

CONCEPTUAL CAUSAL FRAMEWORK TO ASSESS THE IMPACT OF COVID 19 ON ENERGY TRANSITION

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Abstract

The current crisis demonstrates the critical role that energy plays in our lives. The vulnerability of some of us in relation to an essential daily service illustrates that public policies need to be strengthened to deliver a resilient and fair market in which the consumer takes centre stage. The pandemic has given rise to additional imbalances that risk further undermining social cohesion and the mechanisms of democracy. In this context, it is necessary to develop a solidarity pact to protect the most vulnerable in the context of current and future crises and to address growing social inequalities with a focus on the health and well-being of vulnerable populations. The aim of this paper is to build through data analysis some arguments on the impact of legislative measures applied in Romania on the phenomenon of poverty that must be taken into account in any approach to the concept of energy poverty, according to the literature, the recommendations of European institutions and the experiences of other countries.

Keywords

COVID 19, energy poverty, domestic energy consumption, vulnerable and energy-poor populations, Romania

JEL Classification

K32, Q43

Introduction

The coronavirus outbreak shows once again that energy and energy services are essential ingredients for a safe, healthy and decent life. Energy poverty, commonly understood as the inability to provide the necessary levels of energy services in the household (Padmanaban, Sharmeela, Sivaraman & Holm-Nielsen, 2021), means living in a home that is difficult to bring up to an optimal temperature level (whether this means heating during cold seasons or cooling in summer) or where cooking or providing fresh food needs are constrained due to higher costs relative to income and poor energy efficiency of the building and home equipment. In addition to affordability and efficiency, fuel poverty is also about difficult access to alternative, clean and safe sources. Energy poverty is thus recognised as a complex challenge with significant social impacts, which requires the commitment of policy makers to address.

Energy poverty also implies exposure to a number of vulnerabilities. Energy-poor people are more vulnerable to physical health risks such as respiratory, cardiovascular and other diseases with a documented impact on increased mortality, but they are also more exposed to mental illness (Thomson, Snell & Bouzarovski, 2017). At the same time, energy poverty is associated with a variety of problems related to inequality and social (in)justice (Reames, 2016), access to education (Banerjee, Mishra & Maruta, 2021) and well-being in general (Grey, Jiang, Nascimento, Rodgers, Johnson, Lyons & Poortinga, 2017). With all its effects, the phenomenon has a differential impact on women and other vulnerable groups. All these issues are highly topical during the coronavirus pandemic.

The current coronavirus crisis has wider than public health effects, with profound and long-lasting socio-economic consequences (Nicola, Alsafi, Sohrabi, Kerwan, Al-Jabir, Iosifidis & Agha, 2020). The pre-existing factors leading to energy poverty have been amplified throughout this time, with falling or lost incomes and rising bills due to increased energy consumption (Jiang, Van Fan & Klemeš, 2021). At the national level, domestic energy consumption (Figure 1) shows a fairly sharp quarter-on-quarter variation, but it can be seen that since joining the EU, Romania has also reduced its electricity consumption, which is in line with the EU strategy to reduce final energy consumption.

From a medical point of view, the combination of the effects of the virus with pre-existing medical conditions, some of which are also associated with energy poverty, is well documented. In whatever form it manifests itself, fuel poverty is now putting increased pressure on household budgets and public finances, amplifying the need to better understand it and identify targeted measures for those affected.

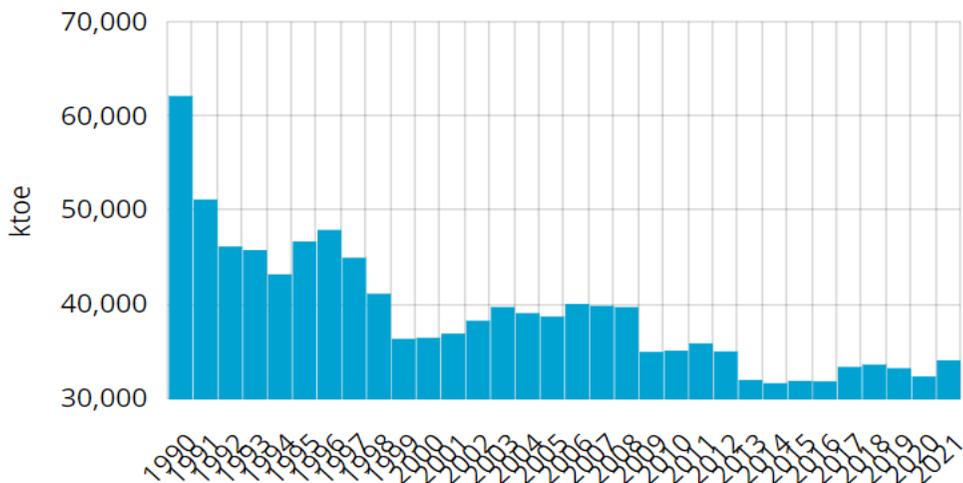


Figure 1. The evolution of electricity consumption in Romania during the period 1990–2021

Source: Romania Energy Information, <https://www.enerdata.net/estore/energy-market/romania/>

As shown in the above figure, domestic electricity consumption also increased slightly in 2020 compared to 2007 (0.28%), partly due to EU requirements to reduce energy consumption and also to increase energy efficiency (Soava, Mehedintu, Sterpu & Grecu, 2021).

As governments take increasingly stringent measures to halt the spread of the pandemic, despite their inability to predict how it will evolve over the coming months, the energy world prepares to face economic uncertainties and anticipate possible failures. One question prevails above all: what will be the impact of the health crisis on the energy transition?

One thing is certain, and that is that the 'green' transformation of the energy sector is far from complete. The contribution of renewables to total energy demand is still limited and so far, represents a tiny percentage even if we include hydropower. In addition, it is not obvious that the total costs of renewable energy will fall in the future. While electricity generation costs have fallen dramatically, putting most renewable technologies in the cost range of fossil alternatives (IRENA, 2020), there are additional costs resulting from the increasing penetration of variable energy sources (wind and solar) into the electricity grid (such as energy storage costs and an increased role for

balancing markets). Finally, in the transport sector, oil is not really challenged by low-carbon alternatives.

Moreover, the pandemic may lead to changes in business and household habits. Smart work helps reduce global demand for oil products by putting downward pressure on oil prices. Telemarketing, which companies have stimulated as a result of curbs, reduces demand for oil products (for transport) while increasing demand for sources that meet domestic energy demand (such as gas and electricity); in addition, constraints on the movement of people and goods related to Covid-19 restrictions may cause companies to shift production back within national borders, partly reducing their participation in global value chains (see www.rivistaenergia.it).

Overall, the lack of investment in low-carbon technologies and the persistent energy price gap can reverse the decarbonisation process. Estimates using historical data show that rising prices of some commodities stimulate the use of substitutes, such as in the case of oil and coal (Carnazzi, 2017). Indeed, in the energy sector, the combined effect of weak carbon pricing mechanisms and lower gas and coal prices may have slowed the growth of renewables, and in the transport sector, the persistence of high crude oil prices may accelerate biofuel-based decarbonisation. In the current context, this scenario is slowly materialising, which would lead to a reversal of the trend observed in recent years of increasing the share of renewables in the energy mix, spurred by the sharp rise in oil prices, as was the case in 2007-2008, when political and economic support was used to try to combat climate change and mitigate technological progress in these sectors (see www.eca.europa.eu).

Another view, supported by simulations carried out by the Breakthrough Institute, states that the trajectory of global carbon emissions is not consistent with future climate neutrality. As can be seen in Figure 2 in general, emission reductions related to economic crises have been followed by subsequent increases, and even if a worst-case pandemic scenario were to occur, emission reductions would not be sufficient to place the international community on a trajectory consistent with climate neutrality.

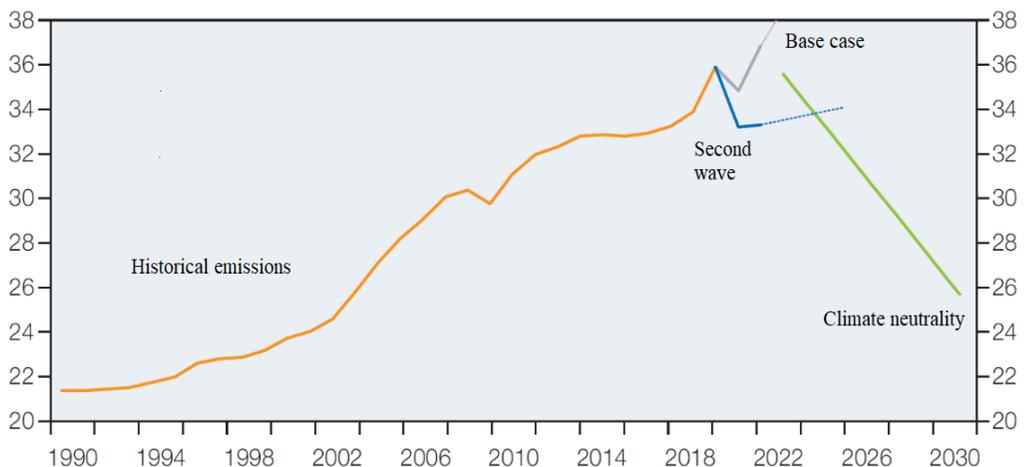


Figure 2. Climate Geopolitics

Source: Breakthrough Institute, <https://thebreakthrough.org/energy>

The contraction in emissions is likely to be temporary, as seen after the 2009 financial crisis: even in the case of a prolonged stall following a new wave of Covid-19 (blue line in Figure 2), the emissions trend is far from that needed to reach neutrality after 2050 (orange line).

The immediate impact of the COVID-19 crisis on energy-poor households in Europe

The recession triggered by global bottlenecks has begun to deepen pre-existing inequalities across the world's economies as they have faced soaring unemployment (Hirsch, 2020), the failure of many businesses and a fall in household incomes (Abrihan, 2020). Various economic analyses expect the number of unemployed in Europe to double (Strauss, 2020) to an estimated 7.6%, and a reduction in wages and working time with an impact on household budgets in the short and medium term. In Romania, the unemployment rate has been rising throughout the months of the crisis, reaching 5.2% in June (INSSE, 2020) and, according to some sources, a real level above the European level since the end of March, showing sustained upward trends (Cornea, 2020). The unemployed are joined by two other categories of people. Firstly, those affected by technical unemployment, which peaked at more than one million people in April (900,000 in May) and has since risen to 596,000 following the new regulations accompanying the measures to gradually reopen the economy (Cornea, 2020). Secondly, people on childcare leave (188,514 people in June, including people on childcare leave as a result of measures to stop the pandemic). For both categories, incomes have been reduced by at least 25% over several months if we also take into account the threshold limits in the legislation (see. <http://mmuncii.ro>)

We are therefore witnessing a generalised fall in income while residential energy consumption has increased, amid the increase in time spent at home as a result of the decree imposing the state of emergency, work at home and the suspension of classes throughout the education system. Internationally, a study by the International Energy Agency (see <https://www.iea.org>) in more than 30 countries in March-April 2020 estimates a 40% increase in residential electricity consumption compared to previous years, while gas consumption has fallen slightly due to warmer temperatures for the period. As regards residential energy consumption in our country, no data are yet available, but taking into account that the period of the emergency coincided with periods of high outdoor temperature variations, we can also estimate a slight increase in gas and wood consumption for heating and cooking compared to similar periods in previous years, higher in areas with lower temperatures. In terms of impact on household budgets, at an average annual electricity consumption per household of around 1600 kWh (see www.odyssee-mure.eu), an average final price before the liberalisation period of around 0.65 lei/kwh and a 40% increase in electricity consumption can result in additional average monthly expenditure of 35 lei on electricity alone, not taking into account possible increases in heating and cooking fuel bills and in the context of decreasing incomes. Increased expenditure will result in more people being in a state of energy vulnerability, especially as the number of households supported by heating assistance during the cold season has been steadily decreasing since 2012, as incomes have increased and the ceilings in the legislation have not been updated. With the uncertainties of the pandemic's evolution, where some states have moved from initial forecasts of economic stabilisation towards more fluctuating and long-lasting trends (Abdelkafi & Refas, 2021), at least some of the drivers of reduced income and increased energy consumption will continue for an uncertain period of time, being anticipated at national level by regulations from the Ministry of Labour to support economic agents (see www.mmuncii.ro). However according to a study by Invest energy, the new law on the vulnerable consumer continues to leave unaddressed dimensions deeply connected to the causes and symptoms of energy poverty (see www.investenergy.ro).

The impact varies by sector and demographic segment, but it is becoming increasingly clear that those most affected by this crisis are the most vulnerable and marginalised groups (elderly, disabled, women, children, minorities, people with informal status, rural people, single people, single parents, etc.) who overlap to a large extent with those

for whom the impact of energy poverty is disproportionate (see Inclusion and Social Dignity Operational Programme, 2022). The COST ENGAGER action brings together researchers, experts and practitioners concerned with fuel poverty in Europe who are exploring the link between the experiences of fuel poor households and their trust in institutions and social networks (see Grossmann, Jigla, Dubois, Sinea, Martín-Consuegra, Dereniowska & Varo, 2021). Published papers have identified a variety of categories that exhibit relevant individual and group vulnerabilities depending on the national context. Relative to the sectors affected, vulnerable workers in retail and hospitality are the first victims of the sudden economic shutdown. In the same context, according to an NBR study, the sectors on which the COVID-19 pandemic is expected to have a high impact are part of the manufacturing industry employing a large mass of unskilled workers, the textile industry and service operators such as transport, tourism operators, cultural activities, which together are fundamental sectors of the economy and whose difficulties are expected to give rise to knock-on and long-term effects (Laboş, 2020). The result is a context which is conducive to the overlapping of several causes of vulnerability, accentuating the precariousness of already vulnerable people, but also bringing new households into a situation of prioritizing expenditure and therefore difficulty in paying energy bills.

The COVID-19 crisis also exacerbates gender inequalities, which are themselves deeply rooted in the causes and experiences of energy poverty (Dubey, 2022). The typical structure and characteristics of households in our country expose women and children in particular to the need for reliable, clean and uninterrupted energy consumption and thermal comfort throughout the year. Their increased presence in the home exposes them to the environmental pollution that comes from increased energy consumption during this period. In addition, perhaps more than ever, access to energy is closely linked to access to education or the labour market, as online schooling or working from home have become either alternative options to resort to in health emergencies or the only options for children and adults to continue their schooling or work.

Beyond the formal frontline sectors, the OECD (2020) draws attention to the need to protect workers in informal markets, which do not benefit from any support mechanism in times of crisis, but are among the most vulnerable consumers. Moreover, the studies draw attention to the social and spatial distribution of vulnerability and energy poverty, highlighting the widespread manifestations at the level of society (the difficulties faced by post-communist countries compared to Western countries), but also the existence of pockets of poverty, particularly in urban areas, which produce a lock-in effect in which vulnerability is perpetuated in a vicious circle that gives rise to a dynamic of deep socio-economic degradation. Such environments, such as Ferentari (Bucharest) or Pata Rât (ClujNapoka), to refer to the best known, are contexts where energy poverty is a multidimensional phenomenon, which combines with other vulnerabilities among which informality plays a central role (Teschner, Sinea, Vornicu, Abu-Hamed & Negev, 2020). Here we find sub-optimal housing conditions, overcrowded and visibly dilapidated dwellings, and it is to be expected that, with the health crisis, the state of precariousness here will become more acute.

The development of the pandemic is causing uncertainty at all levels of activity, generating significant psychological pressures on individuals (Sawyer, Sherriff, Bishop, Darking & Huber, 2022). An INSSE (2020) experimental study of the first weeks of the coronavirus crisis assesses its impact through the expectations of economic agents in various sectors of activity and highlights the high degree of uncertainty about the development of activities in each of these sectors. The inability to anticipate a secure and steady income in the future, combined with the effects of quarantine and stress arising from the need to reconcile professional and personal activities, can result in significant psychological costs such as anxiety, depression or

reduced decision-making capacity, etc (Vancea & Apostol, 2021). Given the evidence on the psychological effects of energy poverty, situational factors can become an important amplifying element.

Previous fuel poverty situations are now exacerbated. Some people are forced to live in conditions of low thermal comfort, lacking the energy services to provide them with fresh food or running hot water. For others, more than ever before, work, education or household activities become challenges to consider when prioritising expenditure. Despite the necessary initiatives (Decree of the President of Romania no. 195) to cap prices during the state of emergency, the situation of those already disconnected for non-payment or those accumulating debts to suppliers remains uncertain. The physical response capacity of companies and relevant institutions has been reduced during this period. Physical distance also means more difficulties in seeking and receiving help, either from official social services or from family and friends. Moreover, for most vulnerable consumers there are no support policies in place, partly because of incomplete legislation, partly because of a failure to recognise the phenomenon as a whole in companies' commercial policies. Under-represented minorities remain outside emergency measures. Legislation recognises vulnerable consumers on the grounds of low income or age. For them, heating aid is granted only in the winter months and under a combination of restrictive criteria. Social tariffs are also highly restrictive (Jigla et al., 2017). Moreover, measures that have been considered in many countries (see https://energy-poverty.ec.europa.eu/index_en) and which have provided an additional safety net for consumers, such as temporary bans on disconnections or financial support mechanisms in times of crisis, have so far been lacking in our country.

It is time to think about the right to energy and energy services for all

Governments all over the world have taken increased measures to increase protection for the population and minimise the costs of the crisis in the hope that economies will recover as quickly as possible (Hesselman, Varo, Guyet & Thomson, 2020). However, much more needs to be done to protect the vulnerable. Social solidarity and energy services must continue to operate at full capacity, including in the context of the crisis, so as not to impede people's access to energy, support schemes and a dignified life. Flexible and sustained measures are needed to maintain the incomes of people who have lost their jobs or are facing difficulties in absorbing the shock of the crisis and maintaining their purchasing power. There is also a need for mechanisms to identify households and companies that have run into difficulties paying their bills due to the effects of the crisis and mechanisms to ensure that they can continue to do business, whether this involves a rethink of policies on social tariffs, subsidies and state aid, or mechanisms to reschedule payments or a rethink of pricing options at companies. As consumers become more vulnerable and use more energy, easy access to financial support must become the norm. Indeed, the Covid crisis has highlighted the negative consequences of legislation's narrow understanding of vulnerability and its sources. A thorough understanding of the concept of vulnerability - including vulnerability in relation to energy services - is needed in order to develop targeted and effective instruments. Beyond legislation, vulnerability cannot be understood and tackled in practice without making social support systems more effective, especially those under local authorities (OECD, 2020), as they know local communities and the problems they face best.

Household energy costs must be affordable and predictable, avoiding shocks not only for vulnerable consumers but for the population in general and not only in exceptional situations. In this respect, consumers, especially with the liberalisation of the energy market, must be provided not only with good quality services, but also with

contractually agreed protection mechanisms for unforeseen situations where household bill payment difficulties may arise. Given the limited ability of consumers to understand the technical language in which contracts are drawn up, good faith on the part of companies and oversight by the regulator to protect consumers are essential to establishing lasting relationships based on trust between both parties to the contract. It is also necessary to introduce performance criteria for companies that take into account the market regulator's policies on vulnerable consumers. Identifying tools to disseminate and reward good practice may be beneficial in this respect. Social tariffs or heat subsidies are transitional mechanisms towards generalised energy efficiency measures, but they need to be updated to take account of income indexation, i.e. to adapt consumption bands to rational volumes, while the criteria for granting them should be fair and non-restrictive. Specific rules must therefore be applied that can operate and produce effects both during the COVID-19 crisis and beyond the quarantine period.

Limiting disconnections from energy services. Although during the state of emergency, utility prices were capped, no action was taken to ban disconnections (see <https://righttoenergy.org/>). At present, the measure is only in place for those whose health depends on being connected to support appliances. But the measure is needed as a safety net for a much wider category of consumers and for a longer period of time, not just during an emergency or alert state. Given the long-term effects that economic imbalances have on household budgets, it is necessary to take this measure at least until payments are paid, while preventing the accumulation of debts to providers. In times of crisis, it is necessary to set minimum consumption levels to ensure that households can cover their basic needs, especially those related to health emergencies such as those in the context of the current crisis (household hygiene, personal hygiene, access to information for information, work, education, etc.). After this period, the ceilings must be changed in such a way as to prevent situations where disconnections cause social hardship. Mechanisms for managing or cancelling debts can only be adopted in cooperation between government, regulator and utility companies.

The quality of housing and amenities and access to diversified and affordable resources are two of the most pressing issues, recognised as such by the UN's inclusion of them among the Sustainable Development Goals (see <http://roaid.ro/>) Thus, providing decent housing with adequate and uninterrupted access to energy must be a priority in the national economic recovery plan and in view of the objectives of the European Green Pact. Housing quality is about more than energy efficiency, but for now the priority remains to retrofit while keeping housing costs affordable for households (Grossmann, 2019). The proposed wave of renovation should be applied fairly and inclusively to ensure that even the poorest citizens live in energy-efficient housing. Also, with 80% of rural households heating with firewood without access to alternative, affordable and clean sources, national economic recovery plans should integrate improved energy access as a priority for action, taking into account a reasonable minimum energy standard for all dwellings (as proposed in Directive (EU) 218/844).

Conclusion

The Covid crisis highlights and amplifies the problems related to access to energy, but it is important to remember that for at least a quarter of the population of Romania and over 10% of the population of Europe, these problems existed before the crisis and will persist beyond it. Therefore, it is necessary to conceptualise and implement in legislation the right to energy for all citizens, as well as to operationalise it into a mechanism that will ensure continuous access to affordable, secure and clean energy services for all citizens. A fair distribution of the costs of the pandemic between

households, the state and economic actors is necessary to protect the energy vulnerable population. Further research and development efforts are also needed to better investigate and understand the impact of such global crises on vulnerable and energy-poor populations. Also, a special fund for energy poverty, managed by the state as a guarantor of citizens' rights, can take on the burden of bills when households default, protect households from the consequences of macroeconomic imbalances and be a source of investment in infrastructure and housing efficiency. The mechanisms for accessing this fund must be flexible and fair so that the economic interests of energy suppliers are not affected and the fund does not become a pretext for non-payment of bills. The modalities for replenishing this fund can also be explored with representatives of suppliers and consumers. The permanent operation of such a safety net for securing the right to energy is a sustainable way of protecting citizens against unforeseen crises, whether global or just at household level.

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