

Clean Energy Policy and Some Implications for Low-income Communities

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Abstract

Undeniably, we are moving away from the fossil fuels-based economy due to the extreme climate and weather catastrophes our communities in different areas of the world are experiencing. The solution for future generations is the transition to clean energy. How does that look for overburdened communities? It is an equality and environmental justice concept to make it inexpensive and available to everyone. Policy makers are now creating bills and pushing for legislation that supports new regulations for building electrification at the residential and commercial level, allocating charging stations for electric vehicles and making sure these changes do not impact the pockets of low-income families. This paper will look at some ways policy makers in USA are working with environmental justice groups, unions and advocacy groups to make the transition to clean energy (solar, offshore wind, electric vehicles) accessible to underserved and low-income communities and what are some of the implications of these changes for the low-income families.

Keyword: Fossil fuel, solar, offshore wind, electric vehicle, clean energy

INTRODUCTION

Combating the effects of climate change in the environment, mitigating, and adapting to new normal temperatures require changes in the resources used for energy, new regulations and policies that support the changes in the resources, access and affordability of the new resources utilized and the impact of all these changes in low-moderate income (LMI) households. Energy justice and energy equity are concepts and processes that help determine where injustices in the affordability and accessibility of energy LMI households experience [1–4]. The situation is constantly evolving, and the predictability of the injustices is not foreseen until the changes are implemented. LMI households are expanding. Sovacool and Dworkin [5] provided a human-centered definition of energy equity where the advantages and challenges are part of energy production, distribution, and consumption. It also investigates the way communities, families and people are treated when decisions are made for them, and if these communities are represented at the time of decision making.

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Zinecker et al. [6] shared their vision of energy justice as a fluid process that evolves and changes according to local, cultural, political, and socioeconomic contexts. Energy equity in one circumstance may be considered an injustice in another context.

However, it is important to note that implementation of energy justice and equity is a challenge in places where access to systems that protect the rights of the communities that depend on mostly fossil fuels are low [6]. This is a dilemma that impacts the consumers and the workers whose economy still depends on fossil fuel jobs.

Problem

Changes in the technologies used in the clean transition energy for infrastructure and distribution are costly and are increasing the accessibility cost of renewables [7]. These changes impact the ability of LMI households to access and afford clean energy. LMI households spend around 8% of their monthly income on energy expenses (between \$200 and \$300).

Compared to other households, low-income households nationwide spend a higher percentage of their income on home energy expenses (such as electricity, natural gas, and other home heating fuels). This metric is frequently called the "energy burden" of a home [8].

Energy justice must acknowledge that energy raises human centered concerns about fairness in costs, benefits, consumptions, and distribution not only to the current generation but for future generations that must include overburdened communities [4, 9]. The rising of prices to access energy makes the energy justice approach a necessity to understand, and suggest changes in current energy production, distribution, and consumption. In developed countries, like the United States, it seems that energy poverty and looking for solutions to address climate change are in conflict [10] due to the technology used to roll out clean energy and the costs involved with these technologies, impacting negatively LMI homes. The transition to sources of energy that reduce carbon emissions should make all community members winners and not divide our neighborhoods between losers and winners.

THE THREE PRINCIPLES OF ENERGY JUSTICE

Three energy justice principles have been developed because of the need to equity in affordability and accessibility:

1. *Distributional justice*: It focuses on outcomes and concerns whether everyone equally shares the benefits and burdens of the energy system, in addition to looking for places where energy injustices happen in the world [11].
2. *Procedural justice*: It helps researchers and decision-makers to engage LMI communities through local mobilization, disclosure of information, and fair representation of the community in the institutions and agencies addressing clean energy access and affordability [11].
3. *Recognition justice*: Investigates which societal segments are misrepresented or not represented at all through lack of recognition, degradation, insult, and disrespect [12].

The issue is to apply the three tenets of energy justice to policy and all the components of the system of energy. The challenge is for corporations, governments, and private sector, and the public to understand that access and affordability are issues of social responsibility, civic responsibility, and social justice.

METHODOLOGY

This paper offers some of the solutions and approaches several states in the United States have adopted and implemented to reduce injustices in energy affordability and accessibility for LMI households. Several reports, studies, and articles were reviewed using the following terms: energy accessibility for low-income households, energy affordability for low-income households, energy poverty, energy justice, clean energy transition and justice, energy equity, and clean energy policy implementation. The articles, studies, and reports were accessed through Google Scholar, Semantic Scholar Google, Svier, and the U.S. Department of Energy.

FINDINGS

Many states have adopted policies and implemented programs to bridge the gap between energy accessibility/ affordability and LMI households. Energy policy must address the decision making, the subsidies, the costs, and consumption in the local and international communities [11]. Assisting in the decrease of electricity and other fuel usage is one strategy to address energy affordability. It helps "reduce household energy costs regardless of climate, heating fuel, or energy price factors" [8].

An initiative from the head of the household could be Insulating a home to reduce costs of heat and air conditioning, to improve the quality of indoor air, and the health of household members which in turn will decrease sick days.

Related to this initiative a study made in Holyoke, Massachusetts interviewed residents of LMI neighborhoods and the resident's reported awareness of the benefits of the reduction of energy consumption [13]. They mentioned "the level of saving energy in household consumption, the generational struggle of grandparents trying to save while children waste, and that electricity costs go up" [13].

When consumers accept that their own consumption impacts the cost of energy, their behaviors change. When the consumers blamed costs on corporations, government decisions, and the international trade market, they would not see their behavior as impactful in the cost of the energy services received, and those perspectives build the understanding of the arbitrariness and relateness the definition of energy justice. According to psychological research [5], one of the most influential factors in determining the seriousness with which energy problems are addressed, or in motivating changes in energy-related behaviors and decisions, is the attribution of blame for these issues by the individual in question.

Initiatives from the U.S. Department of Energy

1. The U.S. Department of Energy's Clean Energy for Low-Income Communities Accelerator (CELICA) collaborated with state and local leaders who committed \$335 million to assist 155,000 low-income homes in accessing renewable energy and efficiency solutions, enabling them to save up to 30% or more on energy bills.
2. The Low-income Energy Affordability Data (LEAD) Tool was also developed by CELICA. This tool provides energy burden data for states, cities, and counties. In addition to the energy burden, several other factors could make it challenging for low-income households to afford their energy bills (retrofitting, housing, health, food security). Some of these factors can be explored through the Home Energy Affordability Tool (HEAT) [8].
3. Designed specifically for low-income rural households, the Low-Income Home Energy Assistance Program (LIHEAP BILL ASSISTANCE program). The providers of this program are state health and human services agencies with their sub-grantees, utilities, and municipalities. It is funded by taxpayers and federal grants [14]. Not much research has been done on the effects of the Low-Income Home Energy Assistance Program (LIHEAP), the biggest energy assistance program for low-income households in the US.
4. Murray and Mills [15] researched the impact of LIHEAP in LMI homes, and the results indicate that the homes that participate in LIHEAP significantly increase their energy security. According to simulations, the number of low-income energy-secure homes would decrease by more than 17% if the current household energy aid safety net were eliminated.

Other Approaches/ Alternatives Happening in the United States

1. Adoption of clean distribution generation (DG) technologies, which is access to energy without the grid to combat energy poverty. Casa Pueblo in Puerto Rico is an example of a Clean Distribution Generation happening in the municipality of Adjuntas. In places where there is no connection to the national power grid, distributed generation—such as windmills and solar panels—can offer access to electricity.
2. Employment in the clean renewable energy sector is steady. In New Jersey, for example, various policy proposals have been developed by a coalition of advocacy groups, industries in the energy sector, and government agencies like the Board of Public Utilities and submitted to policymakers as bills to receive their endorsement and approval. In Vermont, the Clean Energy Worker Just Transition Act (advocating for workers retraining, relocation expenses and paid early retirement), was introduced in December 2015 by Senator Sanders [16].

3. The pay-as-you-save (PAYS) approach is used by both the Ouachita Electric Cooperative's HELP PAYS program and the Roanoke Electric Cooperative's Upgrade to save program. These programs eliminated the income qualification barrier to participate, eliminated demographics socioeconomic disclosure, eliminated up-front costs and initial payments. "On the customer's monthly payment, they tack on a fixed fee that is intended to be smaller than the expected savings produced by the efficiency measures" [17].
4. In Connecticut, those in charge of the PAYS program mentioned that they have been tasked by the governor to make 80% of all homes in the state more energy-efficient by 2030 [17].
5. A state statute requiring the participation of a low-income representative in the statewide energy efficiency stakeholder collaborative was established in Massachusetts. This is important for advocating for low-income programs and administration [17].

International Initiatives

Global approaches toward energy justice emerge throughout my research. Although I was looking for initiatives and solutions implemented in the United States, I decided to include Mexico's and Europe's efforts after reading about the way they include the voices of LMI households and other stakeholders in the decision-making process. One approach seems to be more inclusive than the other one now of implementing energy policy changes in their countries.

Mexico – Top-Down Approach

Mexico, since 2000, has planned to bring wind energy as one of their alternative energy resources. The approach used by Mexico has been creating opposition from grassroots and indigenous organizations. They feel their voices are not included in the planning and implementation of this alternative source of energy.

"Mexico follows a top-down scheme that produces an asymmetrical dynamic for developers, who are forced to fulfill orders from the central administration while "working it out" with local populations excluded from participating in decision-making processes" [18].

Our recommendation is to give representation of these consumers and communities in the decision-making take. Harper et al. [13] study participants at Holyoke in Massachusetts shared the concern of not being included in the decision-making process. Their concern was "decisions about energy do not include their input as consumers, people lacked voice at the policy developing level", which creates a parallelism at the global scale of the experience the Indigenous communities are experiencing in other countries, like Mexico.

Europe

Just Transition Guidelines for 2015 – This strategy is a cooperative dialogue-based procedure aimed at altering energy production and consumption habits. Its objective is to reduce adverse effects on communities and workers in high-carbon industries that are coming to an end while increasing prospects for new, high-quality jobs in the low-carbon industries that are expected to grow in the future. It attempts to guarantee that all stakeholders receive an equitable share of the transition's expenses and benefits [6].

The stakeholders of the 2015 Guidelines for a Just Transition include trade unions, non-unionized workers, businesses, regional governments, political leaders:

- *Trade unions*: They might oppose employment in the renewable energy sector due to lower levels of unionization, which is used to stabilize jobs in the traditional track of the energy sector.
- *Non-unionized workers*: They constitute a vulnerable group of workers who need to have a seat at the table.
- *Businesses*: Businesses in the energy sector can either be opponents if they are in the fossil fuel industries or allies for a just clean energy transition if they favor it. These businesses, if green, can assist in keeping workers, by retraining them.

- *Regional governments:* They are key players because they disseminate information to the consumers, and other stakeholders and assist in the implementation of policies in the transition to clean energy.
- *Political leaders:* They are responsible for formulating policies. For instance, as Zinecker et al. [6] note, "The newly elected presidents of Egypt and Indonesia used their strong political mandate to implement subsidy reforms swiftly while communicating the reasons and benefits."
- *Energy consumers and the public:* This group receives the impact of the policies created that impact on their pockets with either reductions or increases in prices and cost for services.

Recommendations to Continue Lowering the Economic Impact of Clean Energy Transition in LMI Households

This section offers recommendations that were found in the articles and one environmental justice qualitative study at a LMI community in Holyoke, Massachusetts. It combines the opinions of academics, researchers, and study participants. The study had 36 participants from 4 focus groups who responded to questions in English and Spanish [13].

Improvement of Educational Outreach Efforts for LMI neighborhoods

1. Greener practices and habits need to continue to be implemented. Consensus of the importance of greener practices – electric vehicles (EVs), solar panels, bicycle use (participants of the study)
2. The language of communication needs to be clear and succinct. The participants of the study reported a lack of transparency in communication about the energy transition planning process. They mentioned that "justice language is horrible" and that there exists a "pervasive linguistic and racial inequality."
3. To build trust with LMI communities the clean energy transition process must be disclosed to the public. A "lack of transparency in communication about the energy transition planning process" was brought up by the participants [13].
4. It is critical to address other concerns that affect LMI households' transition to sustainable energy.
5. Housing, by guaranteeing that LMI households have access to reasonably priced and high-quality housing.
6. When the LMI households are tenants that brings significant concerns of clean energy about accessibility. Property development, managers or landlords may pass down the cost to renters [for example by adding fees to install solar panels] but may not share the benefits with them.
7. Health – with the protection of trees, tree canopies, and open spaces to reduce the heat island effect caused by constructions, and project development that is pervasive in LMI urban neighborhoods. These will reduce the air conditioning usage expenses, which will result in health benefits and energy savings.

Policy Development and Implementation Recommendations

Study of Impacts Before Implementation

Efforts to develop a comprehensive analysis of both the positive and negative impacts of the energy transition in LMI households, utilizing a combination of quantitative and qualitative methods. For instance, Ukraine is currently creating comprehensive strategies for mitigating social and environmental issues related to each coal mine that is slated for closure. Additionally, they are working on implementing programs aimed at the social rehabilitation of regions that will be affected by the closures [6].

Bottom-Up Approach

To ensure that the research process is as inclusive and comprehensive as possible, it is important to actively involve the groups and communities affected by the research. In the case of Canada, they made a concerted effort to engage with every affected community as part of their transition process. This strategy promoted inclusivity and teamwork while enabling a more nuanced view of the research's impact [6].

Participants in the Harper et al. [13] study reported concerns that consumer input is not included in energy decisions and that people lack a voice in policy development.

A Single Statewide/ Region/ County Program Implementer

To guarantee that the programs provided by several implementers are uniform and equal, coordination is required. As an alternative, the procedure might be streamlined by designating a single statewide program implementer. According to Gilleo et al. [17], this strategy would give clients and program contractors a single point of contact.

CONCLUSION

The transition to clean energy presents both opportunities and challenges for low-income communities. As policy makers strive to address climate change, it is crucial that energy justice and equity are prioritized. This paper has highlighted various initiatives and approaches in the United States and globally that aim to make clean energy accessible and affordable for low-income households.

The findings emphasize the importance of involving low-income communities in decision-making processes and addressing intersecting issues such as housing, health, and employment. Recommendations include improving educational outreach efforts, adopting a bottom-up approach to policy development, and streamlining program implementation.

Ultimately, a just transition to clean energy requires a multifaceted approach that prioritizes energy justice, equity, and community engagement. By doing this, we can make sure that no community is left behind and that the advantages of clean energy are distributed fairly among all stakeholders.

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