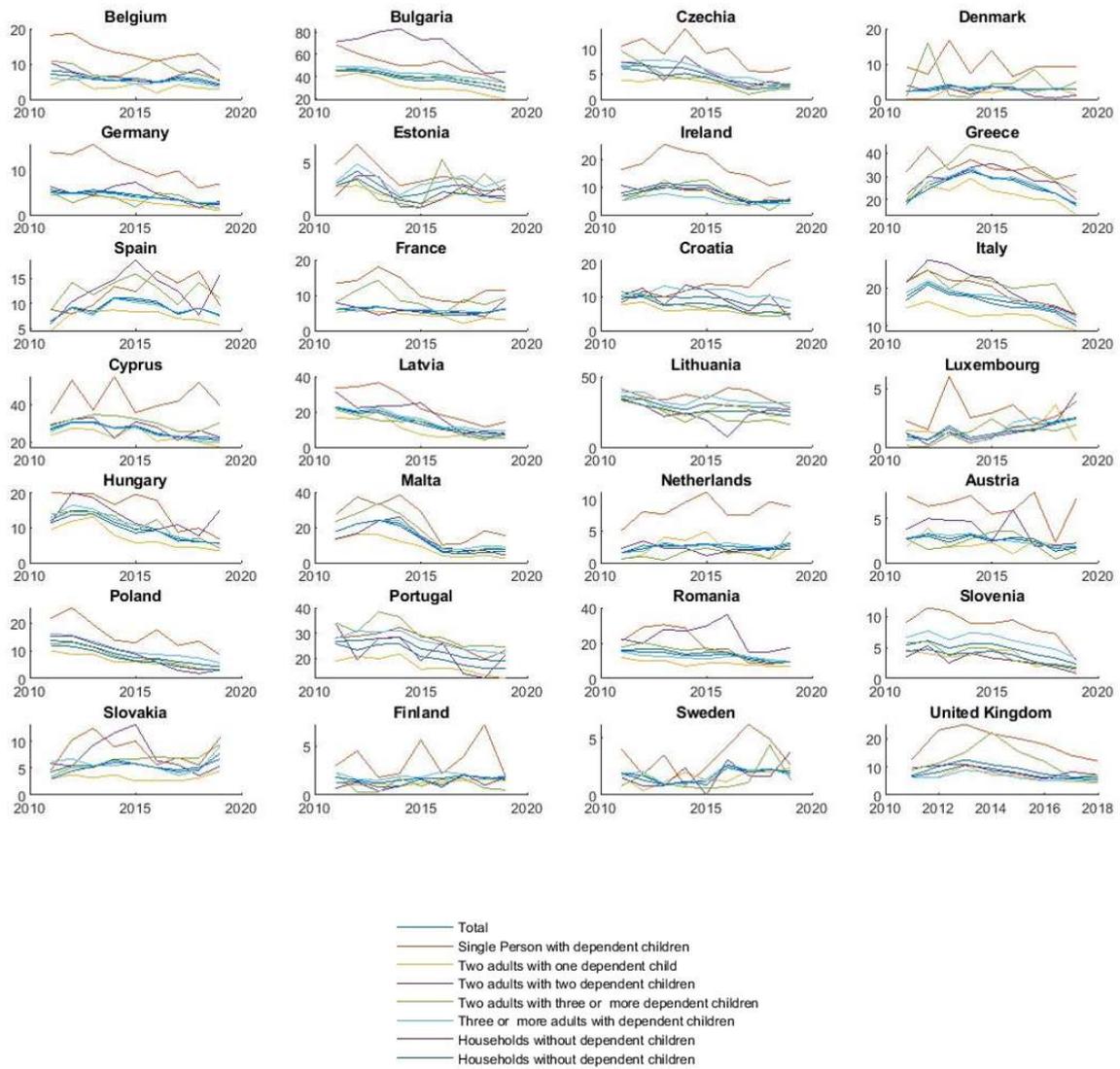
Analysing the problem of children in energy poverty and the approach of energy policies to it from different points of view, qualitative and quantitative, has undoubtedly been relevant in order to detect shortcomings and propose adequate recommendations.

Supplementary information



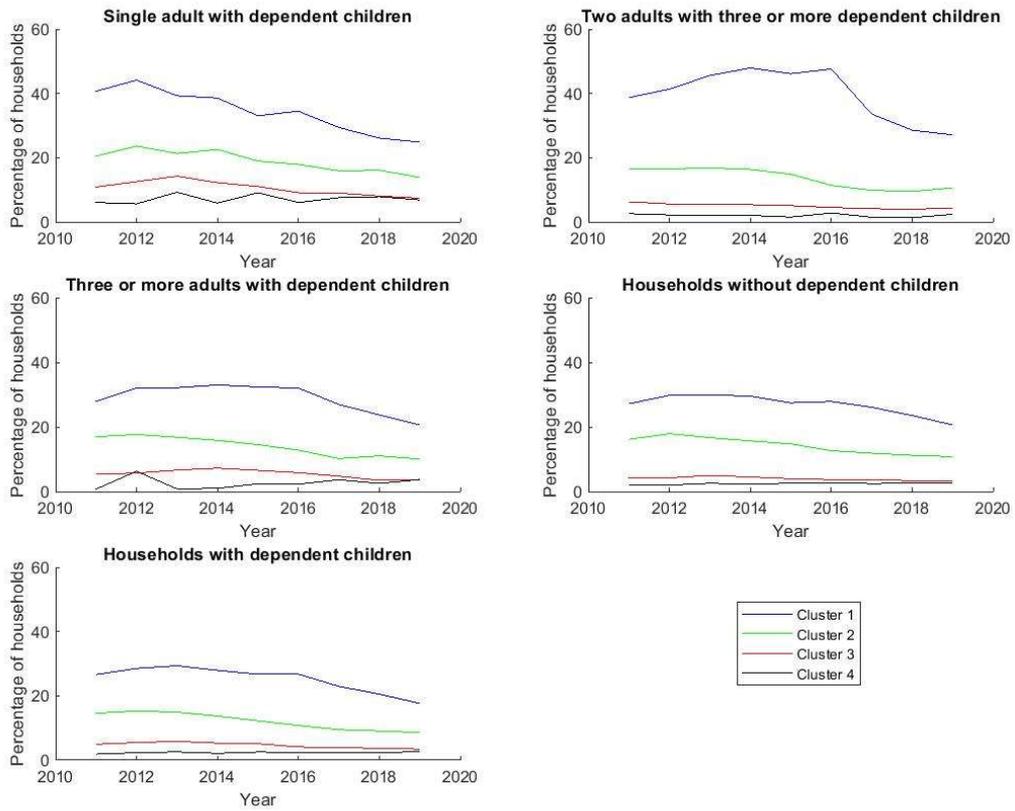
Arrears in utility bills for different household types, in the 28 countries that by the end of 2019 formed the European Union. Data between 2011 and 2019

Inability to warm



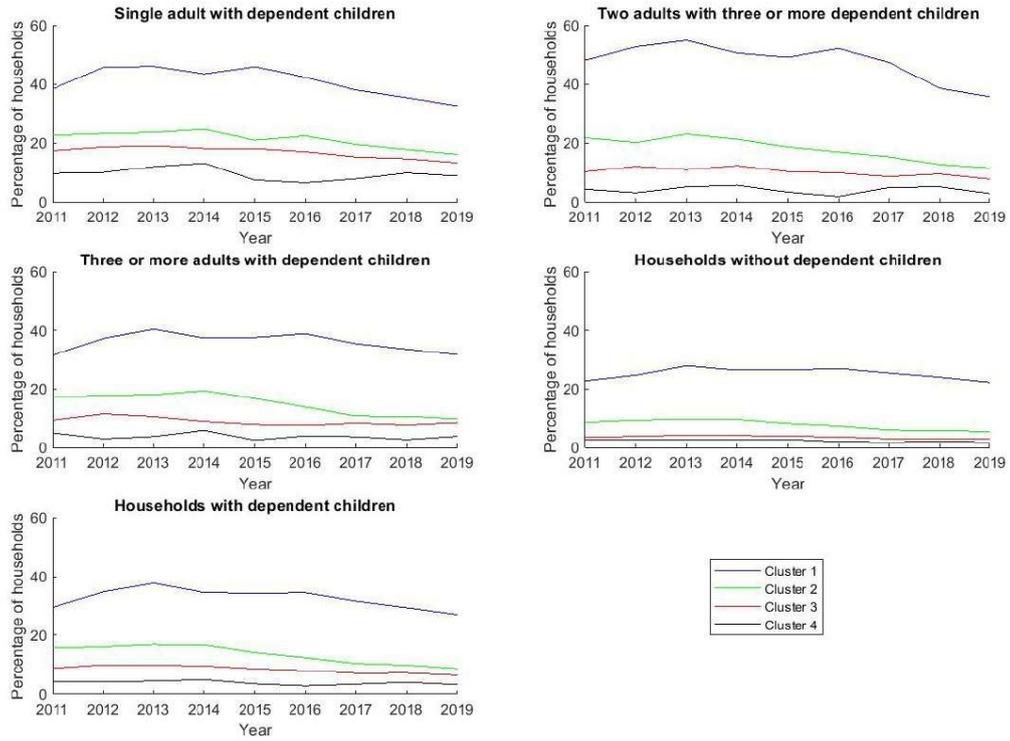
Inability to keep warm for different household types, in the 28 countries that by the end of 2019 formed the European Union. Data between 2011 and 2019

Inability to warm per family type and cluster



Inability to keep home adequately warm for different household types, in the four energy poverty cluster areas defined by Recalde et al.⁴¹ between 2011 and 2019

Arrear bills per family type and cluster



Arrears in utility bills for different household types, in the four energy poverty cluster areas defined by Recalde et al.⁴¹ between 2011 and 2019

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