Energy culture in energy poverty settings in South Chile

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Rationale

Too often, academic research is not accessible to policy makers. This project focused on translating academic research into a format that was accessible and actionable for policy makers. It achieved this by strengthening collaboration between two PhD students and their research.

Four knowledge gaps justified the proposal of this research:

1. A limited number of publications tackling energy poverty are from countries in the Globa-South, and existing literature is mainly in English.
2. A limited number of studies are focussed on the lived experience of energy poverty.
3. There is a mismatch between research and policymakers' knowledge transfer. Academic publications are used less by policy makers.
4. There are significant barriers to transferring qualitative research into policies.

Key research question(s) and/or aims

1. Link two qualitative research projects and their findings on energy culture and energy poverty in Coyhaique city, Chile, to advance knowledge and collaboratively promote science-policy interfaces.
2. Analyse qualitative findings from interviews to explore households' experience pre and post energy efficiency interventions in Coyhaique city, Chile.
3. Disseminate results in a format that can impact policy makers in Chile: audio-visual material, an open-access Spanish language journal article and a seminar with policymakers to release the findings.

Figure 1: Panoramic View of Coyhaique city: Afternoon pollution
Source: Authors, August 2022

Summary of research activity

1. Data Analysis: A collaborative analysis was conducted based on the results of both researchers.
2. New Research Material: From the analysis, two new materials were developed: a Spanish language scientific paper and the script for a mini documentary (video).
3. Fieldwork: The mini documentary involved fieldwork in Coyhaique city, Chile, during winter 2022. The researchers and the filmmaker visited households previously interviewed by the researchers, who agreed to give their testimonies and be audio-recorded. The narratives and experiences of households in different forms of fuel poverty and stages of an energy transition were filmed.
4. Dissemination: the mini documentary was released and disclosed through a face-to-face seminar in Coyhaique city. A panel discussion with local policymakers was conducted by one of the researchers.

Methodologies

1. Writing a literature review for an open-access Spanish article.
2. Coding qualitative research findings from previous interviews of two different PhD research projects.
3. New fieldwork to collect audio-visual material from households in the PhD studies. During the fieldwork, the researchers explained to participants the research aims and householders participating signed a Participant Information Sheet and Consent Form.
4. Audio-visual method to capture the narratives and experiences of households with different forms of fuel poverty and stages of an energy transition.
5. An event, with the premiere of the mini-documentary and a panel discussion with policy makers in charge of Atmospheric Decontamination Plan and local academics to disseminate research findings and to impact policies, held the 11th of April 2023.

Context

This project is a collaboration between two PhD students from the Energy Poverty Network in Chile. The project aims to show and disseminate qualitative research findings of social housing households' energy culture living in an energy poverty setting in Coyhaique city, Chile. In 2018, the city was reported as the most polluted (PM2.5 µg/m3) city in Latin America, even though it is a small city and without major industrial activities. Coyhaique is located in a cold environment (Parallel 45° South Latitude). The key source of air pollution is the firewood combustion used for domestic cooking and heating. The main driving factors of firewood combustion are its affordability; its availability in formal and informal markets; the lack of housing energy efficiency and high heating demand; and cultural factors, such as preference and habits. Also, firewood is a readily available resource, so people can collect it without paying.

Figure 1: Panoramic View of Coyhaique city: Afternoon pollution. Source: Authors, August 2022

To tackle this problem, Chile has made significant public investments by allocating subsidies for the thermal retrofit and heating appliances replacement programme under an Atmospheric Decontamination Plan (ADP). In this context, social housing households that have not yet received thermal retrofits are likely to be in a condition of energy poverty as they are economically vulnerable, living in social housing that lacks energy efficiency and living in a country with high energy prices. Literature shows that culture can either complicate or catalyse efforts to promote more efficient and affordable forms of domestic energy use. It can operate as both a barrier and an enabler to energy practices, often unacknowledged in policymaking .

Findings

The results from this research - a journal article and a mini documentary - show the difficulties that households from Coyhaique face with the current energy efficiency policies. The results identified cultural barriers in the energy transition process and potential improvements that could be made to both programmes to strengthen their potential impact from a just transitions approach. Regardless of the positive or negative experiences, both programs have triggered changes in the local energy culture, causing different trajectories. These experiences show how complex the processes of change in the daily dynamics of energy use in homes are, especially when previous conditions of energy poverty are identified. These conditions may be associated with factors such as access to energy sources and/or devices, energy expenditure and/or cultural issues such as thermal comfort thresholds, among others. The local energy culture shows that there is no single trajectory of change and that decontaminating the city should involve recognising this diversity and designing strategies according to it.

Clockwise from top left:
Figure 4: Kerosene Heater Installed with the ADP Programmes
Figure 5: Pellet Heater Installed with the ADP Programmes
Figure 6: Woodstove in Coyhaique city
Source: Authors, August 2022

Fuel reliability, accessibility and affordability are key factors for a just energy transition. Firewood generates greater security in households since it is always available and cheaper than alternative energy options. Also, woodstoves do not require electricity to operate, which is advantageous in a city where the general electrical system is perceived as unreliable, with supply shortages occurring during winter. Households using other fuels, such as pellets or paraffin, feel more vulnerable to power outages, price increases, or supply shortages in winter.

The findings show that the ADP policies do not consider the pre-existing conditions of energy poverty in their design, and their implementation could aggravate these conditions in those households with greater socioeconomic vulnerability. The ADP programmes could include a more exhaustive evaluation of households' economic situation by considering payment capacity and usage habits to avoid exacerbating pre-existing energy poverty conditions. The exacerbation of energy poverty might be caused by: greater spending on fuel and maintenance of the new heater; by sacrificing comfort conditions given budgetary restrictions triggered by the increase in prices or fuel shortages; or by being exposed to indoor contamination with the use of the cookstove, given its multifunctionality and the cultural preference for using it.

The cultural roots of firewood are strongly expressed in the multifunctionality of the cookstove. Replacing the multiple energy services that it provides represents a barrier to technological change. This change is more difficult for the older generations, especially for women who have historically supported the social practices of life around their kitchens. Therefore, the accompaniment and support for the energy transition must be early, continuous, and monitored by public entities. Adapting to the technological implementation has proven to be a barrier to the positive perception of the heating appliance replacement programme. Among the households interviewed, those who have found it challenging to understand the new heater's operation and maintenance have expressed their intention to use firewood again. In addition, the dependence on specialised technical services for maintenance reduces users' autonomy and adds another expense to the household budget.

Regarding the thermal retrofit programme, it seems there is a deficit in the control and monitoring capacity of the Ministry of Housing and Planning. The absence of the ministry in the execution process of the thermal retrofit programme was resented by the beneficiaries. From households' perspectives, the ministry should better monitor and follow up on the work carried out by construction companies.

The local energy culture shows different trajectories of change in the context of the ADP energy policies. These changes have implications for daily life, which causes households' uncertainty around the adoption of new energy technologies and difficulties in changing practices over time. Public energy efficiency policies associated with air decontamination must incorporate this diversity of experiences, recognising the previous conditions of energy poverty that influence the possibilities of change. Only then we will be able to advance in a just energy transition.

Figure 7: Wall Insulation Installed with the ADP Programmes. Source: Authors, August 2022

Recommendations

1. Chile, and the Global South countries, have been implementing standardised and homogeneous energy efficiency interventions and policies developed in Global North without recognising the local energy culture and energy poverty conditions. Therefore, we suggest that policy makers study the potential impacts of policies in local territories. The energy efficiency policies must recognise and include site-specific sociocultural factors to develop effective and responsive local solutions.
2. Energy culture is a key component in better understanding how to support households overcoming energy poverty. Culture can act as an enabler or a barrier to more sustainable energy transitions. We recommend designing policies following a bottom-up approach in order to achieve sustainable outcomes from energy efficiency interventions. This approach would involve multi-sectoral participation with local communities, academia, and the public and private sector.
3. Policy makers value qualitative research less, and they tend to use quantitative data to support policies. This research found that policy makers from Coyhaique were very interested and receptive to the findings, and the mini documentary proved to be an adequate method for disseminating qualitative research findings. We suggest strengthening the association between academia and policymakers in discussing energy policies and planning research projects that can contribute to evidence-based policy design.

Outputs

1. Mini documentary available online at: Spanish Subtitles and English Subtitles
1. Publication in Open Access journal and Spanish (submitted and under review). The submission was made in a special call from INVI Journal on Energy Poverty : view invitation.
2. Seminar with policy makers (promotional image on Instagram, see below)
3. Media Coverage:
   - Investigadoras se adjudican fondo para estudio interdisciplinar de Doctorandas sobre pobreza energética
   - Pobreza energética obstaculiza desarrollo del Plan de Descontaminación Atmosférica en Coyhaique
   - Coyhaique: cómo la pobreza energética obstaculiza desarrollo del Plan de Descontaminación Atmosférica

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Cover image: Figure 2: Aerial View of Coyhaique city. Source: Authors, August 2022

About the Funder

The Fuel Poverty Research Network (FPRN) was established in 2016 by researchers who were all concerned with different aspects of the interaction between people, homes and energy. The charity supports researchers and facilitates dialogue between researchers, policy and practice. FPRN's grant programme, Engaging in Energy Poverty in Early Career (EPEC), supports early career researchers (ECRs), postgraduate students (PGRs), and early career practitioners (ECPs) based in any country to contribute to efforts to tackle fuel and energy poverty through original research and publication.