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Emergency measures to protect energy consumers during the Covid-19 pandemic: A global review and critical analysis

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ABSTRACT

The Covid-19 pandemic and the consequent lockdown exacerbated energy poverty and insecurity worldwide. Many governments introduced emergency measures to protect energy consumers during confinement. This article reviews and classifies the policies implemented in several jurisdictions around the world, identifying potential inefficiencies, but also best practices. According to our analysis, these much-needed relief measures should be based on a proper targeting and a consistent financing.

1. Introduction

The Covid-19 outbreak that spread worldwide in the first months of 2020 [1] has obliged many governments to undertake confinement measures [2,3]. These interventions had a massive impact on the world economy, provoking, in many countries, an unprecedented destruction of employment. Only in the United States, 20 million jobs were lost in April 2020, bringing the unemployment rate beyond 14%, and more than 30 million unemployment claims were filed in the first six weeks of the epidemic [4,5]. In Canada, the total employment decline since the beginning of the COVID-19 economic shutdown until mid-April was over three million jobs [6]. Similar impacts were registered all over the world, especially in Europe. In France, more than 10 million employees (one out of two in the private sector) were laid off during the lockdown [7].

The pandemic also had a tremendous impact on the energy sector, with a plunge in total energy demand, driven by a decline in commercial and industrial activities [8]. On the other hand, confinement measures increased domestic demand for energy due to a larger occupancy. A similar rise was registered in all affected countries, as shown graphically in the charts below for Ontario and Australia[1] (Fig. 1). The price of electricity and gas decreased during the outbreak, as a result of low demand and low oil prices in international markets [10]. However, this price reduction only affects the energy component of electricity and gas tariffs, which, in many jurisdictions, accounts for a minor share of the final bill and it may not be perceived by consumers in the free retailing market, who are subject to fixed prices.

Many definitions can be found in literature for energy poverty[2] [17–20], but all of them point at an unbalance between the economic resources needed to cover the basic energy needs of a household and the income of the family living in it[3]. The combination of financial hardship for many households and increased residential energy needs has obviously exacerbated pre-existing energy poverty [21], prompting many governments around the world to introduce emergency measures to protect energy consumers. These interventions, although very diverse in nature, are all based on the same underlying assumption: if the government requires people to stay home, then it must ensure that the basic energy needs of the household are satisfied [22].

This article presents a global review of these emergency measures (section 2) and classifies them in six policy groups: disconnection bans, payment extension plans, enhanced assistance programmes, energy bills reduction or cancellation, measures for commercial and industrial users, and creation of financing mechanisms. Section 3 presents a critical analysis and draws recommendations for policy makers. Our

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[1] This chart also allows to observe the opposite directions taken by residential demand and commercial and industrial demands, with the latter driving total demand to a strong decrease. In California, the regulator registered an increase in residential demand as high as 20% [9].

[2] In academic literature, this concept is also known as energy insecurity (especially in the United States; [13] [14]) and fuel poverty [15] [16].

[3] This unbalance may be due to different causes, from low household incomes to inefficient building and appliances, or a combination of them [17].

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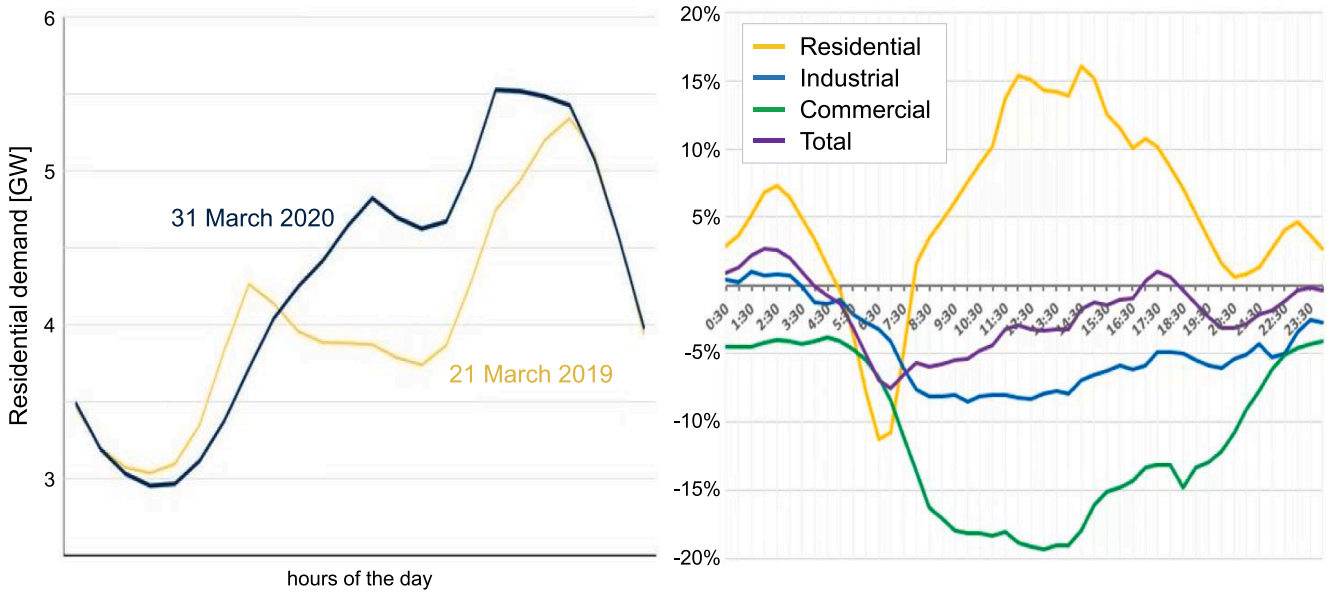

Fig. 1. Left chart: residential electricity demand in Ontario in similar days of 2019 and 2020 [11]; right chart: variation in daily load patterns during the Covid–19 outbreak in Australia [12].

assessment identifies the need to improve the targeting of these financial aid programs to reach only those households economically affected by the outbreak. In our opinion, energy bill reductions (or even cancellations) for all customers produce inclusion errors[4] and should be avoided. The aid should be better channelled through the energy assistance programmes already in place, adjusting, if necessary, its design to the current circumstances. Brand-new subsidies (including payment extension plans) should be properly targeted and, if this is not possible during the emergency phase, we believe that an ex-post validation on eligibility should be considered. We also highlight the importance of a consistent financing of these measures, whose economic costs should not encumber energy suppliers in this already delicate phase of their economic activity.

2. Global review of emergency measures

The global review presented in this section is the outcome of a continuous monitoring of emergency measures on energy consumption taken by governments all over the world since the very beginning of the Covid-19 outbreak. Since many jurisdictions introduced similar measures (although certain heterogeneity can be found in their detailed design), the review is not presented as a country-by-country analysis, but rather through a taxonomy of these regulatory interventions, which are classified in six different groups, highlighting, for each group, any worth-considering peculiarity found in the design implemented in a certain jurisdiction[5]. The jurisdictions analysed here are countries, states or even municipalities, depending on which administrative division is in charge of the energy sector regulation; they encompass very different organisations of the energy industry, from vertical-integrated monopolies to competitive markets. The sources of information used in this global review are official legislation, reports from relevant national institutions, policy trackers (as [3] or [25]), and, in some cases, also press releases and newspaper articles. Such a broad range of sources was selected in order to have a taxonomy as representative as possible of the emergency measures that have been introduced worldwide[6].

2.1. Disconnection bans

The prohibition to interrupt the energy supply in case of non-payment was by far the most widespread measure introduced by governments during the pandemic [3]. We found it in the vast majority of jurisdictions covered by this global review, although with few exceptions (for instance, in the Netherlands [25]). The obvious rationale is to guarantee the basic energy needs to households while confinement measures are in place.

These disconnection bans are usually related to other support measures. In fact, once the prohibition is in place, governments had to set specific rules for unpaid bills, as discussed in the following subsection.

2.2. Energy bills deferral and payment extension plans

Many jurisdictions introduced the possibility for residential consumers who are experiencing financial hardship due to the epidemic to defer their energy bills until the lifting of confinement measures. In some cases, governments also specified the financial arrangements for these payment extension plans. Most countries ruled that unpaid bills were not to be subject to any interest rate, but, for instance, Bulgaria only applied this exemption during the first 20 days from the first delayed payment [25].

Large differences can be found in the time duration of the extension plan. Energy bills that cannot be paid while the confinement is in place are to be recovered through instalments in the subsequent bills in a time window that ranges from three months in Germany [25], to six months in Italy [26], and up to 24 months in Peru [27] or even 36 months in Colombia [28].

[4] In literature regarding energy subsidies, an error of inclusion takes place when the economic aid benefits a consumer who is not in need for the subsidy [23]. The targeting of social assistance is a very complex topic already studied in literature [24]. Any targeting strategy must find an equilibrium between the administrative effort it requires and the inclusion and exclusion errors that it may provoke.

[5] It must be remarked that this review only considers measures introduced by governments and local authorities (this may include state-owned energy monopolists) and does not encompass voluntary initiatives by private companies, NGOs, or charity entities.

[6] This article has been drafted while these measures were being introduced and covers several jurisdictions and geographies; this, together with language issues, is why referencing official sources was not always possible.

A key difference in the design of this measure is its targeting strategy. While most countries specify that the payment extension plan is only available for those end-users economically affected by the Covid-19, in the majority of cases, they did not introduce any validation phase. This is not the case, however, in those Latin American jurisdictions applying bill deferrals. In Peru, for instance, the 24-month extension plan is granted only to those residential customers who consume less than 100 kWh per month (a strategy commonly known as quantity targeting or self-targeting). In Colombia, only consumers in layers 1 and 2, i.e., low-income households already receiving a subsidy, are eligible for the 36-month payment plan at 0% interest rate; customers in layers 3 and 4 are eligible for a 24-month plan, but the interest rate is to be defined by the supplier.

Finally, significant differences can be found in the governance of these interventions[7]. While in Central and Southern Europe and Latin America, the extension plan is centrally defined by the regulator, in other jurisdictions (United Kingdom, Ireland, many states in the US, and Australia) the repayment plan is managed by energy suppliers, after they reach an agreement with the government, (e.g., see [30]). Energy consumers who are facing problems to pay their bills, in these jurisdictions, have to communicate it to their supplier, who will propose alternative payment arrangements [31].

2.3. Enhancement of energy assistance programmes

Several countries around the world rely on some sort of energy consumption subsidy for low-income households [17,32,33]. The design of these schemes is very heterogeneous, in terms of provision method (social tariffs vs. direct payments), targeting strategy and financing [23]. During the pandemic, many countries decided to enhance these energy assistance programmes in different ways, as we show hereunder.

Those countries relying on social energy tariffs postponed the deadlines to renew the enrolment in these programmes until confinement measures are lifted, as in Italy [26] and Ukraine [3].

Some regulators have opted for increasing the economic aid that each beneficiary receives. The Government of New Zealand [34] doubled the winter energy payment, a transfer in cash that helps certain categories of energy consumers keep their home warm, from 20 to more than 40 NZD per week (for singles). In New South Wales, Australia, the energy accounts payment assistance underwent a similar process, with the yearly cheque increasing from 1 200 to 1 600 AUD [35]. Comparable policies have been introduced in Ukraine and Montenegro [1]. An extreme version of this intervention can be found in Brazil, where the tariff discount for low-income households already enrolled in the social tariff was brought to 100%, subject to consumption limits [36].

Other jurisdictions preferred to enlarge the pool of beneficiaries, in order to include those families in financial hardship due to the Covid-19. The State of Minnesota [37] reformed its energy assistance programme, extending the application deadline and basing the income eligibility criterion only on the previous one month. Spain introduced a new beneficiary category for its social tariff for electricity, i.e., self-employed workers who lost their job, subject to thresholds on the income level before the crisis began [38].

Finally, certain countries designed specific energy assistance schemes, as in Belgium, where the Flanders Government covers one monthly utility bill (with an upper limit of 200 EUR) for those households where at least one member is temporarily unemployed due to the Covid-19 outbreak [39].

[7] See [29] for an analysis of the impact of governance on the response to energy poverty.

2.4. Energy bill reduction or cancellation for all

Another category of measures considers the reduction of energy tariffs, or even the total cancellation of energy bills, for all residential customers during the lockdown. Differently from the measures presented in the previous subsection, these reductions are not based on any socio-economic targeting and the aid reaches all consumers.

Electricity bill discounts for all were provided, among other jurisdictions, in Cyprus (10%; [25]), Dubai (10%; [40]), Nepal (20% for consumptions lower than 150 kWh per month; [41]), Florida (25%; [42]), and Maldives (40%; [43]). In other jurisdictions, a discount was provided by acting on the tariff itself. The Ontario Government [44] suspended, during a 45-day period, time-of-use electricity tariffs, holding the price to the off-peak rate of 10.1 centCAD/kWh (which is half the on-peak rate). Slovenia removed some regulated charges (e.g., those meant to recover renewable support costs) from electricity tariffs applied during the epidemic [25]. Austin, Texas, lowered the volumetric rate for electricity and removed some regulated charges from the tariff [45]. Chile and Poland did not explicitly reduce energy tariffs, but prohibit any upwards update during confinement measures [46].

Energy bills were directly cancelled in several jurisdictions. The Bolivian Government covered electricity bills for three months during the epidemic, although only up to certain consumption thresholds [3]. A similar policy is being implemented in Chad. In Ghana, the Government is covering electricity bills of customers who consume less than 50 kWh per month and provides a 50% discount to the rest of end-users [47]. In Thailand, electricity is not being charged to those end-users with a power meter of no more than 5 A (10 million households are expected to benefit; [48]). In Bahrain, the Government paid utility bills for three months, but only up to the costs incurred during the same month in 2019 [49].

2.5. Measures for commercial and small industrial activities

Some jurisdictions did not limit the economic aid to residential customers and included some measures specifically targeting commercial and small industrial activities, which also suffered a significant impact from the outbreak and the consequent lockdown.

Spain introduced two relevant measures for self-employed workers and small and medium enterprises: i) the possibility to suspend the electricity and/or gas supply contracts during the Covid-19 emergency state and ii) the possibility to maintain the supply contract but to defer bills until the lifting of confinement and to pay them in six monthly instalments [38]. In France, commercial and small industrial customers whose activity has been affected by the pandemic are allowed to defer energy bills and suppliers will not be allowed to apply any fine for non-payment [50].

Saudi Arabia granted commercial, industrial and agricultural energy consumers a 30% discount on their electricity rates and the possibility to pay only half of the bill, while the remainder can be paid in six monthly instalments starting from January 2021 [51]. In Montenegro, commercial end-users who stopped their activity due to the pandemic are exempted from paying the fixed portion of the electricity bill [1].

2.6. Creation of funds and other support measures to suppliers

All the measures presented so far can have a substantial impact on the financial stability of energy suppliers and retailers [52 53 54], who were already facing plummeting demand, very low market prices, and inflexible long-term contracts. Some of the interventions presented in the previous subsections relied on specific budget lines created by governments. This is especially true for most of bill reductions and cancellations and for the enhancement of energy assistance programmes. Nonetheless, many of these measures lack a proper financing, as, for instance, most of the policies related to disconnection bans and payment extension plans.

The Government of the United States provided a 900 million USD emergency funding to the Low-Income Home Energy Assistance Program (LIHEAP), the federal programme that finances all the initiatives carried out by the government of each State. According to [14], this funding is relatively small if compared with other programmes included in the stimulus package.

Italy created a 1.5 billion EUR "Covid account" to guarantee the financial stability of energy retailing companies [26]. Those retailers affected by the emergency measures (disconnection ban and bills deferral) could apply for advanced payments from this fund to cover unbalances in their accounts that exceed 3% of their historical billing for the same period of the year. A similar credit line for retailers at a zero-interest rate has been established in Colombia [28], although no detail has been given on the size of this fund.

In Brazil, specific sectorial funds are being used to finance the increase in the social tariff discount and to guarantee a proper liquidity of energy suppliers [55]; for the latter scope, the regulator allocated more than 2000 billion BRL (around 400 million USD).

In Texas, the Covid-19 Electricity Relief Program (disconnection ban and payment extension plan) is being funded through a 0.33 USD/MWh surcharge in the tariff, thought to cover the debt of those customers who will be eventually unable to pay their bills [56].

Finally, many regulators exempted retailers from the payment of the energy taxes and network tolls relative to unpaid bills. Of course, this does not represent a real financial aid and, as regards tolls, it only passes the problem through to network companies.

3. Critical analysis and recommendations

This section develops a critical analysis of the emergency measures presented in section 2, keeping in mind their main objective, i.e., to protect energy consumers who have been financially affected by the Covid-19 outbreak. Some of the recommendations presented in this section are supported by academic literature (as those regarding the importance of a proper targeting of financial aid); others reflect the opinion of the authors.

3.1. Disconnection ban: An indispensable second best

Disconnection bans implemented during the Covid-19 outbreak are not targeted and they usually encompass all households. In an emergency context, there is no time to carry out the burdensome administrative process required to identify vulnerable customers according to their socio-economic conditions; thus, untargeted disconnection bans, which are directly enforceable and allow regulators to lift a first barrier to protect energy customers, represent a necessary second best.

However, this design can be prone to strategic behaviours, since also those end-users who are not in need of any financial help could try to take advantage of this measure. In order to avoid these misconducts, we believe that the regulator should clarify, when announcing the disconnection ban, that all non-payments that take place during the lockdown will have to be justified in an ex-post validation phase and that additional charges will be applied to unpaid bills from customers that were not in an objective condition of financial hardship as a consequence of the outbreak.

It must be remarked that these bans are also required for logistic reasons. The energy bills that are collected through direct debit in a bank account worldwide are far from being the majority. Many energy customers need to go out to pay their bills in a shop or an office, or have a prepayment meter that must be topped up [30]. However, this is not always possible during lockdown, which may also force these shops and offices to close. In this case, disconnection bans are effective in protecting consumers while a logistic solution is found.

3.2. Existing assistance programmes: The best way to go

In those jurisdictions that already have an energy assistance programme in place, we believe that this instrument should be used to channel the economic aid to vulnerable households, both old and new ones. These programmes are commonly based on some socio-economic targeting and permit avoiding many inclusion errors. During the emergency, it may be necessary to simplify the eligibility criteria to enrol in these schemes and to make the administrative process more agile[8]. Regulators may also consider fast tracks for people who lost their jobs due to the pandemic, but always verifying that they are in actual need of economic help (this validation may also happen ex post, after the emergency).

Moreover, since confinement has been demonstrated to rise residential energy needs, regulators may also increase the basic consumption that is subject to subsidy. However, if this is the case, the increase should be proportional to the residential demand growth registered in the country, avoiding excessive increments.

3.3. The targeting of brand-new subsidies

When governments introduce brand-new subsidies, i.e., those that are not related to any pre-existing assistance programmes, they should ensure a proper targeting. Bill reductions or cancellations for all residential customers may protect vulnerable customers, but incurring in huge inclusion errors, since they provide financial support to many end-users who do not need that support. This topic has already been widely discussed in the literature regarding consumption subsidies and energy poverty in general [23 24 57 58]. Not all customers who lost their job during the pandemic have necessarily to be in need for economic aid [59]. In our opinion, the targeting of brand-new subsidies should consider the current household income (which could be zero, in case of a loss of employment), but also its income in the past, considering a large enough time window.

A proper targeting should be applied also to payment extension plans. As mentioned in subsection 2.2, the deferral of energy bills should only be available to those household who are in financial hardship due to the pandemic. However, many jurisdictions do not carry out any ex-ante or ex-post eligibility check. If this is the case, then this financial aid[9] is actually available to all customers. This is why the Italian Regulator [26] had to issue a press note specifying that the potential deferral was not to be interpreted as a suspension of energy bills (although it implicitly was). In order not to unnecessarily increase the financial burden on retailing companies, we believe that some sort of economic penalty should be introduced to discourage non-payments from ineligible customers. Apparently following this line of thinking, the Colombian regulator, when introduced the 36-month payment extension plan for vulnerable customers, also required suppliers to grant a 10% discount on the bill of those vulnerable customers who kept on paying their bills in due time [28], introducing an incentive instead of a penalty.

3.4. Governance issues

As mentioned in subsection 2.2, a significant distinction in the governance of the emergency support can be found in certain jurisdictions, where suppliers have a central role in designing the kind of aid they offer to vulnerable customers (although always following the guidelines defined by the government). This feature is probably related

[8] In some case, this may be the only way to guarantee the effectiveness of the programme, since, during lockdown, it may be difficult, when not impossible, to obtain certificates from official institutions.

[9] It must be remarked that the postponement of energy bills represents a loan from a financial point of view and that loans have a cost.

with the historical organisation of the energy retailing activity in these jurisdictions. However, we believe that this approach may result in a segmentation of energy consumers, since the support provided by each supplier may be different, for instance responding to different marketing strategies, even if the needs of end-users are the same.

3.5. The importance of a consistent financing

Energy suppliers can be put under serious financial stress by the pandemic and the emergency measures to protect consumers should not aggravate their liquidity problems in a phase in which the service they provide is essential for society. All protection measures have an associated cost. This cost is more evident for certain measures, as bill reductions or enhanced assistance programmes; but also disconnection bans and extension plans provoke expenses that will appear at some point of the billing process. Therefore, all emergency measures should rely on a consistent financing mechanism. With the very low interest rates currently available in many regions [60], we believe that an efficient solution could be to include this financing in the stimulus packages that are currently being approved all over the world, although this article also presented alternative approaches that may be valid for other contexts.

4. Conclusions

The Covid-19 pandemic put energy markets under stress. However, its most direct impact is on energy consumers: confinement measures exacerbate pre-existing energy poverty issues, by increasing residential demand due to higher occupancy and by reducing the income of many families who have been economically affected by the crisis. This situation prompted a global wave of protection measures, which spanned from disconnection bans to bills cancellation.

This article reviewed and classified these measures and presented a critical analysis on their expected efficiency in providing relief to those in financial hardship. All these measures represent an economic aid and we identify the need to dramatically improve the targeting of this aid. Bills reductions and cancellations, introduced by several governments around the world, provide a subsidy to all customers, also to those who did not suffer any impact from the pandemic; in our opinion, this inefficient approach should be avoided.

The need for a proper targeting applies also to disconnection bans and payment extension plans, which should be made available only to those in financial hardship, although this may have to be checked ex post. The most efficient way to protect customers is probably to channel the aid through existing energy assistance programmes, which already rely on a targeting strategy. This approach requires a larger administrative effort (although there is the possibility to “soften” requirements during the pandemic), but it guarantees a better exploitation of available resources.

Finally, we stressed the importance of a consistent financing for these measures and we present alternative approaches from the review (from the creation of specific funds to the introduction of cross-subsidies in the tariff). If not properly financed, these protection measures risk to aggravate liquidity problems for energy suppliers in a phase in which the service they provide is essential to society.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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