Illuminating Energy Poverty: Unveiling Barriers, Challenges, and Opportunities Through a Vulnerability -Focused Lens in Ontario & Nova Scotia

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Background

- The prevalence of energy poverty in Canada, affecting between 6% and 19% of households, has prompted a growing need to understand and address this multifaceted issue[3]
- Three primary determinants of energy poverty are housing, affordability, and systematic marginalization.
- The quality of housing and access to energy-efficient housing can significantly impact the experience of energy poverty among vulnerable communities in Ontario [4]
- Energy poverty, characterized by inadequate access to affordable and reliable energy services, poses significant challenges across various dimensions, including health impacts, economic challenges, and individual well-being[5]
- Systematic marginalization arises when there is a failure to adequately cant's access, uneven access to programs and energy services, there is an active uneven or unfair ability to access these programs integrate both energy access and efficiency into programs, disproportionately impacting vulnerable community members due to design flaws[6]

What is Energy Poverty?

- **Energy poverty occurs when households lack access to basic energy services and goods, leading to detrimental effects on their health and overall well-being.[1]**

What is a Vulnerability based approach?

The vulnerability-based approach offers a more comprehensive understanding of energy poverty by considering a wide range of factors beyond income, such as social, economic, and environmental aspects. It allows for a more nuanced assessment of energy poverty and aligns with the concept of energy justice[2]

Methodology

Research Question 1

- **Employed mixed-methods approach**
- **Combined qualitative analysis and document examination of programs, utilizing websites and case studies, and supplemented by semi-structured interviews with policymakers, program managers, and energy experts**

Research Question 2

- **Utilized mixed methods for Research to compare energy efficiency and energy poverty programs in Nova Scotia and Ontario**
- **Employed program websites, Energy Efficiency Canada's tool, NRCan's Directory, and semi-structured interviews with representatives from government bodies, utility firms, data scientists, government agencies, and program administrators**

Research Questions

- **How can program indicators be used to effectively assess the determinants of energy poverty, such as housing conditions, affordability, and systemic marginalization, so policymakers can track and evaluate impact accurately?**
- **How do energy efficiency and energy poverty programs in Nova Scotia and Ontario differ concerning target demographics, data collection methods, delivery mechanisms, funding, and accessibility for vulnerable communities and what enhancements could be implemented to better serve this demographic?**

Key Findings

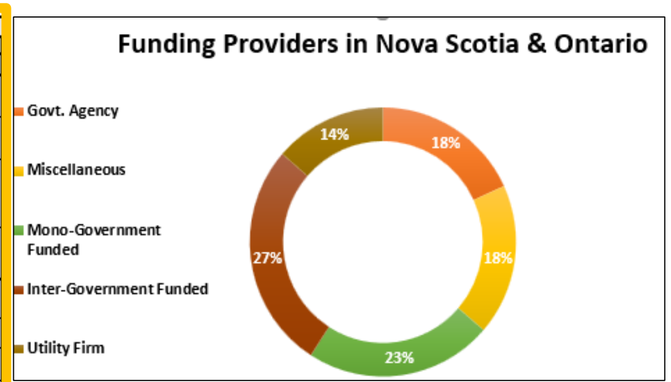
- Importance of Broadening Scope of Indicators: Broadening the scope of indicators to include housing conditions, affordability, and systemic marginalization factors can better target vulnerable populations and address the underlying causes of energy poverty effectively.
- In essence, while indicators help identify communities at risk of energy poverty, personas provide the necessary depth to understand the individual circumstances and challenges they face. Hence, use of personas along with indicators is essential for developing comprehensive and targeted strategies to tackle energy poverty effectively.
- The challenges faced by vulnerable communities highlight systematic marginalization within energy poverty issues. Social development, support program accessibility, language barriers, geographic disparities, and data availability all contribute to these challenges.

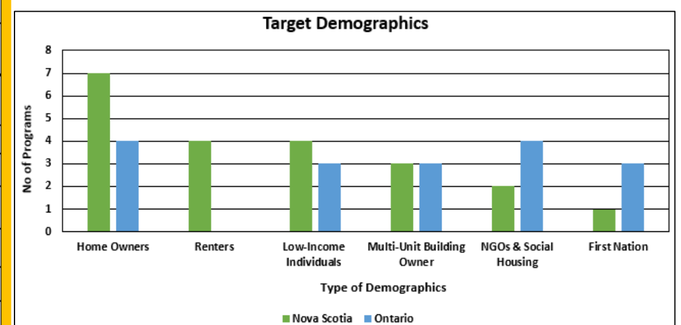
Recommendations

- **Contextualized Definition of Energy Poverty**
- **Tailored Indicator Selection and Enhanced Data Collection for Effective Energy Poverty Intervention**
- **Develop Persona to Understand Vulnerability in Depth**
- **Expand Reach and Effectiveness for Inclusive Energy Programs**

Energy Poverty Indicators

Metrics				Affordability	Housing	Systematic Marginalization		
Indicator Category	Name of Indicator	Description	Approach	Energy Affordability	Fuel Flexibility	Energy Efficiency	Energy Access	Expanation
Income	Annual Income per household	The annual income per household in Ontario is defined as the sum of income of all adults in the household. This includes all gross income, benefits, and gains of every kind and from every source before any deductions, from within and outside of Canada.	Expenditure-Based	X				It is essential for identifying and prioritizing support for households with lower incomes disproportionately affected by high energy expenditures.
	% of income spent on Energy Bills	The percentage of income spent on energy bills refers to the proportion of a household's income that is allocated to covering energy expenses, such as electricity, natural gas, and other heating fuels.	Expenditure-Based & Energy Poverty Gap Metric	X				Key indicator for identifying households in energy poverty; allows for assessment of economic burden of energy costs on households, particularly those with lower incomes.
	Income Type : Business, Service, Govt Support Programs, Unemployed, Pension	The term "income type" describes the type of source of income. If it stems from a service, such as pay, salary, or other forms of compensation received for work or services performed. . If it is business i.e. sales of goods or commissions or if the income is received from government funded programs like in terms of benefits or it is received as a pension or an investment.	Proxy Indicators	X				Impacts energy poverty status; different income sources lead to varying levels of energy poverty due to unique economic circumstances.
	% income spent on household expenditure excluding energy	It refers to the portion of a household's income that is allocated to covering various expenses, such as food, clothing, housing (rent), transport, durable goods, health costs, leisure, and miscellaneous services, but excluding energy-related costs.	Expenditure-Based & Energy Poverty Gap Metric	X				Indicates financial strain on households; high percentage may signify reduced ability to cover energy-related costs.
Building/Dwelling	Building/ Dwelling Type : Single, Detached, Double, Duplex, Apartment, Others	it refers to the kind of building : is it single, detached, double, duplex, apartment or others	Proxy Indicators		X			Significant variations in energy poverty prevalence among different types of dwellings.
	Building/ Dwelling Ownership : Owned, Rented	It refers to the type of ownership of the building/dwelling - if it is rented or owned	Proxy Indicators		X			It influences energy poverty prevalence; both owned and rented households can experience high home energy cost burdens, but for
	Building Yr. of Construction	It refers to the year in which a building was constructed	Proxy Indicators			X		Older homes associated with higher prevalence of energy poverty.
	Building Maintenance Conditions & Period of Frequency : Regular, Minor, Major	It refers to the state of upkeep and repair of a building, categorized as maintenance only, minor repairs, or major repairs	Proxy Indicators			X		Poorly maintained buildings may lead to higher energy consumption.
	% Dwelling with Energy Labels A , B, C, D,E	In the context of buildings, the energy labels A, B, C, D, and E are determined based on the energy performance of the building. These labels are commonly used to indicate the energy efficiency of buildings, with A being the most energy-efficient and E being the least efficient.	Energy Poverty Gap Metric		X	X		Provides insights into energy efficiency of housing stock; lower labels (e.g., D or E) indicate prevalence of energy-inefficient housing.
Demographic Profile	Urban & Rural Area	According to Statistics Canada, an 'urban area' is defined as having a population of at least 1,000 and a density of 400 or more people per square kilometer. All territory outside an urban area is considered a rural area	National Indicators				X	Differences in housing characteristics and energy costs; rural areas may have higher prevalence of energy poverty.
	Age & Gender	It refers to the age and gender of population	Proxy Indicators	X			X	Gendered experience of energy poverty; older households at greater risk.
	Newcomer to Canada	A newcomer is generally defined as an immigrant or refugee who has recently arrived in the country and has been a resident for a relatively short period, usually less than five years	National Indicators	X			X	Recent immigrants/refugees at higher risk of energy poverty; significant factor in identifying vulnerable households.
	Education Level	It refers to the highest level of formal education that an individual has received or the highest degree they have earned	Proxy Indicators	X			X	Indirectly influence energy poverty prevalence through income levels.
	Long Term Illness or disability of family member	It refers to a range of conditions that have a lasting impact on the health and functioning of a family member. This can include chronic health conditions, physical disabilities, and mental health disorders that persist over an extended period	Proxy Indicators	X	X	X	X	Increased risk of energy poverty for households with members living with long-term illnesses or disabilities.
	Household type	It is based on the composition of households, which includes categories such as one-person, multi-family, couple with kids, couple with no kids, and single-parent households	Proxy Indicators	X			X	Composition influences risk of energy poverty; e.g., one-person households are at heightened risk.
	Job Type	It refers to the nature of employment and the associated skill set required for a particular occupation. It can include categories such as skills-based, high knowledge-based, and scientific roles.	Proxy Indicators	X			X	It reflects income levels and economic opportunities; influences risk of energy poverty.
Energy Use & Expenditure	Average household prices per kWh generated from biomass	It refers to the typical cost that households pay for each kilowatt-hour of electricity generated from biomass sources, such as wood, agricultural residues, or organic waste.	Energy Poverty Gap Metric		X	X		Influence energy consumption patterns and economic feasibility of heating sources.
	Type of heating & cooling system	It refers to the specific method or technology used to regulate the temperature and air quality within a building such as heat pump, furnace, boiler etc.	Proxy Indicators		X	X		Type affects energy consumption; energy-efficient systems reduce costs.
	Average Household prices per kWh generated from fuel oil	It refers to the average cost that households in a specific area or region pay for each kilowatt-hour (kWh) of electricity generated from fuel oil.	Energy Poverty Gap Metric		X	X		Influence energy consumption patterns and economic feasibility of heating sources.
	Average household prices per kWh generated from renewable energy sources	It refers to the generation of electricity either from onshore wind or offshore wind or solar voltaic, or geothermal	Energy Poverty Gap Metric		X	X		Influence energy consumption patterns and economic feasibility of heating sources.
	Household gas prices	It refers to the natural gas price	Expenditure-Based & Energy Poverty Gap Metric		X	X		Directly impact energy consumption, particularly for space heating
	Avg. electricity rate	It refers to the average rate of electricity in cents per kWh	National Indicators		X	X		Directly impact energy consumption, particularly for space heating
	Arrears on Utility Bills	It indicates the inability to pay utility bills on time due to financial difficulties	Expenditure-Based & Energy Poverty Gap Metric				X	Significant factor in energy poverty; indicates inability to pay utility bills on time.
Accessibility and Outreach Support	Access to Government programs	It refers to the ability of individuals to obtain and benefit from the various assistance, services, and resources offered by government initiatives .	National Indicators				X	Essential for providing financial support and assistance to households facing high energy costs
	Information in multiple languages	It refers to the availability of information that has been translated into various languages to ensure accessibility for diverse linguistic communities	National Indicators			X	X	Enhances accessibility and understanding among diverse communities, overcoming language barriers.
	Funding level for outreach	It refers to the amount of financial support available for outreach activities	Expenditure-Based & National Indicators				X	Crucial for effective delivery of energy poverty programs; supports targeted strategies to reach and assist vulnerable households





"Newcomers, including renters, seniors, or disabled individuals, often face a significant knowledge gap when trying to access energy poverty or efficiency programs"
- Program Administrator, Utility Firm

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