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This policy brief is intended for public policy makers and practitioners; it will also be useful for those groups and individuals seeking to influence the policymaking processes.

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Energy poverty in Georgia: The need for a broader perspective[1]

Introduction

Energy poverty has become one of the central topics in policy and societal discourses worldwide, and especially, in Europe, as climate change, skyrocketing energy prices, and Russia's ongoing military aggression in Ukraine exacerbate this problem. In Georgia, however, the topic of energy poverty does not yet enjoy due attention in societal and policy circles. Yet, the manifestations of energy poverty abound in the country – both rural and urban areas experience energy poverty and its consequences. In addition, in Georgia energy poverty is a year-round problem - due to climate change, Georgia will witness an increase in extreme heat days[2], and the lack of access to and affordability of cooling contribute greatly to energy poverty. Although the initial policy recognition of energy poverty is present in recently released draft National Energy Policy and draft National Integrated Energy and Climate Plan, more needs to be done to develop solutions to tackle energy poverty in the country.

The following sections first introduce the concept of energy poverty, and next detail current and proposed policy directions to tackle energy poverty in Georgia. Particular attention is paid to broadening the concept of energy poverty, and to the rural-urban divide when it comes to accessing various energy sources and services.

1 This policy brief is based on the review of the literature and on the findings derived from the project "The lived experience of energy poverty in Georgia" funded by the Fuel Poverty Research Network; https://www.fuelpovertyresearch.net/projects/the-lived-experience-of-energy-poverty-in-georgia/ .

2 USAID, "Climate Risk Profile. Georgia.," 2017, https://www.climatelinks.org/sites/default/files/asset/document/2017_USAID%20ATLAS_Climate%20Change%20Risk%20Profile%20-%20Georgia.pdf

1. Energy poverty: A brief review

In academic and policy discourses, energy poverty has emerged as a burgeoning field of inquiry[3] exploring the wide range of issues related to the lack of access to different forms of energy services by different groups in society and in different geographical locations[4]. There are multiple examples from around the world. For example, in Brazil income level is a driving factor to defining fuel choice as low-income households rely on fuelwood and high-income households rely on liquefied petroleum gas[5]. Elsewhere, it has been documented that in average, low-income households spent two times the number of high-income households on energy[6]. In some cases, however, energy poverty remains "hidden" when, for example, "[a household's] total income after deducting the expected housing costs falls under the established threshold"[7]. Although the factors contributing to energy poverty are often related to income, studies show that there is a range of contributing drivers. Energy poverty therefore is a systemic problem that reflects not only people's individual life circumstances (e.g., low income, disability, age), but also social circumstances, access to and availability of infrastructure, and broader political climate[8]. Furthermore, energy poverty is being recognized as a broad phenomenon that relates not only to lighting, cooking, and heating/cooling but also to access to mobility and non-comfort energy uses[9]. For example, studies show that those with lower income have limited choice of the mode of transportation – most prevalent options are walking or public transportation. The problem gets aggravated when public transportation is either nonexistent (e.g., for intercity travel) or not reliable, or when there is poor road infrastructure to support motorized transportation (e.g., rural areas)[10]. Recent disruptions caused by the COVID-19 pandemic and the transition to online working and studying revealed the importance of the widespread access to telecommunication and Internet.

Lastly, it is important to note that the discussions around energy poverty and the need to address it will gain further momentum. Globally, because of the looming climate change, countries start developing approaches to ease their dependence on fossil-fuel-based energy systems. This transition will be felt differently across

3 Christine Liddell, "Fuel Poverty Comes of Age: Commemorating 21 Years of Research and Policy," Energy Policy 49 (October 2012): 2–5, https://doi.org/10.1016/j.enpol.2012.02.036.

4 Mikel González-Eguino, "Energy Poverty: An Overview," Renewable and Sustainable Energy Reviews 47 (July 2015): 377–85, https://doi.org/10.1016/j.rser.2015.03.013; Benjamin K. Sovacool et al., "What Moves and Works: Broadening the Consideration of Energy Poverty," Energy Policy 42 (March 2012): 715–19, https://doi.org/10.1016/j.enpol.2011.12.007.

5 Suani Teixeira Coelho et al., "The Energy Transition History of Fuelwood Replacement for Liquefied Petroleum Gas in Brazilian Households from 1920 to 2016," Energy Policy 123 (December 2018): 41–52, https://doi.org/10.1016/j.enpol.2018.08.041.

6 Anna Zsofia Bajomi, Nóra Feldmár, and Sergio Tirado-Herrero, "Will Plans to Ease Energy Poverty Go Up in Smoke? Assessing the Hungarian NECP through the Lens of Solid Fuel Users' Vulnerabilities," Sustainability 13, no. 23 (November 25, 2021): 13047, https://doi.org/10.3390/su132313047.

7 Lilia Karpinska and Sławomir Śmiech, "Invisible Energy Poverty? Analysing Housing Costs in Central and Eastern Europe," Energy Research & Social Science 70 (December 2020): 101670, https://doi.org/10.1016/j.erss.2020.101670.

8 Lucie Middlemiss et al., "Energy Poverty and Social Relations: A Capabilities Approach," Energy Research & Social Science 55 (September 2019): 227–35, https://doi.org/10.1016/j.erss.2019.05.002.

9 Graeme Sherriff, Philip Brown, and Danielle Butler, "Future Directions for Fuel Poverty Research: A Delphi Study" (University of Salford. Sustainable Housing & Urban Studies Unit, 2019), https://www.fuelpovertylibrary.info/content/future-directions-fuel-poverty-research-delphi-study ; Sovacool et al., "What Moves and Works."

10 Sovacool et al., "What Moves and Works"; González-Eguino, "Energy Poverty."

the communities and groups, and those already experiencing energy poverty may be disproportionally affected. Therefore, taking into consideration how energy transitions relate to energy poverty is of central importance in order not to exacerbate existing inequalities. Second, skyrocketed energy prices in Europe in early days of the war in Ukraine and energy price volatility since[11] put extra emphasis and urgency on the discussions on energy poverty and short- and long-term solutions to address it.

2. Energy poverty in Georgia – policy directions

Energy poverty is relatively new concept in Georgian policy discourse. Recently, energy poverty has gained some attention in policy documents. Most notably, the discussion on energy poverty appears in the draft National Energy Policy (NEP) and draft National Integrated Energy and Climate Plan (NECP). In addition, there are several legal acts that define social assistance to those considered as "vulnerable consumers" in the form of energy (electricity and natural gas) subsidies.

In December 2022, the National Environmental Agency of Georgia released the draft National Energy Policy of Georgia (NEP). Section 4.8 of the draft energy strategy document is dedicated to the topic of energy poverty. In the document, energy poverty is defined as[12]

"the condition, when people are not able to ensure affordable heating, cooling, lighting, and energy supply for the appliances needed for a decent and healthy life. Energy poverty implies inability to consume sufficient energy because of technical, financial, or other types of obstacles. The household is considered energy poor, when it does not heat or cool the house sufficiently, uses firewood ovens or faulty natural gas appliances, spends much of its income to cover energy-related costs, and therefore has to save energy with the negative impact on its everyday comfort and health."[13]

While the document recognizes that energy poverty is a complex phenomenon with multiple drivers and diverse impacts, it focuses on heating/cooling and lighting and does not adopt a broader view of energy poverty as discussed in the earlier section.

11 Jakob Feveile Adolfsen et al., "The Impact of the War in Ukraine on Euro Area Energy Markets," ECB Economic Bulletin, June 21, 2022, https://www.ecb.europa.eu/pub/economic-bulletin/focus/2022/html/ecb.ebbox202204_01~68ef3c3dc6.en.html.

12 "National energy policy of Georgia (draft)," December 2022, 84, https://nea.gov.ge/Ge/GZSH/1209

13 The text is translated to English by the author of this policy brief. The original text in Georgian: ენერგეტიკული სიღარიბე არის მდგომარეობა, როდესაც ადამიანებს არა აქვთ შესაძლებლობა უზრუნველყონ ღირსეული ცხოვრებისა და ჯანმრთელობისათვის საჭირო გათბობა, გაგრილება, განათება და ელექტრომოწყობილობებისათვის საჭირო ენერგია ხელმისაწვდომ ფასად. ენერგეტიკული სიღარიბე ტექნიკური, ფინანსური თუ სხვა სახის ბარიერების გამო, საკმარისი რაოდენობის ენერგიის მოხმარების შესაძლებლობის არქონაზე მიუთითებს. ენერგეტიკულად ღარიბია ოჯახი, რომელიც სათანადოდ ვერ ათბობს/აგრილებს სახლს, იყენებს ჯანმრთელობისთვის საფრთხის შემცველ შეშის ღუმელებსა თუ გაზის გაუმართავ მოწყობილობებს, ან ენერგიაზე გაწეული დანახარჯები შემოსავლის მნიშვნელოვან ნაწილს შეადგენს და ამიტომ, იძულებულია, პირადი კომფორტისა და ჯანმრთელობის ხარზე, დაზოგოს ენერგია.

According to the NEP document, the indicators and methodology to identify the households under the risk of being energy poor will be developed, and that the actions to address energy poverty will be integrated into broader energy and social policies. The priority will also be the long-term support measures targeting the root causes of the problem. Some of the actions indicated in the document include improving energy efficiency of buildings, developing energy efficiency certificate schemes for buildings, incentivising small scale renewable energy installations, conducting information and awareness campaigns, and developing social assistance programs for vulnerable consumers.

The document also outlines that the aim is to develop strategies to address energy poverty in a transparent and participatory manner, in collaboration with regional authorities, civil society and private sector.

The draft National Integrated Energy and Climate Plan of Georgia (NECP), outlines more specific goals in relation to energy poverty, among other issues. According to the document, the goal is to reduce the percentage of the population in the situation characterised by energy poverty from 43% (as of 2017) to less than 15% by 2030 (Objective 4.1)[14].

State programs/policies addressing energy poverty

There are national and municipal-level policies that aim to alleviate the problem of electricity affordability. On the national level, according to the Ordinance #418[15] (Aug 25, 2016) the state covers 50% of the electricity costs per month (and up to 200 kWh) for the consumers living in the high mountainous regions of Georgia. According to the Ordinance #381[16] (July 30, 2015), the state provides a subsidy for the electricity consumption by those households that fall under the poverty line (considered as "socially vulnerable"). The subsidy amounts to 3.95064 Tetri per kWh (about GEL 50 per year). Ordinance #517[17] (October 31, 2018) specifically focuses on large families. Households that score less than 300,000 rating points and have four children receive electricity subsidy in the amount of GEL 20 per month, and for each subsequent child an additional GEL 10 per month. Ordinance #18.1120.1557[18] (December 26, 2018) specifically outline the subsidy program covering electricity, water, and waste management service fees for the households living in Tbilisi municipality

14 "National Integrated Energy and Climate Plan of Georgia (NECP)" (2022), 46, https://nea.gov.ge/Ge/GZSH/1209.

15 "Ordinance of the Government of Georgia #418 Issued on 25 August, 2016 on 'Monthly Coverage of the Electricity Tariffs in the Mountainous Settlements'" (2016), https://www.energo-pro.ge/uploads/tinymce/documents/418%2017.06.19.pdf.

16 "Ordinance of the Government of Georgia #381 Issued On30 July, 2015 on 'Partial Subsidization of the Costs of Electricity Consumed by Socially Vulnerable Population'" (2015), 3, https://matsne.gov.ge/ka/document/view/4475736?publication=0.

17 "Ordinance of the Government of Georgia #517 Issued on 31 October 2018 on 'Determining the Rules and Conditions for Provision of Social Protection for Parents with Many Children'" (2018), 5, Ordinance of the Government of Georgia #517 issued on 31 October 2018 on "Determining the Rules and Conditions for Provision of Social Protection for Parents with Many Children".

18 "Ordinance of the Government of Tbilisi Municipality # 18.1120.1557 Issued on 26 December, 2018 on 'Approving the Rule for the Implementation of the Subprogram "Subsidies for the Municipal Services" as Considered in the 2019 Budget'" (2018), https://www.energo-pro.ge/uploads/tinymce/documents/Tbilisi%20Munic%202019.pdf.

that are registered as "socially vulnerable." Households scoring below 70,000 rating points receive GEL106 subsidy for 5 months, and those scoring from 70,000 to 20,000 receive GEL 20 subsidy per month[19].

The draft NECP document outlines differentiated tariffs for electricity, depending on the monthly electricity consumption[20]:

- Tbilisi Electricity Supply Company LTD. Tariffs for electricity consumption including VAT is designated as follows:

  - Those consuming 101 kWh or less pay about little over 0.18 GEL per kWh;
  - Those who consume between 101 and 301 kWh about 0.22 GEL per kWh;
  - Those with consumption above 301 kWh pay about 0.265 GEL per kWh.

- For JSC "Energo-Pro Georgia" tariffs including VAT:

  - Those consuming 101 kWh or less pay about little over 0.177 GEL per kWh;
  - Those who consume between 101 and 301 kWh about 0.217 GEL per kWh;
  - Those with consumption above 301 kWh pay about 0.262 GEL per kWh.

It is notable that since 2022 subsidy scheme on electricity consumption partially changed for socially vulnerable households that score up to 150 000 rating points. Electricity tariffs grew by 3.5 Tetri (GEL 0.035) and according to the new scheme up to 200 KW.h per month are covered by the scheme now. In case if household consumes more than 200 KW.h electricity the fees have to be covered by the household. This condition differs from previous subsidy scheme according to which households had been automatically excluded from the subsidy scheme once exceeding predefined consumption limit of 200 KW.h. Existing subsidy scheme covers not only Tbilisi but whole Georgia as well[21].

There are two social assistance schemes for the natural gas consumption. Mountainous settlements in Kazbegi and Dusheti Municipalities in Eastern Georgia receive 700 m^3 of natural gas for free per month during

19 National Integrated Energy and Climate Plan of Georgia (NECP).

20 National Integrated Energy and Climate Plan of Georgia (NECP), 88.

21 https://www.radiotavisupleba.ge/a/31665127.html?fbclid=IwAR29pNeDElxGp1E9by1Ri00FMBQ74vFKGEbchbVifWS-OJE0oF08ST90374 .

the period of October 15 to May 15. According to the second scheme, those living in proximity to the occupation border line receive about USD 70 heating allowance in winter[22].

Energy efficiency policy

In 2020, the Parliament of Georgia adopted the Law on Energy Efficiency of Buildings[23] which addresses energy efficiency requirements for buildings and the parts of buildings and responsibility for the violation of requirements established by this law. More specifically, the law includes, among others, the provisions regarding developing national methodology for calculating energy efficiency of buildings, minimum energy performance requirements for buildings, energy performance certification of buildings, the inspection of heating and air conditioning systems.

3. A broader perspective of energy poverty

Access to essential energy resources – cooking, lighting, heating/cooling, mechanical energy

Three primary sources of energy – electricity, natural gas, and firewood – are used for providing basic energy services such as lighting, cooking, and heating/cooling. According to current statistical data, 99% of country's population has access to electricity and 68% has access to natural gas. According to the draft National Energy Policy document, it is expected that by 2030 95% of population will have access to natural gas[24].

Firewood consumption is particularly high in rural areas[25]. "Analysis of energy consumption data indicates that the share of firewood in heating and cooking is high and nearly half of the population depend on it. Burning the wood in the inefficient wood stoves could be considered as a source of energy poverty, which is a result of the lack of modern energy sources[26]." Burning firewood, especially in open fires, can cause indoor air pollution and subsequent health problems. Women, who spend more time at home preparing meals and taking care of the household, will therefore be more affected by indoor air pollution[27]. When relying on firewood, securing firewood may also be problematic and challenging. For example, in our study one of the residents of the mountainous rural village in Eastern Georgia noted the difficulty in acquiring fuelwood from the surrounding forests. The problem is not so much the supply of fuelwood as a complicated procedure to get a

22 Tutana Kvaratskhelia et al., "Energy Poverty. Guidance for State Policy and Public Discourse in the Time of Reform. Georgia, Moldova, Ukraine, IRomania" (Tbilisi, Georgia: World Experience for Georgia, 2019) http://weg.ge/sites/default/files/weg_2019_web.pdf?fbclid=IwAR0RwqYLaII2-mJzzK09NV8g2yAGu12v0Q8Zf8wH3wPshUEMqpkEpNiSEaQ

23 "Law of Georgia on Energy Efficiency of Buildings" (2020), https://www.matsne.gov.ge/en/document/view/4873932?publication=0.

24 "National energy policy of Georgia (draft)."

25 Kvaratskhelia et al., "Energy Poverty. Guidance for State Policy and Public Discourse in the Time of Reform. Georgia, Moldova, Ukraine, Romania."

26 Kvaratskhelia et al., 18.

27 WeResearch, "Monitoring the Implementation of the Sustainable Development Goals in Georgia" (WECF Georgia, February 14, 2020), https://www.wecf.org/monitoring-the-implementation-of-the-sustainable-development-goals-in-georgia/ ; Kvaratskhelia et al., "Energy Poverty. Guidance for State Policy and Public Discourse in the Time of Reform. Georgia, Moldova, Ukraine, Romania."

license, and then physically fetch fuelwood from the remote areas of the forest. In such mountainous areas winter is long, making this season particularly uncomfortable from an energy poverty perspective.

In cases when natural gas is accessible, there may be safety concerns. For example, there have been cases when natural gas installations violated safety standards, leading to fatal outcomes. It is expected that stricter safety and technical standards and regulations will be introduced to address this issue [28].

As for the access to electricity, electricity supply is not equally reliable throughout the country. Rural, remote locations may be particularly affected by electricity supply interruptions. Our study revealed that even when electricity is supplied, often the voltage is very low, making it impossible to use such appliances as a washing machine. This speaks to the lack of access to the mechanical power[29] that can increase the productivity of human labour and save much time and energy, especially for women. The access to mechanical power may be important in agriculture as well. Access to mechanical power can enable such activities as irrigation, procession of crops, pumping or lifting water, transportation, running small-scale manufacturing facilities, etc.

Lastly, it is noteworthy that only 9% of dwellings have air conditioning systems in Georgia[30]. Given the higher probability of heat waves and increased number of hot days in summer, because of climate change, the lack of access to cooling may pose significant problems. The issues around heating and cooling are exacerbated by the low energy efficiency of most buildings in Georgia[31].

Access to Internet and telecommunication

The broadened understanding of energy poverty should go beyond the essential energy services and include access to communications and entertainment. In current digitalized world access to these services gains further importance[32]. In Georgia, the lack of access to Internet and phone connectivity is a year-round problem in some areas, especially, rural, mountainous regions. This issue got particularly acute during the Covid-19 pandemic when education institutions transitioned to online teaching. The lack of access to the Internet put the students from rural areas at a disadvantage. The lack of access to communications and Internet not only affects everyday lives, but it also limits education and employment opportunities and opportunities to engage in social and political processes.

28 WeResearch, "Monitoring the Implementation of the Sustainable Development Goals in Georgia"; "National energy policy of Georgia (draft)."
29 Sovacool et al., "What Moves and Works."
30 Kvaratskhelia et al., "Energy Poverty. Guidance for State Policy and Public Discourse in the Time of Reform. Georgia, Moldova, Ukraine, IRomania."
31 Kvaratskhelia et al.
32 Sherriff, Brown, and Butler, "Future Directions for Fuel Poverty Research: A Delphi Study."

4. Conclusions and recommendations

Despite some progress made in the draft National Energy Policy and draft National Integrated Energy and Climate Plan to recognize energy poverty as an important policy issue, energy poverty still does not seem to be at the center of the energy policy discussions in the country. For example, energy poverty should be discussed in the national framework to achieve Sustainability Development Goals in Georgia[33]. In addition, in current policy documents energy poverty is defined rather narrowly, mostly concerning heating/cooling and lightning, ignoring the issues associated with the lack of access to mechanical energy, mobility, Internet and telecommunications. More broadly, in Georgia energy poverty does not seem to be clearly articulated as a component of the stark socioeconomic inequality that exists in the country.

According to the draft NECP the objective is to reduce the percentage of the population in the situation characterised by energy poverty from 43% (as of 2017) to less than 15% by 2030 (Objective 4.1)[34]. This is a rather ambitious goal, which will be difficult to achieve by relying solely on the subsidy programs, especially given that they may not be effective in reducing energy poverty in a long-term.

More complex policy approaches are needed to tackle energy poverty. This means that developed policy solutions should integrate energy and social policy and target improvements in multiple directions. For example, aside from the financial assistance programs, policy solutions should also concern infrastructure improvements (e.g., energy, telecommunication, road networks), changes in the housing and mobility sectors, information, and awareness measures, etc. More specific examples can be integrating issues of energy efficient housing while developing energy policy solutions, especially while dealing with old and badly insulated housing stock. Access to mobility and development and maintenance of road networks, especially in rural areas, should also be connected to energy poverty issues[35].

On the energy generation front, decentralised (distributed) generation of renewable energy can contribute to the decrease of energy poverty especially in rural, remote areas. Such initiatives can be developed in cooperation with local communities. The draft NECP mentions generation of renewable energy as one of the measures to increase the flexibility of the energy system but it is not clear whether it assumes decentralising generation or continuation of existing practice. Thus, establishing a direct link between this measure and energy poverty would further highlight the importance of supporting decentralised (distributed) generation

33 WeResearch, "Monitoring the Implementation of the Sustainable Development Goals in Georgia."

34 National Integrated Energy and Climate Plan of Georgia (NECP), 46.

35 One example of the grave consequences of the lack of safe roads is recent accident when a school teacher fell victim of the show avalanche while driving from home to school in the mountainous region of Lechkhumi in Western Georgia (https://mtisambebi.ge/news/item/1594-chqumi-qulbaqis-gzaze-mexyberma-masxavlebeli-gela-liparteliani-imsxverpla)

of renewable energy in rural areas. For example, the development of smaller scale, decentralised (distributed) renewable energy generation in rural areas will decrease the dependence on fuelwood.

Therefore, it is highly necessary to broaden the concept of energy poverty in the policy documents (Energy Policy and NECP) and diversify further solutions, while evaluating the progress toward achieving Sustainable Development Goals or developing strategic documents in energy sector. More specifically, the set of energy poverty indicators needs to be defined that can capture the multi-dimensional nature of energy poverty and that will not rely only on one indicator (e.g., income level). A useful reference while developing indicators can be aggregate indicators developed by the European Union, which comprise of the following four groups of indicators:

- *Indicators comparing spending on energy with income:* these quantify energy poverty by comparing the amount households spend on energy with an income measure (e.g. percentage or number of households spending more than a certain proportion of their disposable income on domestic energy services);
- *Indicators based on self- assessment:* households are asked directly to what extent they feel able to afford energy (e.g., ability to keep the home warm enough in winter and cool enough in summer);
- *Indicators based on direct measurement*: these indicators measure physical variables to determine the adequacy of energy services (e.g., room temperature);
- *Indirect indicators*: these measure energy poverty by through associated factors, such as arrears on utility bills, number of disconnections, and housing quality.

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