

Who Gets Left Behind: Climate Change, Vulnerability, and Exclusion in Municipal Climate and Energy Transition

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Abstract

This thesis examines the intersection of climate change, energy transitions, and social inequities in Canada, with a focus on poverty, health vulnerability, and municipal-level governance. Firstly, there were gaps in the existing literature in terms of understanding how climate change-associated risks affect diverse populations in Canada. To address these gaps, the first article of the thesis asked: In the Canadian context, what are the impacts and implications of climate change and weather extremes on the physical and mental health of those experiencing poverty, as evidenced in the peer-reviewed academic literature? To answer that question, the first article presents a scoping review of peer-reviewed literature on climate-related risks in Canada and focuses on exploring how the climate crisis is exacerbating health inequities in Canada, disproportionately impacting those experiencing poverty.

Secondly, the thesis moved beyond merely highlighting the uneven effects of climate change to also showing how vulnerability can also be produced through governance processes with the second and third papers. To do so, in the second article, the thesis developed an integrated analytical framework to examine participation and inclusion in climate and energy governance. Additionally, the thesis uses different data collection and analysis methods. While it uses document analysis and qualitative content analysis for the second article, for the third article it applies qualitative thematic analysis for analysing semi-structured interviews with government officials, community members, and intermediary actors. These studies explore how principles of climate and energy justice, particularly procedural and recognition justice, are operationalized in local policy. The Ottawa case studies reveal persistent gaps between formal commitments to equity and the realities of participation, shaped by institutional barriers, technocratic decision-making, and socio-economic marginalization. Barriers such as top-down governance, resource limitations, and power asymmetries restrict meaningful engagement and reproduce existing inequalities.

Thus, the thesis comprised of the three articles highlight the unequal impacts of climate change and energy transitions, the limitations of current policy frameworks, and the need for more participatory, justice-oriented approaches. The thesis contributes to scholarship on climate and energy justice by integrating evidence on health vulnerability with practical insights on municipal governance. It also provides a foundation for designing policies that reduce inequities, strengthen inclusion, and foster equitable climate and energy transitions in Canada.

Keywords

Climate Change, Energy Transitions, Climate Justice, Energy Justice, Health Inequities, Poverty, Municipal Governance, Public Participation, Social Inclusion

Co-Authorship and Individual Contributions

The first article was developed as a collaborative research project with the Centre for Addiction and Mental Health based in Toronto, Canada and was co-authored with Mariya Bezgrebelna, Yaa S.A. Amoah, Donna Atkinson, Susan Bell Chiblow, Mardi Daley, Julie L. Drolet, Amber Fletcher, Sherilee Harper, Glen P. Kenny, Leanne M. Lacap, Kwame McKenzie, Abhay Sachal, Pierre Valois, Gregor Wolbring, Edward C. Xie, and Sean A. Kidd. This multi-author collaboration was very helpful for conducting my research as it brought together expertise across climate change, public health, equity, and vulnerability research, and contributed to strengthening the scope and interdisciplinary nature of the scoping review.

In practical terms, my contributions included both original draft writing and writing during the review/editing process, performing the formal analysis of the article and data curation. I was directly involved in literature screening and extraction, as well as evidence synthesis and analysis across included studies and writing of and editing of the core content of the manuscript. I worked on these aspects of the article with the lead author (Mariya Bezgrebelna) and the senior author (Sean A. Kidd), who also led the conceptualization, project administration, methodology, and funding acquisition for the project. The remaining co-authors contributed to the conceptualization, methodology, and investigation phases of the scoping review, as well as to the review and editing of the manuscript. While this was a large and multi-disciplinary collaboration, my role was substantive and extended across the analytical and writing dimensions of the work.

The second article was solely authored by me. I was independently responsible for all stages of this manuscript from conceptualizing the framework for analysis; searching for and synthesizing scholarly literature on energy justice, and procedural and recognition justice; translating justice criteria into operational indicators; applying that framework to Ottawa's Community Energy Transition Strategy (Energy Evolution); and ultimately drafting, revising, and finalizing the article. Despite being the single author, my advisor Dr. Kelly Bronson offered critical feedback and reviewed the article at all stages of manuscript development, from the initial conceptualization/framing stage through to the refinement of the analytical framework and the final revisions. Her input was very valuable, as it sharpened the clarity and rigour of the work, though all substantive intellectual contributions, analytical decisions, and writing.

The third article, co-authored with my supervisor Dr. Kelly Bronson, benefited immensely from her close collaboration in guiding the overall design, supporting the analysis of interview data and, particularly, helping me interpret results about participatory and inclusive climate and energy transition governance. My own contributions to this article were extensive and spanned all major phases of the research process. I was responsible for conceptualizing the research questions and the research design (including the selection of qualitative semi-structured interviews), creating the interview guide, identifying and recruiting study participants and completing all interviews. I completed the transcription and coding of the interview data, led the analysis and thematic interpretation of findings with regard to the literature on procedural and recognition justice and municipal climate governance. I also took primary responsibility for the writing of the manuscript, including the literature review, methodology, results, and discussion sections, and led the revision process through successive drafts. Dr. Bronson's contributions were focused on supervisory guidance, including crucial feedback on the major stages of the research process and manuscript writing, as well as critical reading and editing of the article, resulting in its significantly improved quality.

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Terminology and Key Concepts

Before proceeding, it is necessary to introduce and define the key terminological concepts that appear in the thesis and justify choices made regarding conceptual use. For some terms, such as energy transition, climate and energy transition, energy justice, climate and energy justice, climate and energy governance, vulnerability, marginalization, and decentralized or democratized energy systems, they circulate in the literature in overlapping and sometimes inconsistent ways, which requires a clear statement of use.

Energy transition and climate and energy transition. The most common term used in the discussion is energy transition, as defined by Sovacool (2016), a structural change from one form, style, state, place, or scale of energy system to another, encompassing technical and technological change, changes in the political and regulatory structure, pricing regimes, behavioural change of users and producers (Sovacool, 2016; Melosi, 2010; Child and Breyer, 2017). The processes occur at different scales, including municipal, sub-national, national, and international and are influenced by a range of social factors, including knowledge, motivation, norms, and values – and not only by technological and economic factors (Steg et al., 2015). This thesis also uses climate and energy transition as well as energy transition alone, in order to signal that the shifts under examination are specifically those driven by the imperative to reduce greenhouse gas emissions and address climate change, which is, low-carbon transitions motivated by climate science and climate policy commitments rather than historical energy transitions driven by resource availability or economic change alone. The two terms are used interchangeably in the literature; wherever this thesis uses energy transition alone, it refers to the same climate-driven process.

Energy justice and climate and energy justice. A working definition of energy justice is set by Jenkins, McCauley, Heffron, Stephan, and Rehner (2016) in their foundational conceptual review as "an overarching social science research agenda that aims to bring principles of justice to energy policy, energy production and systems, energy consumption, energy activism, energy security and climate change." Within their definition, they describe three justice tenets-distributional justice (concerned with fairness of the distribution of burdens and benefits of the energy system), procedural justice (mandating equitable involvement by all stakeholders in decision-making processes related to energy use with processes being transparent, impartial, and participatory), and recognition justice (enforcing that everyone and especially, historically marginalized populations should be given fair regard and political recognition with respect to their status within energy systems) (Jenkins et al., 2016). A complementary framework advanced by Sovacool, Heffron, McCauley, and Goldthau (2016) proposes eight core principles, such as availability, affordability, due process, transparency and accountability, sustainability, intra-generational equity, inter-generational equity, and responsibility, which together operationalize what a just energy system would look like in practice (Sovacool et al., 2016). The framework of Jenkins et al. (2016) is the overarching one used in this thesis, as it most directly structures the evaluative tools developed in the second article and the empirical analysis conducted in the third. The term climate and energy justice is also used when the thesis also refers specifically to justice concerns arising at the intersection of climate policy and energy governance, which is, when the distributional, procedural, or recognition dimensions of justice apply also to decisions about how municipalities pursue decarbonization and who bears its costs and benefits in addition to the concerns of energy justice. The two terms are otherwise used consistently with the Jenkins et al. (2016) definition.

Climate and energy governance. The use of governance in this thesis conforms to the broad conceptualization of climate governance by Bulkeley & Betsill (2005), who define climate governance as involving not only

formal governmental institutions but the diverse actors, networks, and processes across scales and sectors through which collective decisions about climate and energy are made, implemented, and contested. This multi-level understanding is essential. As Bulkeley and Betsill argue, climate and energy governance occurs through interactions between local, national, and transnational spheres of authority, and municipal governments are embedded within this structure in ways that both enable and constrain their capacity to act. It is in this sense that the term governance of the climate and energy transition is applied in this thesis, in reference to the governance of decarbonisation, such as the arrangements, institutions, procedures, and mechanisms through which municipalities and communities themselves influence the nature, pace, and distributional impacts of the low-carbon transition. This is distinguished from governance of the energy system in its steady state, as the focus is on the governance of change.

Vulnerability and marginalization. Other two key concepts underpinning this thesis, and which are discussed in more detail below, are vulnerability to climate change and marginalization. In line with the definition used by the IPCC (2022), vulnerability to climate change is defined as the tendency or predisposition of individuals, groups, or communities to be adversely affected by climate hazards, not only due to their exposure to the physical risks but their sensitivity and adaptive capacity (determined by social, economic, and institutional factors). The former definition is largely a physical risk definition; the latter more relational, including a focus on coping and adaptation. Adger and Kelly (1999) provide a more relational definition, describing vulnerability as the state of individuals, groups and communities in relation to their ability to cope with and adapt to external stresses on their livelihoods and well-being, which is a definition that emphasizes the social and institutional determinants of adaptive capacity rather than viewing vulnerability as a fixed physical attribute.

Marginalization, on the other hand, according to Wisner et al. (2004), refers specifically the exclusion or marginalization of a person or group based on their individual social characteristics such as age, gender, sexuality, ethnicity, race, disability, class or education. This thesis uses the concept of vulnerability to refer to the physical and health consequences of climate change as conceptualized in the first paper; and marginalization is employed to refer to exclusion from climate and energy governance in the second and third papers. While distinct in an analytical sense, vulnerability and marginalization are deeply interconnected, as the most marginalized within the governance arena are frequently the most vulnerable to the physical effects of climate change. This thesis treats the relationship as central, not coincidental.

Decentralized and democratized energy systems. The literature uses decentralization and democratization as related but distinct concepts that are sometimes conflated. Decentralization is concerned primarily with structural change in the energy sector; the shift from large, centralized energy generation and distribution infrastructure to distributed generation resources, community-scale generation and local control over energy assets (Feldpausch-Parker et al., 2019). Democratization, or energy democracy, on the other hand, is more fundamentally a political term. Energy democracy is defined by Szulecki (2018) as a social movement and a theoretical frame wherein popular sovereignty and participation and community ownership of energy systems, which involves efforts to resist legacy centralized systems, reclaim energy infrastructure for distributed economic and political benefit, and restructure energy governance to support community-based decision-making authority (Szulecki, 2018; Burke and Stephens, 2018; Szulecki and Overland, 2020). Energy democracy research is furthermore defined as an effort to analyze, critique and theorize transitions to a new energy system on the basis of democratic inclusion and argue for practice which is informed by research that make energy decisions as democratic as possible (Feldpausch-Parker et al., 2019). In this thesis, I use the term decentralization to denote structural transformations in the energy system (e.g., installation of rooftop PV,

batteries, community-owned generation) while democratization refers to the governance dimension in terms of who decides, who owns, and who rules the system.

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Chapter 1

General Introduction

Climate Change, Poverty, and Health Vulnerability in Canada

Human-driven climate change poses serious risks to human health, both through its direct effects and by undermining the natural and social systems that support well-being (Romanello et al., 2023). While there are some indications of progress in global efforts to tackle the main drivers of climate change, two major problems remain: first, current efforts are still not sufficient to address climate change, and second, climate change and climate policies have placed certain populations at greater risk than others.

A 2018 report from the United Nations Environment Programme highlighted that most G20 nations, including major emitters like the United States, Russia, and China, are far from fulfilling their 2030 Nationally Determined Contributions (NDCs), crucial to limiting global temperature increase to well below 1.5°C above pre-industrial levels (United Nations Environment Programme, 2019). Canada, though less impacted than many countries, is facing an array of direct and indirect environmental risks to health and well-being that are increasing. While vulnerability to climate change is generally understood and discussed, many gaps are evident in how climate change-associated risks affect diverse populations in Canada. Thus, there was a need to undertake a comprehensive review of the state of the evidence to the best of our knowledge. Thus, the question posed in the first article is: In the Canadian context, what are the impacts and implications of climate change and weather extremes on the physical and mental health of those experiencing poverty, as evidenced in the peer-reviewed academic literature? By addressing this question, this review focuses on exploring how the climate crisis is exacerbating health inequities in Canada, disproportionately impacting those experiencing poverty.

From Global Energy and Climate Policy to Municipal Climate and Energy Justice Gaps

Also, the latest REN21 Report (2025) indicated that in 2024, 741 GW of new renewable energy capacity was added globally, which set a record as the largest annual increase of renewable energy capacity ever seen with solar PV representing approximately 81% of the newly installed capacity. The deployment of battery storage also reached unprecedented levels, propelled by declining costs and increasing recognition of storage as essential for grid reliability (ibid). However, the reports also pointed out that countries are lagging behind the requirements set by climate-driven scenarios. As Rana Adib, executive director of REN21 noted, “We are deploying renewables in record numbers, but we are not building the systems needed to transition to a renewables-based economy” (Reuters, 2025). Despite the record levels achieved in 2024, the estimates of the latest REN21 report (2025) show that there is still a need for an approximately 800 GW more addition of renewable energy capacity world-wide to reach the internationally agreed target that calls for a tripling of renewable energy by 2030. Also, in spite of its leading role, the yearly growth rate of solar PV power capacity increases dropped to 32%, compared with 82% in 2023 and 35% in 2022 (ibid). Additionally, while electric vehicle sales also reached a record level in 2024, the growth rate of EV sales globally dropped to 25%, down from 34% in 2023 and 55% in 2022 (ibid).

One of the reasons why countries fall short of their internationally agreed targets is that many countries started either taking a reverse action on or delaying their transition and climate targets (Dale, Krawchenko, & Lindquist, 2023). As an example, the EU delayed the enforcement of stricter CO₂ emission regulations that were

set for 2025, while New Zealand lifted its prohibition on offshore oil and fossil gas exploration and removed subsidies for electric vehicles (REN21, 2025). The situation in North America was indifferent from the countries that rolled back or slowed down their energy transition and climate measures. At the beginning of 2025, the newly elected U.S. government withdrew from the Paris Agreement once again while promoting fossil fuel expansion and decreasing its investments and support for renewables and climate-related projects domestically and internationally (ibid).

In Canada, while initially praised by critics and the provinces, electoral changes in four provinces have caused some premiers to oppose the federal government on enforcing a carbon tax, even though the majority of economists and climate scientists consider it one of the most effective methods to alter societal and economic behavioral trends (Dale, Krawchenko, & Lindquist, 2023). In the past two years, the Conservative Opposition Leader has led his “axe the tax” campaign, reaching a peak with former Prime Minister Trudeau’s successor, Prime Minister Mark Carney, abolishing the tax on the day he got into office (ibid). Also, despite their involvement in current climate leadership discussions, major Canadian oil and natural gas producers continue to operate with a 'business-as-usual' approach. According to a 2021 report by Environmental Defence Canada and Oil Change International, these companies aim to grow annual production by roughly 30% above 2020 levels, potentially driving a 25% increase in GHG emissions, highlighting that without decisive action from federal and provincial governments, this trajectory could render their climate targets ineffective. Recent developments have become even significantly more intricate due to President Trump’s election and his early statements regarding tariffs with Canada, the US exit from the Paris Agreement, and his goal to boost domestic oil and gas production (Dale, Krawchenko, & Lindquist, 2023). These developments have changed the conversation around climate policies in Canada, as Alberta aims to protect its oil and gas exports to the US and broaden its reach to other global markets (ibid).

Alongside the inadequacy of global and national efforts to accelerate the energy transition, there is a substantial concern that energy transitions could also create injustices and reproduce already existing ones if energy policies are not framed through a question of justice (Jenkins et al., 2017). This has resulted in the growing energy justice literature, which develops a justice-focused framework for examining energy systems and policies and provides grounds for policymakers to better understand the necessity of embedding justice principles within energy policy processes.

There is compelling evidence from this literature that renewable-energy policies often place greater emphasis on technical targets than social impacts (Finley-Brook & Holloman, 2016). Public participation continues to be restricted by elite-dominated narratives, inadequate procedural structures, and long-standing power imbalances (Wagner et al., 2016; Radtke, 2025), and low-carbon initiatives can reproduce or even potentially worsen existing inequalities when costs and benefits of energy transition are not equally distributed and corresponding vulnerabilities are not addressed (Sovacool et al., 2019; Śmiech, Karpinska & Bouzarovski, 2025). The transition pathways have also faced with widespread mistrust, limited local autonomy, and inadequate attention to community-specific vulnerabilities, particularly for Indigenous peoples, women, and other equity-deserving groups, reinforcing energy transition pathways shaped largely by technical expertise rather than social inclusion (Končalović et al., 2023; Walker et al., 2019; Lieu et al., 2020; Duran et al., 2024).

Why Participation and Inclusion Matters in Energy Transition Governance

Democratizing energy governance is usually defined as the increased participation in and control of energy systems by non-traditional actors, including citizens, civil society organizations, and historically marginalized groups, who are often excluded from conventional energy governance structures (Feldpausch-Parker et al.,

2019). Energy democracy literature conceptualizes this not only as formal participation in consultation processes, but as a shift toward greater distributed control over energy decision-making, ownership structures, and governance arrangements, thereby challenging the concentration of authority among utilities, governments, and private developers (Feldpausch-Parker et al., 2019).

When it comes to the benefits of democratized and participatory energy transition governance, one of the central arguments in the literature is that public participation, if performed genuinely, contributes positively to the social acceptance and legitimacy of energy infrastructures and transition projects. Indeed, drawing on evidence from multiple Canadian energy developments, Shaw et al. (2015) clearly showed that people's reaction to energy projects are affected not only by their environmental effects or their technical effectiveness but also by people's views about whether decision-making processes are fair, open, and accountable, and whether they have meaningful opportunities to participate in decisions. Communities react to new energy projects with protest or acceptance depending on their belief about the nature of decision-making process. They feel their needs or concerns are ignored by the project developers when they feel that "processes were rushed, exclusionary or insensitive to the issues of public concern" (Shaw et al., 2015). In contrary, public acceptance and voluntary participation are boosted when stakeholders feel being adequately included and having influence over decision making process, which in turns fosters their trust toward institutions responsible for the energy projects' administration and proponents and increases their feeling of legitimacy for the project decision-making processes (Shaw et al., 2015). They concluded by showing how fair decision-making processes help build trust, which in turn contributes to greater public acceptance. Thus, public participation does not only embody democratic ideals but can also act as a practical governance tool to strengthen political viability of the energy transition, especially in contexts with renewable energy development, new transmission lines and other energy projects which could face locally induced protest (Shaw et al., 2015).

Another commonly claimed advantage is the redirection of financial benefits towards impacted communities. Using the example of the German experience of renewable energy cooperatives, Yildiz et al. (2015) suggest that citizen-owned organizations in the energy sector are crucial for building public support for renewable energy initiatives through meaningful participation, democratic decision-making, and local ownership. The authors found that cooperatives do not only serve as financial means to invest in renewables but also act as social organizations, stimulating citizenship and enhancing citizen involvement in energy governance. A survey carried out on more than 1,800 members of energy cooperatives indicates that members valued cooperative governance, including the one-person-one-vote principle, equal voting rights and the opportunity of participating independently from their share of capital. Participation in energy cooperatives also raised support for distributed energy systems, local projects and the broader citizen engagement in the energy system.

They also put forward the assumption that participation could foster greater social acceptance of renewables as the results of collective decision-making processes tend to be more readily accepted by citizens than unilateral decisions of energy companies or authorities. However, the authors note that participation has to be more than just participation in formal membership and must also encompass the building of local networks, community interaction and social capital. Finally, they stress the role of trust in reinforcing cooperation, reducing coordination costs and enhancing members' relationships in the context of an ever growing and evolving organization.

A further contribution of participatory energy governance is the enhancement of energy literacy among citizens. Existing research has shown how community-based renewable energy initiatives do not only result in cleaner energy production but also in learning spaces, where citizens learn from one another and jointly build knowledge about energy systems, sustainability and governance (Duguid, 2007). Through participation in

meetings, decision-making processes, and project development, members learn about the technical side of energy production (renewable technologies, grid integration, efficiency measures) as well as the political and institutional aspects of the energy transition. Learning in green energy cooperatives often seems to occur informally and experimentally, rather than through formal training courses (the WindShare case in Ontario illustrates the case), as most members in the analyzed WindShare community indicated having learned a lot in ways which were unintended and were strongly correlated to members' levels of participation.

In addition, inclusive energy governance can bring forward new and innovative ideas that may not emerge within traditional expert-driven planning processes. Engaging the knowledge, experiences, and values of various social groups (including those that face energy poverty or local environmental problems directly) can expand the options and solutions generated through energy planning and policy development, thereby potentially increasing problem-solving capacity and the ability to make responsive, contextually-relevant and adaptable decisions (Feldpausch-Parker et al., 2019).

Finally, participatory and community-oriented approaches to energy governance have been linked to improvements in policy effectiveness and implementation outcomes. A review of community-owned renewable energy (CRE) projects finds that local involvement can strengthen legitimacy, reduce resistance, and improve implementation, for example, leading to fewer delays and conflicts during planning and construction (Berka & Creamer, 2018). These benefits seem to be related to heightened trust between project developers and local communities, perceptions of procedural fairness, and the direct ability of local stakeholders to shape projects and their benefits.

Despite these positive impacts, it is important to recognize that they are not guaranteed. Their effectiveness depends crucially on the quality and extent of participation processes and their institutional framework. Substantive processes, where communities have control over decision-making, benefit distribution and governance, lead to much more positive outcomes (more local acceptance and long-term support). By contrast, more superficial or symbolic forms of engagement, often limited to consultation without real decision-making power, tend to produce far weaker effects and may even reinforce skepticism or resistance if perceived as tokenistic (Berka & Creamer, 2018).

Participation and Inclusion in Ottawa's Energy and Climate Policy: Scope, Focus, and Justification

Before examining how communities participate in Ottawa's energy and climate governance, it is crucial to clarify what exactly constitutes the decisions in question in this thesis. This thesis concerns community participation and inclusion with regard to the specific type of climate and energy policy decisions over which Ottawa possesses municipal jurisdiction. That includes the decisions where community values, place-based knowledge, and distributional judgments are not only relevant but necessary, and where no technical expert can substitute for the input of those who live with the consequences. Thus, the domain of study is intentionally bounded. It does not include overall electricity market design or rate setting and dispatch (governed by the provincial Ontario Energy Board and Independent Electricity System Operator), or the nationally and provincially determined vehicle fuel efficiency standards or building codes. It should also be noted that Hydro Ottawa is simply a distribution utility governed by an OEB license; although the electricity it distributes is transmitted to within Ottawa's service territory, it neither generates the power nor sets the rates. These are genuinely technical and regulatory domains where expert authority is both appropriate and legally mandated. The participation and inclusion claims advanced in this thesis are therefore directed at a specific set of decisions

where Ottawa's municipal government holds real authority and where the exclusion of community voices produces decisions that are both less legitimate and less effective.

The first, and most legally grounded domain, involves siting and zoning of energy infrastructure projects such as renewable energy generation facilities and battery storage facilities. In 2019 Ontario repealed the Green Energy Act, which had previously stripped municipalities of planning powers over energy projects and allowed provincial approvals to supersede local zoning, but the Green Energy Repeal Act, 2018 restored such powers to municipalities like Ottawa (City of Ottawa, Engage Ottawa, REGF and BESS Provisions, 2024; Ontario Government, Green Energy Repeal Act, 2018). This power has direct and practical relevance to communities. For example, in 2024 and 2025, two large, transmission-scale Battery Energy Storage System projects were procured by IESO within Ottawa's rural Wards 5 and 21-a decision which, as a technical determination regarding system capacity, was outside the community's decision-making jurisdiction. Ottawa City Council, however, ultimately decided where on Ottawa land the batteries would be placed, under which zoning by-laws they would be operated, and whether to grant the Municipal Support Resolution the IESO's own procurement procedures mandated (City of Ottawa, Memorandum on South March BESS MSR, 2025). In December 2025, 21-4 Council approved the Marchurst BESS project in Ward 5, after residents of West Carleton-March, in a public consultation process initiated through Engage Ottawa, offered input which directly informed the zoning conditions imposed on the facility (The Energy Mix, 2025). It is the type of decision sequence that this thesis is interested in: the process of provincial decision-making around system needs and the siting process conducted by the City and including the community. This thesis is not concerned with the participation in market design, but participation in the land-use decisions that determine where energy infrastructure is imposed on host communities and on what terms. These decisions are value laden. This decision-making involves difficult trade-offs between system needs and such local interests as the rural landscape, noise, local agriculture and community character. These issues cannot be objectively determined through technical analysis alone, and are thus, necessarily political.

The second domain is municipal energy strategy priority-setting, where Ottawa's City Council and community hold genuine authority over which objectives the city pursues and how ambitiously. Ottawa's Energy Evolution (Ottawa's Community Energy Transition Strategy), adopted unanimously by City Council in October 2020, established a target for a 100 per cent community wide reduction in greenhouse gas emissions by 2050 and identified a portfolio of 20 priority projects ranging from building retrofits, electric vehicle uptake, and zero-emission commercial fleets to renewable natural gas from organics diversion (City of Ottawa, Energy Evolution, 2020). These were not technical decisions requiring expert input to reveal the right answer; the decision to set a 100 per cent target versus a 50 per cent target was a choice of political will about what level of emission reduction ambition a community should attempt to pursue, the sectors in which effort should be prioritized, and in what sequence to achieve these goals in the context of limited resources and potentially competing priorities. The decision-making process involved nine technical working groups, over 45 stakeholder meetings, virtual Sounding Board sessions, public information sessions, and ward- and community-association meetings (City of Ottawa, Energy Evolution, 2020). Stakeholders involved in early stage workshops were asked to suggest project priorities and the most action-oriented interventions that could address the target goals (City of Ottawa, Summary of Short-Term Actions, Energy Evolution Phase 1, Document 2). The City of Ottawa's own Climate Change Master Plan clearly articulates a principle that decisions must include a consideration of "equity and inclusion" (City of Ottawa, Climate Change Master Plan), which this thesis explores in terms of who participated in informing the Energy Evolution strategy and which interests and values informed the direction of energy transition policy within the city.

The third domain is that of demand-side program design and implementation - and particularly Ottawa's Better Homes Ottawa Loan Program (BHOLP) which was launched in November 2021. BHOLP provides up to \$125,000 in low-interest loans for up to 20 years to fund home energy retrofits - including heat pumps, insulation, solar and EV charging stations (City of Ottawa, Better Homes Ottawa Loan Program, betterhomesottawa.ca). The decisions embedded in this program – about which retrofit measures are eligible, what interest rates apply, which neighbourhoods are targeted, how low-income residents' barriers to participation are addressed – are distributional and political. They represent the community's values on issues such as equity and climate change. The program does contain some equity measures; income-qualified households are provided zero-interest loans, administrative fees are waived, and a retrofit project manager provides services for free (Better Homes Ottawa, program documentation). However, due to the nature of the loan, the program is only accessible to property owners-and not to tenants, and given that an increasing share of Ottawans, particularly newcomers, low-income households, and residents of multi-unit buildings-are tenants, this is a considerable gap in coverage. A body of research on Canadian retrofit programs confirms that tenants and residents of multi-unit buildings are among those least likely to benefit, given the complex interlocking barriers of insecure tenure, language, and lack of information (Walker & Day, 2012). This thesis examines whether the design of such programs as Better Homes Ottawa adequately incorporates the voices and circumstances of those it is least likely to reach and whether meaningful participation in shaping the program's terms could close that gap.

The fourth focus area-cross-cutting through all of the first three-is who participates in these decisions. Ottawa's processes to decide on energy and climate policy are theoretically open-Enage Ottawa consultations, committee meetings, technical working groups are open to the public-but they are practically skewed. Ecology Ottawa have documented how "urban planning processes often exclude the voices of equity-deserving communities-such as low-income, newcomer, and other marginalized groups-who are disproportionately affected by climate change. Marginalized communities face barriers to participation in planning processes and consultations, while the interests of a narrow demographic of privileged homeowners are overrepresented" (Ecology Ottawa, Climate Equity, 2025). The results of this structural skew matter in energy and climate policy because, as the literature on energy justice makes abundantly clear, decisions become systematically biased toward the preferences and situations of those who already participate-typically higher-income, English-speaking, property owners-and away from the distributional needs of those who bear the brunt of energy costs and benefits (Jenkins et al., 2016; Sovacool et al., 2016). Addressing this is critically important. The Ottawa Climate Action Fund's Climate Equity grant program explicitly recognizes that achieving Ottawa's net-zero targets by 2050 "requires creating tangible, compelling and relevant climate solutions for all demographics," and that the climate movement must "stop existing in a silo by preaching to the converted while neglecting those who may face obstacles to engagement" (Ottawa Climate Action Fund, *Climate Equity Call for Grant Proposals*, 2025). The City for All Women Initiative and Ecology Ottawa's joint *Building Power to Shape a Climate-Equitable Caring City* workshop series similarly identifies people with wealth and homeowners as "historically over-represented in City Planning consultations," and seeks specifically to support "low- and moderate-income folks, renters, people with disabilities, newcomers, Indigenous people, and other marginalized identities" in participating in the planning decisions that affect their neighbourhoods (CAWI and Ecology Ottawa, 2026).

To sum up, this thesis explores participation and inclusion within four interconnected areas of Ottawa's energy and climate governance: siting and zoning processes that shape the location of energy infrastructure on the city's terms; processes of priority setting and determining the level of ambition and focus of the city's decarbonization efforts; demand-side program design such as BHOLP that determines who benefits from the transition; and barriers that prevent equity-deserving groups from meaningfully participating in any of these areas. These are

the domains where community voices are both legally relevant and democratically necessary. It is not because communities should operate the grid or set electricity prices, but because the energy transition will only be legitimate, durable, and just if the people most affected by it have a genuine role in shaping its direction, distribution, and pace.

Advancing the Assessment of Procedural and Recognition Justice

Moreover, the current literature on justice measures or metrics has been widely limited to one aspect of energy justice, which is distributional justice (Baker et al., 2023; Rios-Ocampo, 2025). As one of the three mainly used tenets of energy justice, this dimension is concerned about an equitable sharing of the costs and benefits of energy systems among all members of society (Walker, 2009; Todd & Zografos, 2005). Thus, the existing knowledge base lacks measurable and concrete criteria for designing and evaluating procedural and recognition dimensions of energy justice, which are the other two of the three widely used tenets of energy justice. The former dimension calls for democratic, fair, inclusive and transparent procedures for energy-related decisions (Walker, 2009; Bullard, 2005; McCauley et al., 2013), while the latter is about identifying and recognizing the diverse needs and challenges of specific social groups, including socially and historically marginalized and vulnerable populations (Shejale et al., 2025; Jenkins et al., 2016; Sovacool et al., 2019). Additionally, many studies in the energy justice literature also highlight that the tenet-based approach has certain limitations (Laes et al., 2023; Bombaerts et al., 2023; Van Uffelen et al., 2024; Wood, 2023; Wood & Roelich, 2020; Wood et al., 2024). First, it lacks conceptual clarity and clear definitions for each tenet, leading to uncertainties about what is just or unjust (Van Uffelen et al., 2024; Wood et al., 2024). Secondly, it does not provide sufficient normative guidance, as there are different interpretations of the tenets, varying due to the existence of different contexts as well as various moral framings and conceptualizations (Wood et al., 2024).

Given that the current academic literature on justice metrics for energy transition policies has overwhelmingly addressed distributional justice and overlooked those two other dimensions (Baker et al., 2023; Rios-Ocampo, 2025), and there is lack of conceptual and normative clarity (Van Uffelen et al., 2024; Wood et al., 2024), there is a pressing need for further research to fill these research gaps. To address these gaps, the second article of my thesis suggests a comprehensive analytical framework for evaluating already existing energy policies and designing future energy policies based on the neglected aspects of energy justice.

Also, it is important to mention that while participation and inclusion are essential elements in achieving just climate and energy transitions at the municipal level, meaningful engagement is often shaped and constrained by socio-economic inequalities, institutional marginalization, and uneven access to time, knowledge, and resources. Through a case study of Ottawa, the third article of my thesis examines how community participation and inclusion are reflected and practiced within municipal climate and energy transition governance using an integrated analytical framework, based on semi-structured interviews with 16 participants in 2025. Two research questions guide this study: how participation and inclusion are practiced in Ottawa's climate and energy transition governance, and what insights emerge for a municipal transition agenda.

Problem Statements of the Thesis

Accordingly, this thesis examines three main issues. One is the lack of knowledge about how the health risks and impacts associated with extreme weather and climate change, a growing global concern, disproportionately affect the physical and mental health of people experiencing poverty in Canada. Second, while distributional justice is well-established within energy justice scholarship and evaluation instruments, insufficient tangible

criteria for procedural and recognition justice exist, and municipal authorities are inadequately equipped to measure whether climate and energy governance is actually inclusive, procedurally fair and attentive to equity-deserving groups. Third, there is a need for more research to be done to understand how participation, inclusion, and recognition of marginalized groups can be meaningfully integrated into decision-making processes. Thus, by combining a scoping review of climate change, poverty, and health vulnerability in Canada with two municipal-level studies of Ottawa's climate and energy transition governance, this thesis explores both the unequal impacts of climate change and the governance structures that can either reinforce or challenge these inequities. Taken together, the three articles highlight the need for stronger evidence regarding marginalization and justice in the context of climate and energy transition and the need for better metrics and governance to ensure that climate and energy transitions do not exacerbate existing inequalities but instead work towards a more equitable and just society.

Research Aim and Objectives of the Thesis

Based on the concerns and gaps identified earlier, this thesis *aims* to examine the intersection of climate vulnerability and governance exclusion in Canada's urban context, by assessing the health impacts of climate change on low-income populations, evaluating the inclusivity of Ottawa's Community Energy Transition Strategy through a justice-based framework, and identifying pathways toward a more participatory and equitable municipal climate and energy transition. Accordingly, the thesis establishes the following *research objectives*:

- 1) To review and synthesize peer-reviewed academic literature on the impacts and implications of climate change and weather extremes on the physical and mental health of those experiencing poverty in Canada.
- 2) To develop and apply an operationalized integrated analytical framework that translates procedural and recognition justice into concrete and measurable criteria, and to use it to assess the extent to which Ottawa's Community Energy Transition Strategy (Energy Evolution) incorporates inclusion and community participation.
- 3) To examine how participation and inclusion are practiced in Ottawa's municipal climate and energy transition governance, and to identify insights for improving a justice-oriented municipal transition agenda.

What Is at Stake? Lessons for Municipal Policymakers, Practitioners, and Researchers

After following the research aim and objectives, each of the three articles has generated concrete lessons that together point to an urgent and interconnected problem: that climate change and the energy transition are simultaneously intensifying existing inequalities and failing to reach the communities most affected by them, and that current governance structures are not yet equipped to address this double failure. This thesis speaks to three overlapping audiences, including municipal policymakers, practitioners, and researchers. When it comes to municipal officials, city planners, and community engagement practitioners not only in Ottawa but also in other municipalities more broadly, it specifically speaks to the people who are tasked with developing consultation processes, managing energy efficiency or renewable energy or retrofitting programs, approving zoning for energy infrastructure and establishing the level of ambition in municipal climate plans. Researchers working in energy justice, climate governance and participatory planning are also addressed by providing empirical evidence derived from a specific context. The thesis also provides both municipal policymakers and practitioners as well as researchers with an analytical or practical tool for combining locally defined standards

of equity and inclusion with external diagnostic tools to develop genuinely inclusive, equitable and participatory climate or energy policies or evaluate present climate or energy policies. Thus, across all three audiences, the thesis offers not only evidence of what is going wrong but practical guidance for doing it differently.

Specifically for the first article, a scoping review on climate change, poverty and health vulnerability in Canada, its main finding is that poor Canadians are disproportionately and compoundedly health-vulnerable to climate change effects from heat waves, floods, food insecurity, wildfire relocation, and declining air quality while remaining systematically underrepresented in both research and policy responses. Here, the lesson for municipal officials is direct: climate strategies developed without understanding poverty-related health vulnerability might overlook residents most in need of protection. Poverty worsens exposure to environmental hazards, it reduces resilience, and intersects race, Indigeneity, housing precarity, and geographies that seldom emerge through conventional consultation processes. Climate resilience planning must therefore be integrated with anti-poverty strategy from the outset, with evidence disaggregated by income, tenure, language, and racialization. A municipality that only track aggregate GHG reductions would have no idea that its most vulnerable residents may be being systematically left further behind. The article also points to a critical research gap in Canada that Canadian research on the climate-health impacts for people living in poverty is scarce, largely non-intersectional, and inadequately addresses the health experiences of low-income urban populations, racialized and Indigenous people, and new Canadians.

The second article responds at the level of governance tools. If the first article shows who is being left behind, the second asks why existing frameworks cannot adequately detect or address the problem and what a more useful framework would look like. The dominant approach to energy justice remains overwhelmingly focused on distributional outcomes, leaving procedural and recognition justice largely unmeasured and therefore unaddressed in practice. Current measures of energy justice remain almost exclusively distributional and do not engage with either procedural or recognition justice. There are simply no widely used, concrete benchmarks or criteria that a municipal official can use to know if consultation was actually inclusive or whether the particular needs of disadvantaged groups were recognized when designing a program. The article addresses this by showing how policymakers and researchers may design their own evaluative tool, one that combines municipally defined standards of equity and inclusion, reflecting the specific values and commitments of their community, with an external diagnostic framework for assessing procedural and recognition justice. The point is not to hand officials a fixed tool but to show a tool can be constructed, adapted to local circumstances and used to monitor past activities and prospectively to embed justice considerations into new ones before inequities become entrenched.

The third article brings these lessons to ground in Ottawa's specific context. Based on semi-structured interviews with sixteen participants conducted in 2025, this article analyzes how participation and inclusion are put into practice, not just "promised" in Ottawa's climate and energy transition governance. It reveals that while the city's climate and energy participation processes are open in name, they exclude renters, newcomers, low-income households, and Indigenous peoples in practice, producing policies that center the needs and interests of more privileged residents. The findings suggest municipal policymakers and practitioners that achieving a just energy transition requires moving beyond consultation toward inclusive co-creation and community ownership models that expand accessibility, strengthen energy literacy, and give affected communities a meaningful stake in decision-making and outcomes. In this sense, Ottawa provides the concrete site of these arguments and findings, yet the framework demonstrated herein, regarding whether there is any exclusion and if yes, how to uncover exclusion, how to develop tools to make exclusion visible and identifiable, and how to redesign

governance to respond, can be applied in any municipality striving to ensure its climate and energy transition does not leave anyone behind.

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Chapter 2

Climate Change, Poverty, and Health: A Scoping Review of the Canadian Context

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Abstract

Introduction: The understanding of the role of climate change in worsening health outcomes and social disparities is growing, highlighting poverty as a key factor amplifying exposure to environmental hazards and as a result of such exposure. However, there has been insufficient focus on the unique risks encountered in Canada, highlighting the necessity for targeted understanding to inform and evaluate effective responses. The question guiding the present scoping review is: In the Canadian context, what are the impacts and implications of climate change and weather extremes on the physical and mental health of those experiencing poverty, as evidenced in the peer-reviewed academic literature?

Methods: A systematic search was conducted within the following four databases: Scopus, PubMed, PsycINFO, and Google Scholar, using key terms related to poverty, climate change, and health and well-being in the Canadian context. Primary research and review articles published in English were included ($n = 28$).

Results: The articles included 23 reports of primary research and five reviews, spanning 2000 to 2022. Six theme areas emerged at the climate change, poverty, and health intersection in Canada: heat, air pollution, food security, pollen, wildfire evacuation, and health systems.

Discussion: Addressing poverty reduction is identified as a critical lever for reducing environmental risks and enhancing resilience, although challenges remain in implementing evidence-based interventions due to significant gaps in knowledge. Future research should consider exploring outcomes disaggregated by sociodemographic factors, interconnections between heat and air pollution, and interventions targeting vulnerable groups.

Keywords

climate change, extreme weather, health, poverty

1. Introduction

Anthropogenic climate change is threatening human health through both direct impacts and damage to the natural and human systems necessary for good health [1]. Concurrently, there are few signs of progress in global efforts to address key drivers of climate change and there is a need to move forward large-scale, equitable adaptation strategies [2]. Canada, though less impacted than many countries, is facing an array of direct and indirect environmental risks to health and well-being that are increasing [3]. Recent examples of these risks include the 2021 Western heat dome and the 2023 forest fires and subsequent large-scale evacuations [3,4]. This review focuses on exploring how the climate crisis is exacerbating health inequities in Canada, disproportionately impacting those experiencing poverty [5]. We consider poverty as defined by Canada's First Poverty Reduction Strategy report, developed in alignment with the United Nations Sustainable Development Goal (SDG) of ending poverty: "[t]he condition of a person who is deprived of the resources, means, choices and power necessary to acquire and maintain a basic level of living standards and to facilitate integration and participation in society" [6] (p. 7). Consistent with Canada's poverty indicators, we consider the following indexes as relevant dimensions of poverty: housing precarity and homelessness, difficulty meeting health needs, food insecurity, low income, and low educational attainment [7].

Despite the general understanding of poverty-related vulnerability within the health literature, many gaps are evident in how climate change-associated risks affect diverse populations in Canada [8]. A review of the state of

the evidence in this area has yet to be undertaken to the best of our knowledge. Thus, the question posed in the present review is: In the Canadian context, what are the impacts and implications of climate change and weather extremes on the physical and mental health of those experiencing poverty, as evidenced in the peer-reviewed academic literature? This review is positioned within the broader international literature and considered from a complex systems perspective [9,10].

2. Methods

This review was registered in OSF Registries (<https://doi.org/10.17605/OSF.IO/MP5S9>). We employed scoping review methods, designed to identify and describe evidence in areas where the topic is complex or is being reviewed for the first time [11,12]. The implications of global climate change are complex and diverse in terms of impacts, affected systems, and the methods used in the associated fields of study. Four databases (Scopus, PubMed, PsycINFO, and Google Scholar) were searched using key terms related to poverty, climate change, and health and well-being in the Canadian context (see Supplementary File S1 for search strategy and Fig. 1 for identification and screening process). These databases were selected based on coverage of topics of interest (PubMed and PsycINFO – biomedical and mental health literature respectively) as well as for multidisciplinary perspectives (Scopus and Google Scholar). The findings are presented in accordance with the PRISMA Extension for Scoping Reviews (PRISMA-ScR) guidelines: Checklist and Explanation [13].

The articles' publication timeframe does not have a defined starting point, with publications considered until June 2024 (for Google Scholar – October 2023). We did not have pre-determined types of information sought as we aimed to explore the broad understanding of the interplay within the nexus of interest (see Table 1 for a full list of inclusion and exclusion criteria). Covidence software was used to manage references, screen, and select them [13]. Two authors (MB and EA) independently screened titles and abstracts, followed by full-text reviews. Disagreements were discussed and resolved through a third author (SAK) at both stages. Reference lists of the articles selected for review were also screened to identify sources that may have been missed during the search. See Table 2 for data extraction dimensions. Thematic analysis was performed relying on methods described by Baxter et al. [14]. Following Baxter et al. [14], the data extracted from qualitative studies was given equal weight to the data extracted from quantitative studies and reviews. The themes were developed according to their relevance to the research question posed by this review rather than the centrality of the evidence in the articles analyzed.

3. Results

28 peer-reviewed articles met the criteria for inclusion. The articles included 23 reports of primary research (18 cross-sectional and five longitudinal; 16 quantitative, five qualitative, one mixed-methods, one quasi-experimental) and five reviews (three systematic, two non-systematic), published from 2000 to 2022. Seven articles were focused on the national level, four at the provincial, 11 focused on cities, and six on small regional, small cities and rural communities. Six major thematic areas emerged in the analysis: heat, air pollution, food security, pollen, wildfire evacuation, and health systems.

3.1. Heat

A total of 11 articles covered heat-related issues, with one spanning 10 provinces [15], seven focusing on the province of Québec [16-22] and three on Ontario [23-25].

3.1.1. Urban vulnerabilities

Using Canadian census data from 2006 to 2011, Ho et al. [15] found that, in cities, vulnerability was associated with low-income populations amongst other correlates (e.g., lower education). Benmarhnia et al. [19] conducted a time series study in Montreal and Paris. In Montreal, looking at deaths during the summer months from 1990 to 2007, the authors found disparities in the daily years of life lost, comparing the most advantaged SES group to all other groups in relation to ambient temperature. Bassil et al. [23] observed more heat-related medical dispatch calls by neighborhoods in the down- town core of Toronto during the summers of 2002 to 2005, suggesting a linkage with areas prone to poorer housing conditions.

3.1.2. Adverse health effects

Several studies by Bélanger et al. [16-18] addressed adverse health effects associated with heat. These studies employed a large cross-sectional data set from the most disadvantaged areas in nine cities in Québec. Vulnerability risks included physical inactivity, pre- existing physical and mental health issues, and older age [18]. For all age groups under 65, the prevalence of perceived risk was higher for women than men, with long-term medical leave and very low income, noting that among those on long-term medical leave, 75 % reported yearly income below \$15,000 [16]. Only 12 % of participants sought medical consultation for heat-related adverse health effects.

3.1.3. Older adults

Three studies concentrated on heat risks for older adults. Laverdière et al. [22] conducted a prospective study with older adults (68+ years of age; N = 1233) in Southern Québec, finding that older adults with low household income are at increased risk of presenting at an emergency department for heat-related issues compared to older adults with higher incomes. Using data from 1980 to 1996 on heat-stress-related mortality for older adults in Southern Ontario (64+), Smoyer et al. [24] found that low income was associated with increased heat-stress mortality. Finally, Eady et al. [25] conducted a study using interviews (n = 15) and surveys (n = 244) with older adults in the Waterloo Region. This study indicated that older adults who are aware of their personal risk factors, such as lower income, are also aware of the risks of heat exposure related to these risk factors.

3.1.4. Pregnant women

One Québec study related to heat focused on pregnant women [21], using data from 1989 to 2012 and focusing on May to October. This case-crossover analysis of women (n = 17,172) whose pregnancies were complicated by placental abruption examined the association between the abruption and the maximum temperature reached within a prior week. Among other factors, socioeconomically disadvantaged women were at increased vulnerability of abruption compared to women in other socioeconomic conditions.

3.1.5. Heat action plan (HAP)

Benmarhnia et al. [20] conducted a quasi-experimental study in Montreal, comparing the daily mortality before and after the implementation of a Heat Action Plan (HAP), using data from the provincial death registry. Results indicated that HAP helped to reduce mortality overall. Moreover, for those living in low SES neighborhoods, mortality differences were reduced by 2.48 deaths per day compared to high SES neighborhoods.

3.2. Air pollution

Most studies identified in this review suggest relationships between air quality, vulnerability, and public health

outcomes [26- 29]. An exception was Cakmak et al. [30], who found that air pollutants posed a significant health burden but were not correlated with income level.

Chen et al. [26] employed a population-based cohort design tracking mortality outcomes over a 10-year period, estimating annual mean concentrations of fine particulate matter (PM_{2.5}) based on postal code, and posited that interventions to improve air quality would be particularly beneficial for low-income individuals. Cakmak et al. [27] examined the influence of traffic-related air pollution and socioeconomic status (SES) on respiratory health outcomes for 2,328 children residing in Windsor. They found that children from households with lower income and education levels have a higher likelihood of experiencing respiratory conditions.

Two studies of air pollution in Vancouver were identified. Lin et al. [28] focused on asthma hospitalizations and air pollution in the Vancouver area between 1987 and 1998. They observed that nitrogen dioxide and sulfur dioxide are positively associated with asthma hospitalizations in low SES groups, while no association was found for high SES groups.

3.3. Food security

Several studies pointed to the complex relationship between climate change and food security [31-38].

Batal et al. [31] conducted a cross-Canada participatory study from 2008 to 2018 across 92 First Nations communities to investigate the prevalence and predictors of food insecurity, primarily among on-reserve First Nations households. Climate change was cited as a contributor to food security pressures. In the Fort Albany First Nation community in the western James Bay region, Tam et al. [32] investigated the impact of climate change on traditional environmental knowledge (TEK) and its implications for community well-being. Using semi-structured interviews with 39 participants, the study suggested both direct and indirect impacts of climate change on lifestyle, well-being, and community, emphasizing the vital role of TEK in developing effective adaptive strategies. Ford et al. [33] conducted a systematic review of the human dimensions of climate change in Arctic communities. This review highlighted the impacts of climate change on subsistence harvesting, land-based activities, vulnerability, and adaptation determinants in Arctic communities. It also emphasized the disproportionate health effects of climate change on food security.

Beaumier and Ford's [34] mixed-methods study examined the health ramifications of food insecurity, focusing on Inuit women in Igloolik, illustrating the pervasive nature of food insecurity with environmental conditions described as a key factor. Similarly, Beaumier et al. [35] focused on Inuit women in the Arviat community and emphasized socioeconomic and cultural factors as primary determinants of food security, noting the traditional food system's mitigating role against climate-related risks. In this community, climate change did not appear to significantly impact the food security of Inuit women. However, relying on a limited range of animals (mainly caribou and arctic char) for sustenance increases the vulnerability to potential future disturbances due to changing sea ice conditions.

Drolet's [36] study in British Columbia, involving 121 participants from interior and northern regions, emphasized the influence of local environments on communities' ability to respond to climate change challenges, underscoring the centrality of food security in health and economic impacts. Schnitter and Berry's [37] article urges a multi-sectoral approach for effective adaptation and resilience-building, with a focus on interdependencies in the food system. Finally, Yusa et al.'s [38] review of the North American data on climate change, drought, and human health emphasized the climate-change-related health impacts for people with low socioeconomic status, particularly for persons relying on subsistence fishing and farming.

3.4. Pollen

A single study suggested risks associated with pollen exposure. This study of data from Montreal from 1994 to 2002 investigated the relationship between Ambrosia pollen levels and medical consultations for allergic rhinitis across different socioeconomic groups [39]. This study found a higher medical consultation rate among low-income residents as compared to high-income residents.

3.5. Wildfire evacuation

One qualitative study focused on the consequences of a mandatory wildfire evacuation in Whitefish Lake First Nation 459 in Alberta [40]. Poverty was a significant factor during the evacuation, presenting challenges with paying for necessities like food. While financial support was provided, issues with money management and distribution emerged, causing further stress. The community suffered additional financial strain as not all evacuation costs were reimbursed.

3.6. Health systems

In their systematic review of the Canadian public health adaptations to climate change, Austin et al. [41] concluded that despite increased attention in scholarly work to some populations at risk, such as those living in northern regions, more attention is needed to vulnerable groups. The authors noted that only Health Canada and the City of Vancouver health adaptation initiatives included low-income populations.

One review paper focused on the preparedness of the First Nations, Inuit, and Metis health systems to climate change. Using a vulnerability framework, Ford et al. [42] found poverty to be a significant vulnerability risk for First Nations, Inuit, and Metis people individually and systemically. Poverty was associated with several interconnecting factors, such as living in suboptimal conditions with a range of health challenges, increasing exposure and susceptibility to climatic events as well as specific health outcomes, such as infectious diseases. Further, poverty was associated with reduced ability of First Nations, Inuit, and Metis people to engage in adaptive and protective behaviors.

4. Recommendations

4.1. Heat

Heat-related response domains include urban development, emergency planning, healthcare systems, and identification of at-risk populations. Ho et al. [15] recommend focusing mitigation strategies, such as urban and emergency planning, and improving healthcare coverage, in areas that will be more vulnerable to heat in the future. Bélanger et al. [18] also call for attention to urban development, especially in the disadvantaged census dissemination areas (DAs) of large urban centers. Further, Bélanger et al. [17] indicate that using such indicators as indoor air temperature and health indicators (especially chronic multimorbidity) can be useful for identifying subgroups at risk during hot and humid weather conditions. He et al. [21] emphasize the importance for pregnant women at term to have access to air conditioning and to remain hydrated.

4.1.1. Older adults

While targeting this age group and health vulnerabilities in the context of climate change, the response strategies outlined were not specific to poverty. Smoyer et al. [24] indicated that cities need explicit policies to foster

adaptation while addressing vulnerabilities, including urban planning with increased greenery and increasing the availability of social and health services. Laverdière et al. [22] proposed age-friendly cities to reduce the isolation of vulnerable older adults by promoting social participation. Another example of social participation that can empower older adults is peer support programs [25]. There is also a need for emergency plans. During heat waves, air-conditioned spaces, water fountains and public wash-rooms must be available and accessible [25]. At the individual level, heat alerts and information regarding heat stress and locally available resources may reduce exposure to heat [24,25]. The language of the messaging should be developed in consultation with local communities to ensure that the terminology used is understandable and that the messaging relies on strength-based language, focusing on the abilities of older adults and avoiding disempowering or stigmatizing terminology.

4.2. Food security

Support should be given to growing food locally [36]. Food insecurity should be targeted alongside other poverty-reduction strategies at the municipal and provincial levels. For rural communities, priority should be given to developing social institutions and ensuring the spread of information [38]. To increase the accessibility of traditional foods, efforts are required to support the self-determination and land connection of First Nations, Inuit, and Metis Peoples and to promote collaborative monitoring and protection of local ecosystems [31].

4.3. Wildfire evacuation

Christianson and McGee [40] suggest that wildfire evacuation plans must be specific to the community and that communities would benefit from hiring an emergency manager working full-time. Local leadership should be engaged in developing plans. Financial support should be sufficient to cover the basic needs of evacuees during the evacuation and upon return home.

4.4. Health systems

Austin et al. [41] recommend implementing vulnerability assessments that can inform health adaptation measures at the sub-national level. The UK Climate Impacts Program (UKCIP) Adaptation Wizard is suggested as a tool to guide the implementation of adaptation best practices. Investment in long-term structural changes, including health care access, education, and economic development, will ameliorate poverty, which is key for increasing resilience to climate change and improving health of First Nations, Inuit, and Metis communities [42]. Health planning must include climate change adaptation strategies, including providing guidance by health professionals on practical steps to be taken.

4.5. Future research directions

Future research directions in the context of heat events include collecting diverse demographic data [23] and exploring the interconnections between elevated temperatures and air pollution [15]. Additionally, there is a need to further examine the relationship between heat and placental abruption in pregnant women [21] and explore interventions to limit exposure to air pollutants among different sub-groups [27]. For First Nations, Inuit, and Metis Peoples, there is a call for greater attention to mental health, research into vector-, food-, and water-borne diseases, examination of changes in availability of traditional foods, and exploration of food insecurity, especially among women [33,36].

5. Discussion

This scoping review was designed to assess the current state of knowledge related to poverty, climate change, and health in Canada. Given the well-recognized ‘threat multiplier’ nature of the environmental risks faced by people lacking resources, the evidence generated in Canada related to this topic is sparse. Nonetheless, there are some clear parallels to findings from other countries. For example, vulnerabilities to heat in low-income neighborhoods due to poor climate resilience resource access have been well-established in U.S. studies [43]. Factors such as energy poverty and limited access to information and support are also regularly seen to increase illness morbidity and mortality risks for older adults [44] and for pregnant women, attended by risks to developing fetuses [45]. Air pollution risks, exacerbated during events such as fires, have also been established as having heightened health impacts as a function of income and poverty in other jurisdictions (e.g., UK [46]). Similar parallels are found in food security research (e.g., U.S. [47]), vulnerabilities during wildfire evacuation (Australia, U.S. [48,49]), and vulnerabilities to pollen-induced asthma (global [50]). Risks in all areas are compounded greatly in low-income countries [51]. At the same time, one of the key gaps in literature found in this review is the limited attention to mental health. Global literature suggests that the links between climate change and poverty will exacerbate both physical and mental health issues (U.S., global [52,53]). Further, the implications of climate change on the health and well-being of marginalized populations living in poverty are largely absent. For instance, disability is associated both with economic disadvantages (e.g., Canada [54], Europe [55]) and greater susceptibility to climatic events [56] yet is poorly covered in academic literature [57]. Such interconnections need further consideration in the Canadian context.

Systems-level response efforts in Canada, such as Vulnerability and Adaptation assessments [58] and the National Adaptation Strategy [3] align with many of the themes emerging in this review. These themes include ensuring broad representation in the design of responses, including Indigenous leadership, fostering resilience and sufficient infrastructure within all affected communities, and constructing learning systems in which representative data informs responses that can be tested, scaled, and iterated upon [3,64]. The literature identified in this review, and from other comparable countries suggests a need for poverty to have a more prominent place in such systems-level strategies. Poverty is, arguably, more than one consideration amongst many but, rather, a key point of intersection for many types of risk and many types of vulnerability. Similarly, poverty is likely a target for intervention that needs to be highlighted to a greater extent.

In terms of specific interventions, one of the more striking gaps identified in this review was the absence of trials and case studies of interventions at any level – from individual to systems/policies. This has been observed in other countries as well and has led to calls for rapid assessment and outbreak science models to speed up cycles of evidence response in emergencies such as the climate crisis [59]. In terms of prioritizing interventions, as noted above, one of the most leveraged domains is likely poverty reduction. Improved access to quality housing and physical environments, and other determinants of health, such as equitable access to infrastructure that fosters climate resilience (e.g., access to health facilities and relevant education), greatly reduces exposure to direct and indirect environmental risks and improves the ability to adapt. There is a clear consensus on this point from various sources, including Sustainable Development Goals [60], the Canadian Climate Change Health Assessment [61], the IPCC [62], and local assessments, such as that of Toronto Public Health [63]. While broad imperatives in this area are important, it is clear that the significant evidence gaps described above will hamper implementation. These gaps include attention not only to the intervention implications of how poverty is experienced by individuals and communities, but also intersections with specific environmental risks. Finally, the lack of specificity in this area likely increases the risk of problems such as ‘othering’ or individualizing problems associated with poverty leading to stigmatization, a lack of systems-focused responses, and less impetus for action.

A final point relates to the high level of complexity in considering climate change, environmental risks, intersecting vulnerabilities, resources, and vital knowledge lying behind the extremely broad construct of 'poverty'. An intersectional approach can help differentiate experiences of poverty in climate change, disrupting homogeneous representations of those most affected while valuing their knowledge, agency, and resilience [64]. An intersectional approach draws attention to the social dimensions of poverty and climate change. For example, this review showed that attention to the gender/sex dimensions of poverty and climate change in Canada is limited, mainly focusing on women's physical health and maternal health. Future sex and gender-related research should also move beyond biological risk factors to examine how social phenomena like gender-based violence and women's economic inequity, which correlate with homelessness, precarious housing, and poverty, affect women's experiences of climate hazards [65,66].

The risks presented by climate change in this area are best characterized as complex, dynamic systems [67]. They can also be considered as compound events [68]. There is a need for a progression of science in articulating risks and designing interventions that employ a systems lens. Such work will seek out points of leverage where interventions maximize impact through engaging early in feedback loops of risk and bad outcomes and attending to multivariate, temporally, and spatially compounding events that engage complexity at individual, social, and community levels. Indeed, considering the compounding of risk over time as a function of climate change highlights another limitation in the literature reviewed. While some papers noted the need to plan responses considering worsening conditions, none employed an evidence-based approach with which risk predictions are made based upon the predictive modelling of, for example, worsening heat events. Such information will be essential in designing responses, for those built based on current state modelling will likely prove to be insufficient when applied when conditions will have worsened.

This scoping review has several limitations including a breadth of parameters related to climate-poverty-health. It is possible that the search terms used failed to capture some pertinent papers and a different approach to the constructs studied would yield a different set of results. However, allowing for a margin of error, it is likely that the higher-level assertions made in this paper would likely still stand with respect to major gaps in the information available to date. Further, while this review highlighted some of the issues faced by those experiencing poverty, the disproportionate impacts of climate change on the most vulnerable populations have not been adequately addressed in the literature to date. As Waldron [69] indicates, environmental racism in Canada, which includes lack of representation, poverty, and lack of environmental protections, continually disadvantages Black and First Nations, Inuit, and Metis communities, impeding health equity and social justice efforts.

6. Conclusion

This review provides evidence that validates concerns that climate change has threat-multiplying effects for people experiencing poverty in Canada. The review also highlights a significant problem: the current state of evidence is not adequate to inform equitable adaptation and mitigation responses that account for people experiencing poverty.

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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Supplementary materials

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Fig A. Flow diagram of data evaluation and selection of articles

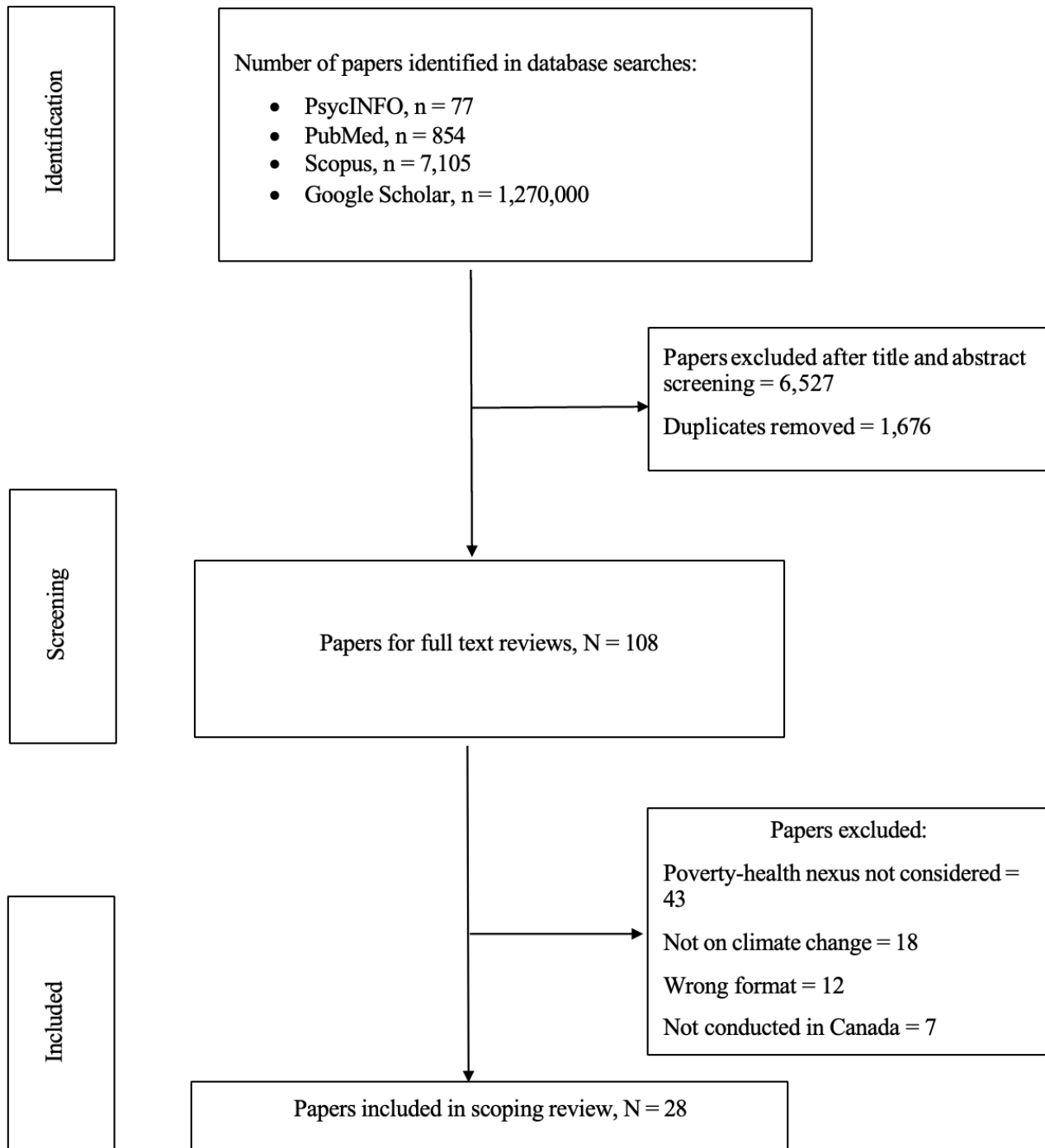


Table A Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Primary research articles with data collected within the Canadian context or review articles based on Canadian literature	All sources other than primary research and review articles (e.g., grey literature, commentaries, books)
Peer-reviewed articles	Articles for which disaggregated data on Canada is not available
Articles published in English or French	Non-peer reviewed publications
Articles addressing variables related to the interconnection between three key concepts of climate change, poverty, and health	Articles published in languages other than English or French
	Articles that do not address variables related to the interconnection between three key concepts of climate change, poverty, and health

Table B Summary of article characteristics and extracted data

Study	Study Design	Methods	Geographic Setting	Climate change	Health	Poverty	Intersectionality of climate change, health and poverty
HEAT							
Ho et al. (2018)	Retrospective study	Developed heat vulnerability indices from Canadian census data between 2006 and 2011 to determine the changes in spatiotemporal heat vulnerability and to identify locations at an increasing risk to extreme heat.	10 provinces	Extremely hot weather resulting from climate change.	Vulnerability to heat-related health outcomes.	Low-income populations (households with income less than \$20000) were studied as part of 8 population groups considered to be associated with heat vulnerability based on literature review.	Low-income populations were found to be one of the most vulnerable groups whose health were impacted by extremely hot weather.
Bélanger et al. (2014)	Cross-sectional study	- Interviews with randomly selected individuals (n=3485) from 9 cities. - Data was collected via a close-ended questionnaire developed from	Quebec	Climate change-related extreme heat and humidity during summer.	Perceived adverse physical and mental health effects.	Low-income populations (annual income below \$15000) were studied as a sub-group of people living in the most disadvantaged dissemination	Low-income populations were found to have a higher prevalence of self-reported health impacts from extreme hot and humid summertime weather.

		a review of literature on the impacts of climate change on the health of a population.				areas in Quebec.	
Bélanger et al. (2015)	Cross-sectional survey	- Interviews with individuals (n=9485) from randomly selected households. - Data was obtained via a close-ended questionnaire generated from reviewing climate change and health literature.	9 largest cities of Quebec.	Climate change-induced extreme hot and humid summer weather.	Self-reported physical health effects which potentially results in medical consultations .	The study included non-randomly selected households with both low-rental and other types of housing. Households with varying socioeconomic characteristics were selected randomly within dissemination areas.	Individuals living in very disadvantaged dissemination areas had a higher incidence of self-reported adverse health effects resulting from extremely hot and humid weather. Very disadvantaged dissemination areas are characterized by low-rent housing, houses needing maintenance and higher air pollution.
Bélanger et al. (2016)	Cross-sectional survey	- Questionnaire-based interviews with individuals	9 largest cities of Québec	Climate change-induced extreme hot and	Self-reported adverse health impacts of extremely	Individuals living in neighborhoods and households	Neighborhood (e.g. level of pollution, walkability), building (e.g. quality of

		(n=3485) living in buildings (n=1647) in the most materially and socially disadvantaged census areas (n=87) in the 9 most populous cities in Quebec.		humid summer weather.	hot and humid weather and adaptation to these conditions.	located in the most disadvantaged dissemination areas were randomly interviewed.	insulation) and other demographic factors are important determinants of self-reported health impacts and adaptation during hot and humid summer conditions.
Benmarhnia et al. (2015)	Time series study	-Used historical data from the summers of 1990 to 2007, and from 2004 to 2009 for Montreal and Paris respectively to estimate daily years of life lost social disparities (DYLLD). -Generalized Linear Models were used to approximate relative risks (RR) for DYLLD and their	Montreal	Rising ambient temperature resulting from climate change.	The relationship between extreme heat and daily years of life lost.	The vulnerability of neighborhoods with varying socioeconomic statuses (measured in terms of neighborhood level of education) to heat mortality was compared as a case study.	Vulnerability to heat mortality was higher in low socioeconomic neighborhoods compared to neighborhoods with higher socioeconomic statuses.

		association with daily mean temperatures.					
Benmarhnia et al. (2016)	Quasi-experimental study	<ul style="list-style-type: none"> - Utilised a difference-in-differences (DID) design. - Assessed the efficacy of the Montreal Heat Action Plan (HAP), effected in 2004, on the mortality through the analysis of Montreal's death registry data for the summers of 2000 to 2007. 	Montreal	Heat waves	The effectiveness of a heat action plan on daily mortality in Montreal.	The effectiveness of the heat action plan among various social groups including populations from neighborhoods with different socioeconomic statuses were assessed.	The heat action plan was observed to reduce the impact of heat on health, including mortality. Among other social groups, the heat action plan was observed to be more effective in reducing heat-related health effects among individuals with low socioeconomic statuses.
He et al. (2018)	Case crossover	<ul style="list-style-type: none"> - Examined 17,172 women who had placental abruption complications in Quebec between May to October 1989-2012 using a case-crossover analysis. 	Quebec/ women whose pregnancies were complicated by placental abruption.	Extreme heat in warmer months.	Placental abruption associated with rising temperatures.	Among other categories, the data on the association of temperature with placental abruption was stratified by the socioeconomic status of women.	Heat was found to be associated with placental abruption complications among pregnant women, especially those at term. Among other factors identified, socioeconomically disadvantaged women were found

							to be more vulnerable.
Laverdière et al. (2016)	Prospective study	Data from the initial follow-up of community-dwelling older adults from the NuAge cohort (2005-2006) in three health regions of Southern Quebec were used. - An Older Adult Health Vulnerability index was created from medical, social and environmental factors specified in Health Canada guidelines (2011).	Southern Quebec (Older adults)	Extreme heat	Heat-related health outcomes (emergency department presentations and health events) among older adults.	Low socioeconomic status (measured as household income below \$20000, primary school level or less, or material deprivation) was studied among 9 risk factors of heat-related health outcomes among older adults.	Low household income increased the susceptibility to both outcomes: health events including death or hospitalizations, and emergency department presentations among older adults.
Bassil et al. (2009)	Retrospective study	- Used historical data for the summer periods (June 1-August 31)	Toronto	Extremely hot weather	Heat-related illness	The percentage of heat-related illness calls was calculated	A higher percentage of heat-related illness calls was observed to originate from

		<p>during 2002-2005 in Toronto, Ontario, Canada.</p> <p>-Used current early warning system and emergency department data from the National Ambulatory Care Reporting Systems (NACRS).</p> <p>- Geospatial methods were also used to map the percentage of heat-related calls in each Toronto neighborhood over the study period.</p>				<p>for all of Toronto's 140 neighborhoods with varying socioeconomic statuses.</p>	<p>downtown Toronto characterized by low-income neighborhoods, poorer housing types, inadequate air conditioning and local heat islands.</p>
Eady et al. (2020)	Mixed methods	- Qualitative interviews (n=15) and a survey (n=244) was used to investigate the	Waterloo Region/ Seniors	Heat waves	Perceived vulnerability to heat-related health outcomes	Seniors' access to resources including income was assessed	- Seniors with more access to resources perceived themselves to be less vulnerable to

		risk perceptions and coping practices of seniors in the Waterloo Region in Ontario, Canada.			among seniors.	among other variables to measure their perceived risk to heat-related illnesses.	the negative effects of extreme heat and weather conditions. Seniors with lower income were at an increased risk and were aware of their elevated vulnerability.
Smoyer et al. (2000)	Retrospective study	Examined the effects of hot weather on health through the analysis of heat-related deaths among older adults (> 64 years) within the Toronto, Hamilton, Kitchener-Waterloo-Cambridge, London, and Windsor metropolitan areas for a 17-year period (1980-1996).	Southern Ontario	Extremely hot and humid weather conditions.	Heat-related mortality among the elderly.	Socioeconomic and other factors characterized by indicators from statistics Canada censuses were assessed to determine their effect on the vulnerability of the elderly to heat stress and their ability to adapt.	Older adults residing in cities with high cost of living are more vulnerable to climate-induced heat-stress mortality as their disposable incomes become too small to afford them air conditioning and other options to avoid heat stress.
AIR POLLUTION							

Chen et al. (2022)	Cohort study	A population-based cohort study using CanCHEC data on 2.7 million adults throughout Canada from 2007 to 2016 was used to estimate the effect of reducing fine particulate matter from anthropogenic sources on public health.	Canada	PM2.5 emissions	Health impacts of the elimination of PM2.5.	To determine the effects of the elimination of PM2.5 on diverse populations, the study was stratified by income and other demographic factors.	The elimination of fine particulate matter (PM2.5) would result in health gains for all the populations studied. This health gain would be more significant for low-income individuals.
Cakmak et al. (2016)	Cross-sectional study	- Examined the relationships among respiratory health, volume of traffic, and air pollution stratified by socioeconomic status measured by household income and education, in schoolchildren (n=3591).	Windsor	Traffic and air pollution	Respiratory illnesses among schoolchildren	The socioeconomic status of children was categorized into three parental/family income levels and three parental/family education levels.	Schoolchildren from low socioeconomic status households were found to be significantly vulnerable to respiratory health issues from exposure to higher traffic volumes and air pollution.

Lin et al. (2004)	Retrospective study	- Analyzed the associations between gaseous air pollutants and the incidence of asthma hospitalization among children between the ages of 6 and 12 from 1987 to 1998.	Vancouver/ children with asthma hospitalization (6–12-year-olds)	Gaseous air pollution	Asthma hospitalization among children	Data was stratified by sex and socioeconomic status (measured by average household income) of the children studied.	For the low socioeconomic status group, sulphur dioxide (females only) and nitrogen dioxide (males only) were observed to be positively and significantly associated with asthma hospitalization among children.
Yang et al. (2003)	Case-crossover	Applied a bidirectional case-crossover method to analyze the association between ambient ozone and hospitalizations from respiratory diseases. Data was collected from the BC Linked Health Dataset for the periods between 1 st	Vancouver/ Children (under 3) and elderly (65 and above)	Ambient ozone	Acute hospital admission for respiratory diseases among children and adults.	Study subjects were categorized into various socioeconomic statuses based on mean family income.	Although ambient ozone was found to be positively associated with respiratory hospitalizations among children and older adults, no variations in association were found among individuals with different household income levels.

		January 1986 and 31 st December 1998.					
Cakmak et al. (2006)	Time series study	The association between daily cardiac hospitalizations and daily gaseous air pollutant concentrations was determined through time series analyses adjusted for temperature, day of the week, relative humidity, and barometric pressure.	10 large Canadian cities	Gaseous air pollution	Cardiac hospitalizations	Individuals were classified based on their sociodemographic status including family income.	Although short-term exposure to an increase in gaseous air pollutants was found to be associated with hospitalization for cardiac diseases, individuals' sociodemographic characteristics such as family income did not influence their susceptibility.
FOOD SECURITY							
Batal et al. (2021)	Participatory study	Used the First Nations Food, Nutrition and Environment Study, which is a cross-Canada participatory study of First Nations adults	Canada, on-reserve south of the 60 th parallel	Climate change	Food insecurity	Households were classified as food secure, or marginally, moderately or severely food insecure based on the	The intersecting effects of climate change, financial constraints and other factors have exacerbated food insecurity among First Nation populations.

		(n = 5,176) from 2008 to 2018. - The Household Food Security Survey Module was also used to capture income-related challenges experienced by First Nations households.				Household Food Security Survey Module (HFSSM) which focuses on self-reported food insecurity due to limited financial resources.	
Ford et al. (2012)	Systematic literature review	- Used a systematic review methodology to identify, select and analyse peer-reviewed literature on the human dimensions of climate change (HDCC) in the Arctic region of Canada.	Nunavut, Nunavik, and Nunatsiavut/ Inuit	Climate change	Food security (access, availability and quality)	The reviewed studies assessed the impact of economic factors on food security.	Majority of the reviewed studies found and documented the indirect effect of climate change on food security through the increased economic burden associated with food availability and access.
Beaumier & Ford (2010)	Case study	- Used semi-structured interviews (n = 36) and five focus groups (n	Ingloolik, Nunavut	Climate change	Food insecurity among women	Through the interviews, poverty was revealed as an important	In Northern Canada where there are limited employment opportunities,

		= 19) with Inuit women, and key informants' (n = 13) interviews with health professionals.				determinant of food security among women.	lower household income and relatively higher cost of living, poverty (and other socioeconomic factors) coupled with climate change (which has limited the availability of country foods) has a negative impact on the food security of women.
Beaumier et al. (2015)	Participatory study	<ul style="list-style-type: none"> -Used semi-structured interviews with Inuit women (n=42). - Focus group interviews with local women, female elders and experienced hunters. - Key informant interviews (n=8). - Participant observation. 	Arviat, Nunavut	Changes in sea ice conditions	Food security among females	Interview participants were purposefully selected to include women who were food secure and food insecure based on their food bank usage and employment status.	<p>Although the food system is vulnerable to the negative impacts of climate change, climate change was not the main determinant of food insecurity among Inuit women in Arviat.</p> <p>The influence of socioeconomic and historical factors was found to be more significant.</p>

Tam et al. (2013)	Semi-directive interviews	Semi-directive interviews with 39 members of the community were held to ascertain their thoughts on climate change and their local environment, and the implications of the changes.	Western James Bay region/ First Nation	Changes in the natural environment (changes in season timings, snow quantity and type, extreme weather events).	Well-being, diet	Participants were interviewed on the impacts of the changes in the natural environment on their socioeconomical statuses.	Climate change had negative impacts on traditional harvesting and hunting activities in the community as well as on the winter road on which they travel to access cheaper necessities including food. This placed a greater financial burden on the community and made many susceptible to poor health conditions.
Drolet (2012)	Qualitative study	- Interviews, focus group discussions, a survey, observations, and documentation (n = 121) were used in collecting data on the experiences of	6 small cities and rural communities in Interior and Northern British Columbia	Climate change	Food security	Individuals' economic status was revealed as an important determinant of vulnerability.	Participants highlighted the impacts of climate change on their communities including effects on their crops and agriculture. Non-climatic factors including economic status increased their vulnerability to

		the community members. - Data collection was done between 2009 and 2010.					these negative effects and reduced their ability to adapt.
Schnitter & Berry (2019)	Literature review	Conducted multiple literature reviews to reveal the interlinkages among climate change, food security and health.	Canada	Climate change	Food security and general human health	The review analyzed the socioeconomic and living conditions of populations and neighborhoods most impacted by distribution challenges in the Canadian food system.	Populations living in food deserts, i.e. neighborhoods with lower income households and relatively fewer food distribution sites and public transportation infrastructure are mostly affected by climate change-induced food disruption. This undermines the food security of such populations and makes them susceptible to negative health outcomes.
Yusa et al. (2015)	Literature review	Reviewed Canadian, U.S and international literature pertinent to	Canada	Climate change, drought	General human health	Analyzed people with low socioeconomic status as part of populations	In the event of a drought, Canadian families with low socioeconomic status are more vulnerable and face

		understanding the impacts of drought and the available adaptations to protect health in the Canadian context.				at risk to climate change and drought, and their ability to adapt.	a greater risk of being food insecure. They also face more difficulty implementing adaptation measures in the face of extreme heat events.
POLLEN							
Breton et al. (2006)	Cohort study	<ul style="list-style-type: none"> - Data on medical consultations for pollen-induced allergic rhinitis were sourced from the Quebec Health Insurance Board. - Data on Ambrosia pollen concentration was sourced from the Aerobiology Research Laboratory. - Data on daily temperature and 	Montreal	Ambrosia pollen concentration	Medical consultations for allergic rhinitis	Household income data for each patient was analyzed using the Forward Sortation Areas (FSAs) as indicator.	A significant association was found between the number of medical consultations for allergic rhinitis and ambrosia pollen levels. People living in low-income Forward Sortation Areas (FSAs) consulted more for pollen-induced rhinitis than those living in high-income FSAs.

		precipitation came from the Meteorologica 1 Service of Canada. -Used the 1996 and 2001 Statistics Canada census data as socioeconomic data.					
WILDFIRE EVACUATION							
Christianson & McGee (2019)	Case study	Semi-structured interviews were held with 45 community members (30 women and 15 men) belonging to different age groups; Elders (n=7), youth (n=10) and older adults (n=28).	Whitefish Lake First Nation 459, Alberta, Canada	Wildfires	Effects of wildfire evacuations on health and well-being.	Poverty came up as an important factor that complicated the evacuation process.	The mandatory wildfire evacuation of the Whitefish Lake FN 459 in May posed significant distress and negative effects to the evacuees. Poverty among other factors exacerbated the level of distress as many of the community members did not have the extra means to pay upfront for the

							costs associated with evacuation.
HEALTH SYSTEMS							
Austin et al. (2015)	Systematic review	Identified and characterized publicly available data on climate change health risk adaptation initiatives among the various Canadian jurisdictions.	Canada	Climate change	Jurisdictional adaptation to climate-change related health risks.	Low-income populations were identified to be more at risk to climate change-related health issues.	The City of Vancouver had identified low-income populations as a vulnerable group to climate-related health risks and had implemented adaptation initiatives tailored to them. Health Canada had also identified low income- populations as vulnerable to heat-related health risks although there were no tailored adaptation initiatives put in place for them. No other jurisdictions had considered low-income populations in adaptation strategies.

Ford et al. (2010)	Systematic literature review	Used a vulnerability framework to systematically review existing literature on Aboriginal health outcomes in the face of climate change.	Canada/ Aboriginal peoples	Climate change	Vulnerability to climate change related health outcomes.	Poverty was revealed as an important determinant of vulnerability to climate change related health outcomes among Aboriginals.	Coupled with significantly higher risk of living in poverty and faced with housing and food insecurity compared to other populations, Aboriginal peoples in Canada are more susceptible to climate-related health risks and have a lower adaptive capacity as many adaptations exceed their financial means.
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Chapter 3

Operationalizing Energy Justice at the Municipal Level: Assessing Inclusion and Participation in Ottawa's Energy Transition Strategy

Abstract

Although there is increasing dedication to building equitable energy transitions, there are ongoing challenges in terms of how justice principles might be embedded and operationalized into municipal energy policy development. This study evaluates Ottawa's Community Energy Transition Strategy and examines how effectively local energy transition planning includes community engagement and the needs of marginalized populations. In this case study, the research examines two specific dimensions of energy justice that have remain underexplored, including procedural justice and recognition justice. Methodologically, the study employs a deductive qualitative content analysis of publicly available policy documents, developing and applying an operationalized integrated analytical framework that incorporates Equity & Inclusion Lens developed by the City of Ottawa and City for All Women Initiative (City of Ottawa and City for All Women Initiative, 2018), and Botes and van Rensburg's (Botes & van Rensburg, 2000) Nine Plagues of Community Participation as analysis tools. The study used NVivo software to develop systematic codes applied to evaluate different themes that pertain to inclusivity and participation. The results show that although the Strategy formally recognizes equity and engagement rights, actual participation remains at the level of consultative and technocratic processes which fail to address power dynamics and representation issues and the lived realities of people from underrepresented communities. Community-driven approaches face additional restrictions because of institutional priorities, higher-level policy constraints, and resource shortages. Thus, the study contributes methodological and empirical insights to the literature on participatory and inclusive energy transitions. It demonstrates how municipal energy strategies can reproduce broader national governance patterns and highlights the need for justice-oriented metrics alongside technical climate targets to advance more equitable and democratic energy transitions.

Keywords

Energy justice, Urban energy transitions, Community participation, Inclusion, Procedural justice, Recognition justice, Municipal governance

1. Introduction

Climate change has become a very critical environmental challenge that the world currently faces. According to a UNEP (United Nations Environment Programme, 2019) report the majority of G20 countries still need to meet their 2030 NDC targets which aim to limit global warming to 1.5°C.

North America's political response is particularly problematic. The United States exited the Paris Agreement in early 2025 while it continued to endorse fossil fuel use and decreased its support for renewable energy sources. The combination of changing provincial governments and federal policy shifts in Canada has created obstacles to climate change solutions since 2024 when the country ended its carbon tax program (Dale, et al., 2023). The major Canadian oil and gas companies keep increasing their output which leads to a potential 25% rise in

greenhouse gas emissions, undermining political targets (Environmental Defence Canada & Oil Change International, 2021), (Dale, et al., 2023).

Beyond global and national inadequacies, energy transitions risk reproducing injustices if policies ignore equity (Jenkins, et al., 2017). The literature demonstrates that renewable energy policies focus more on achieving technical objectives than they consider their effects on society (Finley-Brook & Holloman, 2016). In fact, the elite class and existing power structures control access to decision-making processes, which limits public involvement in those processes (Wagner, et al., 2016), (Radtke, 2025). The implementation of low-carbon programs leads to increased societal divides because their advantages and disadvantages are not distributed equally, placing Indigenous peoples, women, and low-income communities into more risks (Sovacool, et al., 2019), (Smiech, et al., 2025), (Končalović, et al., 2023), (Walker, et al., 2019), (Lieu, et al., 2020), (Duran, et al., 2024).

Moreover, it has been shown that most evaluation metrics have overemphasized distributional justice to ensure fairness in sharing energy costs and benefits (Baker, et al., 2023), (Rios-Ocampo, et al., 2025), (Walker, 2009), (Todd & Zografos, 2005). However, the research on procedural justice and recognition justice needs further examination, which focus on equitable decision processes and acknowledgment of underrepresented communities, respectively (Walker, 2009), (Bullard, 2005), (McCauley, et al., 2013), (Shejale, et al., 2025), (Jenkins, et al., 2016), (Sovacool, et al., 2019). Scholars highlight that unclear conceptualizations and norms create uncertainties about what is just in energy policymaking (Laes, et al., 2023), (Bombaerts, et al., 2023), (Van Uffelen, et al., 2024), (Wood, 2023), (Wood & Roelich, 2020), (Wood, et al., 2024).

This study aims to fill the gaps in scholarship and practice. Using justice frameworks, the study aims to examine an example of energy policymaking at the municipal level. The study develops and tests a framework for analyzing justice of energy policy, applying the framework to the Community Energy Transition Strategy of Canada's capital, Ottawa, as a case study. This research demonstrates how a comprehensive analytical framework can be constructed by integrating internal municipal standards with external diagnostic tools, offering a transferable approach to evaluating existing energy policies and informing the design of future ones through the lens of energy justice.

2. Energy Justice

2.1 Energy Justice in Theory

To understand the analytical lens guiding this research, it is necessary to first unpack what energy justice means and where it comes from. Energy justice, as a framework for critically examining who benefits from, is harmed by, and has a voice in energy systems (Sovacool & Dworkin, 2015), emerged as a distinct field in 2013 (McCauley, et al., 2013). Building on environmental justice traditions, it sharpened focus on energy access, affordability, and sustainability while retaining commitments to empowerment and equity (McCauley, et al., 2013).

Most scholarship operates within the three-tenet framework of distributional, procedural, and recognition justice (Van Uffelen, et al., 2024), (McCauley, et al., 2013). Distributional justice examines how energy benefits and burdens are divided, consistently finding that vulnerable populations bear disproportionate costs, including through technologies poorly matched to local contexts (Walker, 2009), (Todd & Zografos, 2005), (Owens & Driffill, 2008). Procedural justice shifts focus to decision-making processes, asking whether they are democratic, non-discriminatory, and genuinely open to influence (Walker, 2009), (Bullard, 2005). Legal and institutional arrangements are also central here, structuring participation terms and transparency (McCauley, et

al., 2013). In practice, governmental and industrial elites, particularly educated, high-income men, have historically dominated these processes, marginalizing women, youth, minorities, and communities outside fossil fuel networks (Buechler, et al., 2020), (Radtke & Ohlhorst, 2021), (Yildiz & Radtke, 2015). However, meaningful participation requires more than representation; without substantive influence, it risks becoming “tokenism” or “manipulation” (Arnstein, 1969). Genuine procedural justice demands real deliberation (Shejale, et al., 2025) and aligns with energy democracy's goal of centering communities in the transition (Giancattarino, n.d.). Finally, recognition justice addresses the needs of historically overlooked groups, including the elderly, chronically ill, ethnic minorities, women, and gender or sexual minorities, ensuring fair representation (Shejale, et al., 2025), (Jenkins, et al., 2016) and attending to how policies compound existing vulnerabilities (Sovacool, et al., 2019), as illustrated by evidence of heightened energy poverty risks among elderly women living alone across Europe (Pandey & Sharma, 2021).

Re-Defining Energy Justice: the "Five-Tenet" Approaches

Some scholars argue the three-tenet framework requires expansion through “triumvirate+ approaches” incorporating additional tenets (Ayllón, et al., 2025), with cosmopolitan and restorative justice most frequently proposed (Heffron & McCauley, 2017), (Heffron, 2024). Cosmopolitan justice, prominent since 2015 (Sovacool & Dworkin, 2014), (Heffron, et al., 2015), calls for globally coordinated transformation in energy governance, drawing on scientific and epistemic communities (Klinke, 2020) and aligning with the Paris Agreement (2015) and the Convention on Environmental Impact Assessment in a Transboundary Context (United Nations, 1991). However, cosmopolitan justice risks imposing universal solutions that override local contexts and, through its anthropocentric framing, neglects human-nature interdependencies, driving scholars toward more ecologically inclusive frameworks (Tafon, et al., 2023).

Restorative justice, on the other hand, rooted in criminal law's focus on repair and accountability, has been extended to environmental harm and the broader “harm of the Anthropocene” (Wallsgrrove, 2022), entering energy justice debates in 2017 (Heffron & McCauley, 2017). It bridges distributive justice by correcting unfair project outcomes (Hazrati & Heffron, 2021), procedural justice by addressing regulatory failures (Heffron, 2018), (Heffron, 2024), and recognition justice by centering marginalized groups (Salter, et al., 2018), (Fraser, 2008), while foregrounding difficult questions of responsibility and repair that expose entrenched power imbalances (Ayllón, et al., 2025).

2.2. Energy Justice in Practice

In addition to the insufficiency of global and national efforts to accelerate the energy transition to tackle climate change, these initiatives have often also failed on the end of justice concerns. For instance, Renewable Portfolio Standards (RPS), which have widely been used in over half of U.S. states, bring forth the important matters of energy targets but pay little attention what social impacts transitioning to specific renewable resources would have (Finley-Brook & Holloman, 2016). This gap specifically affects marginalized groups, such as African Americans and Latinos, as they remain underrepresented in renewable energy decision-making, particularly in the rapidly growing U.S. solar industry (Finley-Brook & Holloman, 2016). The study also highlights that rooftop solar projects often rely on temporary, unskilled laborers, many of whom accept low wages without benefits due to financial pressures (Finley-Brook & Holloman, 2016).

In Europe, energy transitions frequently fall short on inclusion and community participation. Mainstream media coverage of nuclear energy tends to favor economic and political elites while sidelining NGOs and social movements (Wagner, et al., 2016). Low-carbon transitions cannot sidestep ethical dimensions, as renewable

projects often unevenly distribute costs and benefits, concentrating influence among powerful actors while disrupting vulnerable groups in poverty, rural areas, or with disabilities (Sovacool, et al., 2019). Across 27 EU member states, transitions unsupported by justice-centered policies risk deepening social inequalities despite long-term sustainability gains (Śmiech, et al., 2025). Also, Radtke's (Radtke, 2025) review of 129 studies from Austria, Germany, and Switzerland found that while early engagement can foster transparency and community acceptance, these gains are frequently undermined by power imbalances, late involvement, and low trust, with participation processes favoring consultation over genuine empowerment. Poorly structured engagement can actively increase resistance, while ignoring local contexts and restricting decision-making autonomy further weakens project effectiveness. Communities in Southeastern Europe similarly distrust external actors, fearing benefits would be captured by elites rather than shared equitably (Končalović, et al., 2023).

In Canada, justice considerations have often been overlooked in renewable energy transitions. The Just Transition Task Force addresses procedural justice but largely ignores vulnerabilities and marginalization, leaving recognition justice unfulfilled (Balkissoon, 2018), (Marotta, 2018), (Meyer, 2018). Large-scale hydro projects in Labrador and British Columbia have failed to fully account for Indigenous communities' needs and have sometimes hindered reconciliation efforts (Walker, et al., 2019). While Indigenous organizations participate in about 20% of Canada's electricity generation (Indigenous Clean Energy, 2022), structural changes are needed to ensure meaningful representation, energy autonomy, and local decision-making. Dominant technocratic approaches have historically concentrated power among white male leaders, limiting inclusion of women and Indigenous perspectives (Lieu, et al., 2020). Without addressing the intersectional concerns, energy transitions risk perpetuating inequality rather than promoting a just low-carbon future (Duran, et al., 2024).

2.3 Operationalizing Energy Justice

Several energy justice frameworks have been developed to analyze and guide energy systems and governance (Sovacool & Dworkin, 2015), (Jenkins, et al., 2016), (Bickerstaff, et al., 2013). One widely used framework is the 'principled approach' by Sovacool and Dworkin (Sovacool & Dworkin, 2015), which operationalizes eight philosophical justice concepts into an analytical matrix for evaluating energy policies and technologies. They also propose a decision-making framework for planners, policymakers, and consumers based on principles such as availability, affordability, due process, good governance, sustainability, intergenerational and intragenerational equity, and responsibility (Sovacool & Dworkin, 2015).

Another framework builds on Sovacool and Dworkin's (Sovacool & Dworkin, 2015) concept and earlier work by Hillman (Hillman, 2004), Gross (Gross, 2007), and Deutsch (Deutsch, 1975). Mundaca et al. (Mundaca, et al., 2018) propose a distributive and procedural justice framework, applied to Samsø (Denmark), a 100% renewable energy island, and Feldheim, Germany's first energy self-sufficient settlement. Distributive justice is assessed through cost-benefit allocation, while procedural justice includes representation, consultation access, transparency, and local knowledge (Mundaca, et al., 2018). A similar justice-oriented framework has also been developed by the Dutch municipality of Venlo (van der Kooij, 2025).

However, many studies note shortcomings in these frameworks (Baker, et al., 2023), (Rios-Ocampo, et al., 2025), (Laes, et al., 2023), (Bombaerts, et al., 2023), (Van Uffelen, et al., 2024), (Wood, 2023), (Wood & Roelich, 2020), (Wood, et al., 2024). Most focus on distributional justice, overlooking broader social and ethical dimensions and underemphasizing recognition and energy democracy (Baker, et al., 2023), (Rios-Ocampo, et al., 2025). Policymaking is also weakened by limited conceptual clarity and weak normative foundations, with tenets broadly defined and normative disagreements often ignored (Laes, et al., 2023), (Van Uffelen, et al., 2024), (Wood, et al., 2024).

All in all, existing scholarship offers limited guidance for designing or evaluating energy policies. Procedural and recognition justice remain underemphasized, and tenets are interpreted differently across contexts. Because different moral frameworks can interpret or even create tensions between the tenets, the tenet-based approach alone may not be sufficient to determine what is just or unjust or to guide policy responses (Wood, et al., 2024).

Thus, there is need for a more detailed and comprehensive framework that addresses two important research gaps:

- 1) the dimensions of energy justice that have been insufficiently examined or overlooked in the literature on operationalizing energy justice
- 2) the limitations of the already existing approaches by explicitly defining underlying normative assumptions and translating abstract justice conceptions into clear and operational justice metrics or criteria capable of designing and evaluating energy policies and decisions.

2.4 Research Aim

The aim of this study is to demonstrate how a comprehensive analytical framework can be constructed and applied for designing and evaluating justice dimensions of energy transition initiatives and systematically examine the extent to which community participation and inclusivity are represented within Ottawa's Energy Evolution Strategy and related policy documents.

2.4.1 Operationalizing Energy Justice in the Context of Ottawa's Energy Evolution Strategy

This study examines factors that facilitate or hinder community participation and inclusion in Ottawa's urban energy transition. It focuses on Ottawa's CETS, Energy Evolution, established in October 2020 by municipal authorities with over 40 staff from six departments, around 200 stakeholders from 90+ organizations, and the Climate Change Council Sponsors Group. The program aims to reduce greenhouse gas emissions and guide the city toward a clean, renewable energy future by 2050.

The study specifically addresses participation and inclusion of Ottawa residents, including socially and economically disadvantaged groups, in knowledge creation and policy development related to the energy transition. While literature on community participation and inclusion in urban energy transitions is growing, less attention has been given to developing a clear process that can assess participation and inclusion of marginalized groups in energy policymaking.

2.4.2 Argument

This study argues that Ottawa's CETS is likely to similarly mirror broader Canadian energy policy patterns by prioritizing technical and institutional objectives over social inclusion and participation of communities. This argument is based upon the results of an analysis of publicly available documents related to the Strategy that contains policy commitments, statistical data, expert analysis, and progress evaluations. The analysis reveals that the Ottawa Strategy is likely to reproduce the already existing inequities because of two main reasons. Firstly, it is expected that it has not been acknowledging specific needs of marginalized communities in this policy-making and secondly, decisions have been excluding local communities from meaningful participation and decision-making in the city's transition to clean energy.

2.4.3 Contributions

This study contributes to the literature on participatory and inclusive energy transitions by offering both methodological and empirical insights. Methodologically, it demonstrates how an integrated analytical framework can be constructed to be able to assess inclusivity and community participation, thus offering a transferable approach that municipal staff can apply to evaluate planning, program implementation, and common participation challenges. While the framework uses Ottawa's Equity & Inclusion Lens (City of Ottawa and City for All Women Initiative, 2018), other municipalities can adapt a similar approach with context-specific equity tools. Empirically, the study uses a deductive content analysis of Ottawa's Energy Evolution Strategy to show how a leading municipal energy transition plan reflects broader national policy dynamics.

3. Methodology

3.1. Case Study Design and Methodological Approach

This study adopts an instrumental qualitative case study approach informed by Stake's understanding of case study research and Merriam's emphasis on context-sensitive inquiry (Stake, 1995; Mishra, 2021; Merriam, 2009). Built on an interpretivist/constructivist epistemological base, such a methodological framework suggests that knowledge is not simply discovered but constructed through the interaction between the researcher, the case, and its embedded social and institutional context (Mishra, 2021). According to this perspective, the purpose of case study research should be developing a deep, context-specific understanding of a bounded system rather than isolating variables or creating generalizable models of causality.

Following Stake's methodology, this study focuses on the specificities of a certain case rather than on attempting to generalize findings beyond this case (Stake, 1995). Similarly, according to Merriam, the essence of case study research is providing a "description and analysis of a bounded system" and what matters about the study is "the delimiting of the case, not the method employed" (Merriam, 2009; Mishra, 2021). Following these approaches, the bounded system studied in this paper will be the governance of energy transitions in the city of Ottawa.

The selection of Ottawa does not have anything to do with generalizing from Ottawa as a case for all municipalities. On the contrary, Ottawa has been chosen here due to its strategic significance to study the issues of energy justice and energy governance by the municipalities. In Stake's terms, the study does not regard Ottawa as a representative case, but as a "particular case of interest" that helps understand a larger phenomenon (Stake, 1995; Mishra, 2021). Thus, the strategic importance of the case study arises from its potential to explain energy justice in practice.

3.2. Instrumental Case Study Approach

This particular research takes up an instrumental approach to case study, as proposed by Stake in his typology of case studies. This means that the case study is not conducted with an intrinsic interest in the case itself, but on the basis of its potentiality of shedding light on some other theoretical issue (Stake, 1995; Mishra, 2021).

In this study, Ottawa's Community Energy Transition Strategy (Energy Evolution) serves precisely this purpose. The case is used to examine how procedural and recognition dimensions of energy justice are operationalized within municipal energy governance, and how participation and inclusion are structured in practice. This aligns with Stake's emphasis on "understanding something else through the case" rather than understanding the case for its own sake (Stake, 1995, p. 3; Mishra, 2021).

To be more precise, there were two closely inter-related considerations for selecting Ottawa as a subject of the study.

First of all, the current research focuses on the creation and application of an integrated theoretical framework for analyzing procedural and recognition justice in municipal energy governance. Indeed, Energy Evolution developed in Ottawa in October 2020 serves as one of the more elaborate cases of municipal climate and energy transition policies in Canada. It is embedded within Ottawa's broader Climate Change Master Plan and reflects the city's commitment to achieving ambitious, science-aligned targets, including 100% community-wide emissions reduction by 2050, positioning Ottawa among leading Canadian municipalities in long-term decarbonization planning (City of Ottawa, 2020a; City of Ottawa, 2020b). It is underpinned by a complicated governance mechanism that consists of over 40 municipal employees working for six different departments, around 200 stakeholders from more than 90 organizations, and the Climate Change Council Sponsors Group. It also implies the use of policy documents, roadmaps, and other supporting materials.

From a methodological standpoint, this richness of institutional and documentary material is essential for qualitative case study research. As Merriam (2009) emphasizes, case study research requires a bounded system that can be meaningfully delimited in terms of data collection and analysis. Energy Evolution provides such a bounded system, allowing for systematic engagement with policy texts, governance arrangements, and participatory mechanisms within a clearly defined institutional framework. This boundedness is critical for ensuring that the case remains analytically coherent rather than becoming an unmanageable aggregation of data.

Second, the study sought to investigate whether governance processes themselves may contribute to unequal vulnerabilities during climate and energy transitions. The earlier chapter of the dissertation examined how climate change disproportionately affects vulnerable populations. Building on this, the Ottawa case enables an exploration of whether and if yes, in what ways municipal governance structures, participation mechanisms, institutional priorities, and policy design may reproduce or reinforce inequalities. This reflects Stake's view that case study research seeks to understand the "particularity and complexity" of a case within its real-world context (Stake, 1995; Mishra, 2021). In this sense, Ottawa is not treated as representative or exceptional, but as a meaningful site for examining how inequalities may emerge not only from climate impacts but also from governance arrangements.

Finally, the use of single-case design is justified since the focus of the analysis in this study is not comparison, but rather an in-depth understanding. Stake (1995) and Merriam (2009), for example, emphasize that qualitative case study research focuses on thick description and contextual interpretation, and does not necessarily involve cross-case generalization. The goal of the research is to examine the application of procedural and recognition justice within one particular institution and to identify governance patterns influencing participation and inclusion in practice.

A multi-case approach would certainly allow for meaningful comparative analyses; however, the focus on such comparison might limit the researcher's ability to engage deeply enough with the context in order to develop further the analytical framework proposed. On the contrary, in-depth examination of one case allows for close attention to be paid to the language and practices involved in policymaking, institutional processes, and participatory dynamics of the examined governance process. This approach resonates with Merriam's recommendation to generate "thick description" capturing the interplay of variables in a bounded system (Merriam, 2009; Mishra, 2021).

3.3. Research Questions

This study addresses the two research questions below:

- 1) How can the procedural and recognition dimensions of energy justice be effectively operationalized and translated into concrete, measurable criteria for designing and evaluating urban energy-transition strategies?
- 2) Based on the analytical tools suggested by this study, to what extent Ottawa's CETS and its associated policy documents incorporate participatory and inclusive practices in shaping the city's energy-transition decisions?

3.4. Data Collection

Data were collected through a systematic document analysis of publicly available City of Ottawa materials related to CETS. All publicly available documents related to the Energy Evolution Strategy that could be identified online were reviewed and retrieved. This included formal policy objectives, governance arrangements, implementation plans, technical analyses, pathway studies, progress reports, audits, or performance assessments. Documents were retrieved from the City's official website (www.ottawa.ca) as well as from the website of the Office of the Auditor General of the City of Ottawa (www.oagottawa.ca) and prepared for qualitative content analysis using NVivo 14. This approach enabled the analysis to capture the full policy cycle, from strategic planning and implementation design to monitoring, evaluation, and reporting.

The above-mentioned publicly available official documents that were reviewed include the following:

- *Energy Evolution Strategy (2017)*– Ottawa's long-term plan for a low-carbon energy transition.
- *Energy Evolution Technical Report (2020)* – A technical analysis document outlining the evidence and modelling required to reach Ottawa's climate goals.
- *Audit of the Climate Change Master Plan (2023)* – An independent assessment by the Office of the Auditor General assessing how the City's performance and implementation efforts support its climate goals.
- *CCMP Progress Report (2023)* – A report that tracked how the City is advancing toward the goals of the Climate Change Master Plan, indicating key metrics, achievements, obstacles, and which initiatives are progressing as expected.
- *CCMP Annual Status Update (2023)* – A review that summarizes successes, ongoing initiatives, and performance metrics related to the City's climate commitments, providing updated information on emission patterns and progress on various initiatives.
- *Pathway Studies (Energy Pathway Studies 1 and Energy Pathway Studies 2)*– Background studies that deliver focused analytical support, such as modelling emissions-reduction options and examining technological possibilities.
- *Project Overviews* – A document that provides detailed implementation plans for twenty projects under Ottawa's Energy Evolution Strategy, including their objectives, stakeholders, resource requirements, risks, and expected contributions to emissions reduction targets.
- *Modelling Ottawa's Greenhouse Gas Emissions to 2050: Draft Results* – A technical scenario-modelling document that projects Ottawa's greenhouse gas emissions to 2050 and identifies the specific land-use,

building, energy, transportation, and waste-management actions required under different scenarios to achieve the city's net-zero (100% emissions reduction) target.

- *Summary of Energy Evolution Projects (2020–2025)* – A strategic implementation document that outlines Ottawa's 20 priority Energy Evolution projects, associated investments, emissions-reduction targets, timelines, governance responsibilities, and performance metrics required to advance the city's transition toward net-zero greenhouse gas emissions by 2050.

It is also important to highlight why document analysis was selected specifically. This methodological choice was particularly significant since previous research had already studied stakeholders' perspectives concerning participation and the Energy Evolution Strategy in interviews. For instance, a Master's thesis at Carleton University by Atlas (2021) used semi-structured interviews to explore the process of participation in Energy Evolution. The results revealed that the process was mainly stakeholder-oriented, professionally organized, and technocratic; yet, participation in the process could be considered partially consistent with ecological democracy.

As for this research, it attempted to fill in a somewhat different gap. To put it differently, the present study intended not only to investigate participation experiences but also to uncover how participation and inclusion were institutionally embedded in policy language and planning frameworks. While the previous research mainly concentrated on analyzing participation experience and its perception among actors through interviews, there was nevertheless a necessity to consider policy documents as well, including their institutionalization of participation and inclusion, governance assumptions embedded in the policy, types of participation and the interests it served. Thus, document analysis helped shift focus from participation experience to participation as an institution embedded in urban planning documents and strategies.

This was particularly important because policies are not neutral documents. On the contrary, it defines which areas will be measured, prioritized, financed, and legitimized by a particular governance system. The examination of the policy language helped to identify whether the principle of equity and inclusivity was included or only symbolic.

3.5. Data Analysis

Qualitative content analysis, which systematically interprets textual data by reducing it into analytically relevant categories using a defined coding frame (Mayring, 2014), (Schreier, 2012), is the primary method employed in this study. It has been applied in comparable energy research contexts. For example, Sovacool (Sovacool, 2014) used it to classify 4,444 social science energy studies across twelve categories to map trends and gaps, while Carling (Carling, 2024) applied it to EU policies, including the European Green Deal and the Critical Raw Materials Act, to evaluate just transition principles for Indigenous Sami People.

This study specifically employed the deductive category assignment method (Mayring, 2014), deriving categories from two established frameworks prior to coding: Botes and van Rensburg's (Botes & van Rensburg, 2000) Nine Plagues of Community Participation and the City of Ottawa's Equity and Inclusion Lens (City of Ottawa and City for All Women Initiative, 2018). The former highlighted participation challenges and exclusion patterns, while the latter examined inclusive practices across institutional functions, together enabling a holistic assessment of procedural and recognition justice in Ottawa's energy transition strategy.

NVivo software facilitated the organization, coding, and comparison of textual material across policy documents. More specifically, coding took place in multiple analytical stages. First, all the policy documents were imported into NVivo and read several times, to acquaint the researcher with the structure, language and general governance practices of Ottawa's climate and energy transition policy strategy. At the primary stage of coding, the deductively derived categories from the synthesized framework provided the initial parent nodes within NVivo based on the two analytical frameworks of this study: Equity & Inclusion Lens and The Nine Plagues of Community Participation.

The primary categories under the Equity & Inclusion Lens were Communications; Engaging Community and Staff; Gathering Information/Research; Leading and Supervising; Monitoring and evaluation; Planning: Services, projects, events; Policy development; Recruiting and hiring; Strategic Planning; Training; Working with people. At the same time, the categories related to The Nine Plagues of Community Participation included the paternalistic role of the development professionals, the inhibiting and prescriptive role of the state; the selective participation; the gate-keeping by the local elites; the hard-issue bias; over-reporting of development successes; the pressure for the over-immediate results.

3.5.1. Primary Coding: Text-Grounded Application of Framework Indicators

The coding at the first stage was done with a closely text-grounded approach. The statements, passages or parts of the text were coded based on whether they corresponded to indicators of inclusion, exclusion, technocratic governance, participation barriers or Equity & Inclusion issues. For instance, Communications was assigned to documents referring to transparency, information accessibility, public reporting, public awareness campaigns or the dissemination of information to residents. The extent to which communications were framed as having two-way dialogue rather than a top-down technical flow to residents also influenced coding.

"Engaging Community and Staff" was used for documents referencing consultation mechanisms, collaboration processes, stakeholder engagement structures or community involvement. The degree of inclusivity represented in the passages were judged according to whether residents were in a position to exert a real influence on policy results or if they were in a position to be consulted.

Similar to the above, "Working with People" identified references to vulnerable people, the poor, accessibility considerations or acknowledgment of equity deserving groups. Passages were coded for whether the Strategy made an explicit acknowledgment of varied social effects across demographic groups and provided mechanisms to do so. "Monitoring and Evaluation" captured indications of reports or performance indicators and while both were noted, an attempt was made to see whether social equity and participation indicators went beyond mere technical metrics.

For the Nine Plagues of Community Participation: Paternalistic Role of Development Professionals was attributed to sections where governance structures were presented as being in the hands of technical planning, technical management, and consultant-driven implementation, effectively seeing the public in a passive capacity, as data providers, and beneficiaries of the planning process, but not agents within the process.

Selective Participation was assigned to passages where the structure of participation appeared to be dominated by state, corporate or technical entities with very little of it by marginalized or grass roots communities. Gate-keeping by Local Elites was identified where authority and agenda-setting clearly rested with senior municipal authorities, utilities, consultants, or institutions. Hard-Issue Bias was associated with passages where social

inclusion, participation, and justice were marginal considerations in favor of technical modelling, infrastructure investment, emissions targets or financial optimization.

3.5.2. From Primary Codes to Global Themes

After the primary coding stage, the analysis involved identifying recurring patterns within the coded data. This was done by exploring the relationships, convergences and patterns between different deductive categories, and ascertaining whether the multitude of primary code items indicated significant patterns of governance practice. Based on this iterative interpretation process, similar primary code items were grouped into broader (or global) themes.

For example, the overarching category "Centralized and technocratic governance" emerged from combining "Paternalistic role of the development professionals," "Leading and Supervising," "Policy Development" and "Hard-Issue Bias" based on the fact that these code items generally reveal a pattern of expert-led, top-down, decision-making that relies heavily on the deployment of technical expertise at the expense of participatory governance.

"Selective and uneven participation" also became a broader theme comprised of "Selective participation," "Gate-Keeping by the local elites," "Working with people," and "Engaging community and staff" to capture broader patterns where the existing participatory mechanisms favor the institution-based, technical, powerful participants and exclude equity-deserving citizens and communities.

The category "Over-reliance on technical solutions and narrow success metrics" combined "Hard-Issue Bias," "Monitoring and evaluation," "Gathering Information/Research" and "Over-reporting of development successes" to analyze how the emphasis on the technical side of the transition, through reliance on metrics based on outputs such as technical indicators and reduced emissions, overshadowed the measurement of social equity outcomes.

The theme of "Weak institutional capacity and resource limitation" finally united codes relating to "Communications", "Training," "Recruiting and hiring" and some part of "Planning" and "Working with people" to demonstrate common institutional drawbacks concerning accessibility, training of equity-aware staff and resources to embed principles of social equity within the everyday practice of institutional governance. Moving from deductive framework categories to primary, close-to-text codes to emergent higher-level interpretive themes facilitated a process of consistent, yet exploratory analysis in exploring patterns of participation and inclusion within Ottawa's Community Energy Transition Strategy.

3.6. Integrated Analytical Framework

This study develops an integrated analytical framework combining the Equity & Inclusion Lens City of Ottawa & City for All Women Initiative (City of Ottawa and City for All Women Initiative, 2018) and Botes & van Rensburg's (Botes & van Rensburg, 2000) Nine Plagues of Community Participation to assess inclusivity and participation (Table 1). The Equity & Inclusion Lens evaluates recognition and engagement of equity-deserving groups across functions like communication, policy, planning, and evaluation, while the Nine Plagues uncover structural and procedural obstacles that limit meaningful participation. By integrating both tools, the framework moves beyond noting the presence of participatory arrangements to examining how participation is shaped, constrained, or enabled, and whether inclusion is substantive or merely procedural. It can also guide the design of just energy policies.

The selection of the Equity and Inclusion Lens (City of Ottawa & City for All Women Initiative, 2018) and the Nine Plagues of Community Participation framework developed by Botes and van Rensburg (2000) were motivated by the need to operationalize the recognition and procedural elements of energy justice in a systematic manner to assess municipal energy transition documents.

The Equity and Inclusion Lens was selected because rather than being an abstract framework for assessing normative intent, it is a practical municipal decision support tool embedded within City of Ottawa policy and governance practice. This is beneficial because it contains criteria for evaluating the presence of equity and inclusion in a range of key municipal decision-making domains: communication, community and staff engagement, data collection and research, leadership and supervision, monitoring and evaluation, project and service planning, policy development, recruitment and hiring, strategic planning, training and interpersonal interaction. This is especially relevant to an analysis of energy justice, as recognition justice can be assessed at the level of the policy itself, as well as the processes that are carried out in its communication, design, implementation, evaluation, and monitoring. The Lens operationalizes recognition justice by offering categories through which to observe when and how inclusion-deserving groups are included or excluded across actual administrative functions, instead of treating inclusion as an abstract ideal.

In terms of the second aspect of the integrated framework, it is important to highlight that Botes and van Rensburg's (2000) Nine Plagues of Community Participation framework was chosen to counter an important limitation in energy justice literature, which is the tendency to equate participation with the existence of consultation or engagement processes. While originally created and mostly used to analyze community participation in international development work, it was chosen here because both fields are concerned with governance contexts in which technical expertise, institutional authority, and unequal power relations shape the extent to which communities can meaningfully influence outcomes. The Nine Plagues of Community Participation contributes to an analysis of procedural justice because it provides diagnostic categories for understanding how participation is constrained in practice. These include technocratic domination, paternalistic decision-making, elite capture, exclusion of some stakeholder groups, symbolic consultations, dependence on external experts and local marginalization. These dimensions are directly relevant to analyses of municipal energy transition decisions because they often rely on technical information and highly centralized institutions with considerable technical capacity, as identified by the literature discussed earlier. In this regard, the Nine Plagues enables a systematic evaluation of how participatory processes in energy decision-making serve either actual empowerment or whether it remains symbolic and procedurally formalistic.

Thus, the two frameworks provide a complement to one another. The Equity and Inclusion Lens helps to systematically identify when and how recognition and inclusion are occurring within key municipal governance functions. In contrast, the Nine Plagues of Community Participation interrogates how these participatory processes actually work and if power asymmetries are being challenged or reinforced. Used together, the two frameworks help to not only identify the presence or absence of recognition and procedural elements of energy justice in municipal documents, but to critique their actual performance across these domains.

One of the major strengths of the framework is that it addresses an important gap in the energy justice literature, namely, the difficulty of operationalizing procedural and recognition justice into concrete and assessable criteria. While many energy justice studies acknowledge the importance of participation, inclusion, and recognition, these concepts are often discussed at a theoretical level without clear tools for evaluating how they appear in actual governance processes. By synthesizing two existing frameworks, this study attempted to make these dimensions more practically measurable and applicable to municipal climate and energy governance.

A second strength is the interdisciplinary nature of the framework. The study combines the City for All Women Initiative and City of Ottawa Equity and Inclusion Lens with Lucius Botes and Daniël van Rensburg’s Nine Plagues of Community Participation (2000) framework from development studies. The framework contributed a more critical lens focused on participation barriers and power asymmetries. It helped move the analysis beyond simply asking whether participation existed, toward examining how participation may become selective, paternalistic, technocratic, or dominated by institutional actors. This was especially useful because energy justice scholarship often identifies participation as important but provides fewer tools for diagnosing why participation remains limited in practice.

Another important strength of the integrated framework is its contextual flexibility and adaptability. Rather than relying only on externally developed theoretical models, the study intentionally incorporated the City for All Women Initiative and City of Ottawa Equity and Inclusion Lens because it was specifically designed for Ottawa’s local governance context. This allowed the framework to remain grounded in the social, institutional, and policy realities of the municipality being studied. In that sense, the framework was designed not only as an analytical tool for this specific study, but also as an example of how researchers and policymakers can synthesize context-specific local frameworks, broader theoretical frameworks, and interdisciplinary concepts to develop more flexible and practically relevant tools for assessing or designing energy policies.

Analytical Framework	Codes Applied in NVivo Analysis
Equity & Inclusion Lens	Communications; Engaging Community and Staff; Gathering Information / Research; Leading and Supervising; Monitoring and Evaluation; Planning: Services, Projects, Events; Policy Development; Recruiting and Hiring; Strategic Planning; Training; Working with People
Nine Plagues of Community Participation	Paternalistic role of development professionals; Inhibiting and prescriptive role of the state; Over-reporting of development successes; Selective participation; Hard-issue bias; Conflicting interest groups within end-beneficiary communities; Gate-keeping by local elites; Excessive pressures for immediate results;; The lack of public interest in becoming involved

Table 1. Analytical Frameworks Applied in NVivo Coding

3.5.1 Equity & Inclusion Lens developed by the City of Ottawa & City for All Women Initiative (City of Ottawa and City for All Women Initiative, 2018) (11 inclusive practices)

- Communications – this aspect of the Lens examines whether public information is delivered in ways that ensure all audiences are able to understand the material (e.g., through plain language, accessible formats). In this study, this category is used to assess whether Ottawa’s energy transition

strategy documents adopt communication practices that foster inclusion and ensure that equity-deserving groups are not unintentionally left out of policy awareness or participation.

- Engaging Community and Staff – this component focuses on ensuring that diverse voices are meaningfully included by removing participation barriers and using multiple outreach methods. In this study, this category is used to assess whether Ottawa’s energy transition strategy policies actively involve equity-deserving communities and reflect their insights in final decisions.
- Gathering Information / Research – the Gathering Information / Research lens examines whether data collection methods capture the diversity of affected populations through disaggregated data. In this study, it is used to assess whether Ottawa’s climate and energy documents include demographic or equity-focused evidence that reveals impacts on marginalized communities rather than relying solely on technical data.
- Leading and Supervising – this category focuses on whether organizational leaders create inclusive environments and embed equity into decision-making and accountability structures. In this research, it is used to evaluate whether Ottawa’s governance and supervisory structures integrate equity considerations or whether leadership remains predominantly technical.
- Monitoring and Evaluation – this lens assesses whether success measures capture community experiences and report findings back in accessible ways. For this study, it evaluates whether Ottawa’s performance indicators track impacts on equity-deserving groups or whether monitoring remains limited to technical metrics like emissions and infrastructure progress.
- Planning: Services, Projects, Events – this category examines whether programs and services are designed to reduce barriers and incorporate input from the people most affected. In this research, it is used to assess whether Ottawa’s climate and energy plans identify equity considerations such as accessibility or affordability.
- Policy Development – The Policy Development lens examines whether policies are designed to address equity concerns such as accessibility, affordability, and participation of the groups most affected. In this study, it is used to assess whether Ottawa’s climate and energy policies embed equity considerations in their design or whether they remain largely technical.
- Recruiting and Hiring – This lens evaluates whether hiring practices broaden access and ensure that staff reflect the diversity of the communities they serve. For this study, it helps assess whether Ottawa’s climate and energy institutions build an equitable workforce.
- Strategic Planning - The Strategic Planning lens examines whether long-term plans integrate demographic realities and embed inclusion goals into organizational visioning. In this research, it is used to evaluate whether Ottawa’s climate and energy strategies incorporate equity considerations into their long-term priorities.
- Training – The Training lens assesses whether staff training processes are designed to build awareness and develop competencies for working across diverse communities. In this study, it is used to evaluate whether Ottawa’s climate and energy plans institutionalize capacity-building.

- Working with People – This lens examines interpersonal practices, emphasizing respectful communication and efforts to ensure individuals can participate and be heard. Applied to this research, it helps assess whether Ottawa’s climate and energy documents demonstrate sensitivity to the lived realities of marginalized groups.

These areas were used as child codes under the Equity and Inclusion parent node to assess whether Ottawa’s documents integrate inclusive practices across governance, planning, monitoring, and delivery.

3.5.2 Botes & van Rensburg’s (Botes & van Rensburg, 2000) “Nine Plagues of Community Participation”

Secondly, this study applies Botes & van Rensburg’s (Botes & van Rensburg, 2000) framework called “Nine Plagues of Community Participation” in its analysis as it highlights how participation can be co-opted, manipulated, or constrained in community-based initiatives. The nine challenges, referred to as the “nine plagues,” are outlined as follows:

1. Paternalistic role of development professionals – top-down approaches devised by outsiders, often falling short in empowering community members.
2. Inhibiting and prescriptive role of the state – government actions that create barriers that hinder community participation.
3. Over-reporting of development successes – when development practitioners overemphasize success stories, neglecting failures.
4. Selective participation – cases where a privileged group dominates and controls the development agenda.
5. Hard-issue bias – a bias towards product-related issues related to technology, finance, and physical structures at the expense of process-oriented issues concerned with community participation and inclusiveness.
6. Conflicting interest groups within end-beneficiary communities – conflicts arising among certain interest groups feeling neglected due to community decisions.
7. Gate-keeping by local elites – instances where community leaders dominate and influence development based on self-interest.
8. Excessive pressures for immediate results: the accentuation of product at the expense of process – emphasis on immediate, tangible results in programs, inhibiting community participation.
9. The lack of public interest in becoming involved – an obstacle to community participation stemming from a lack of interest among community members, often influenced by their past experiences (Botes & van Rensburg, 2000)

During the Nvivo analysis, these nine plagues were applied as thematic child codes, highlighting barriers to participation embedded in the documents under the Community Participation Challenges parent node.

4. Results

This section discusses the following synthesized areas that have emerged from the results of examining the Strategy using both analytical frameworks (Nine Plagues and EI Lens).

4.1. Centralized and Technocratic Governance

A dominant theme that emerges from the analysis is that CETS has applied a centralized, expert-led governance as it is primarily directed by city staff and external consultants and as a result it has framed residents as passive recipients:

“The City and Hydro Ottawa can play a key role in promoting and encouraging uptake, ensuring clarity and information availability, including by:

- *Developing a quality, informative website, using leading web-interactive approaches that contain everything an interested party may need to be aware of...*
- *Communicate with the public that today’s large-scale solar is roughly grid competitive...*
- *Promote via Hydro Ottawa’s customer base (the Energy Pathway Study_Phase 1 document, p.30)”*

This passage highlights the *Paternalism* pitfall of the framework. CETS relies on a top-down approach managed by outsiders (the City), framing the public as passive recipients rather than co-planners. By doing so, the Strategy limits participation to one-way information flow. In other words, it fails to empower community members or involve them as equal partners in shaping communication and awareness programs for the energy transition.

Furthermore, the existing rules and funding structures limit Ottawa’s ability to support community-driven planning. This ends up creating financial and regulatory barriers for small-scale and marginalized groups, showing how the state can play an inhibiting and overly prescriptive role, where government rules and decisions limit community solutions instead of actually helping them move forward:

“Additionally, with the recent cancellation of Ontario’s Green Ontario Fund and the Cap and Trade Program, there is uncertainty in the availability of provincial funding for energy storage projects” (the Energy Pathway_Phase2 document, Section 2: Growth Projections for DSM and Energy Storage, p.25).

This statement shows that unpredictable provincial policy changes hinder city-level innovation and support for low-income or community energy initiatives, reflecting a prescriptive role of the state.

Moreover, the Strategy frames leadership mainly around technical management and intergovernmental coordination. By doing so, it neglects equity, diversity, and inclusion and fails to clarify associated roles, decision authority, or equity oversight:

“Energy Evolution will contribute to and leverage the governance framework established in the Climate Change Master Plan to:

- *Establish common vision, goals, and priorities*
- *Coordinate implementation of climate mitigation and adaptation research and action*
- *Scale up community wide projects, programs, or policies*

- *Access funding and resources*
- *Influence organizations and residents to take action (the Energy Evolution Strategy_en document, p. 69)”*

Moreover, it is found that supervisors are not expected to include equity in performance reviews and indicators. Therefore, unlike the roles and expectations described in the *Leading and Supervising* category of the Equity & Inclusion Lens (City of Ottawa and City for All Women Initiative, 2018), leadership in CETS seems to remain centralized, expert-driven, and paternalistic, where achieving technical outputs are considered more important than making participation more inclusive and providing distributional fairness.

4.2. Selective and Unequal Participation

Analysis revealed that institutional, corporate, and technical actors were dominant actors in consultations, ownership and program designs, where there was little to no evidence of grassroots or marginalized community participation in the design or management of the Strategy:

“...ownership is typically by large companies who are active in the electric utility industry, or by investment firms (the Energy Pathway_Phase1 document, Section 1: Present Assessment of Solar Power in Ottawa, p.4)”

This quotation illustrates the *Selective Participation* plague, where empowered stakeholders drive outcomes while renters, low-income residents, Indigenous groups, and small cooperatives are excluded. In this sense, community engagement in the Strategy seems very tokenistic, as it mostly favors senior officials, developers, and large institutions, leaving limited space for marginalized voices to be heard.

Additionally, the Climate Change Tiger Team, which is meant to guide the city’s climate plan and help move it forward, is made up largely of local elites:

“The Climate Change Tiger Team was created to champion and support implementation of the Plan. This team consists of all General Managers across the City, the Chief Medical Officer and representatives from City Manager’s Office and PRED/Climate Change & Resiliency team... the Climate Change Tiger Team is responsible for:

- *championing policies, programs, and projects related to climate change;*
- *discussing climate change policies, programs and projects that have a corporate wide mandate and departmental and cross-departmental opportunities; and*
- *providing advice (e.g., on how climate change issues will intersect with priorities, how climate considerations will be incorporated and prioritized in the annual budget process and the Long-Range Financial Plan)” (the Audit of the Climate Change Master Plan document, p.14)*

This quotation illustrates the plague of *local gate-keeping* as outlined in the integrated framework; in this plague, influence, accessing resources and setting agendas are only available to insiders and well-connected organizations dominating community-driven action and participation instead of democratized processes where all stakeholders take active roles.

Another theme is the gap between formal inclusion commitments and actual practice. More specifically, it has been found that while the Strategy acknowledges community engagement in principle, in practice it is still very

vague and not very inclusive. Most of the consultations are dominated by institutional and technical actors, while equity-deserving groups, like low-income residents, Indigenous communities, renters, and people with disabilities have been largely excluded from the process. Basic practices that could make participation easier, like multilingual access or plain-language documents, are limited, so community voices end up being underrepresented in decision-making. On a positive note, the study identified that there are attempts for collaboration and increasing acknowledgement of an equity and inclusion lens:

“Municipalities are also uniquely positioned to operate with an equity and inclusion lens, ensuring vulnerable populations are not left behind” (the *Energy Evolution Strategy_en* document, p. 60).

This statement reflects the *Working with People* component of the framework, emphasizing participation and being heard. Yet, it is important to note that institutional actors still dominate decision-making, where there are no unclear responsibilities or permanent, representative governance. In this regard, equity mechanisms for underrepresented groups, tenants, immigrants, Indigenous people, or those with disabilities are also absent, and the Strategy mistakenly assumes people have resources and capacity, which potentially reinforces existing inequities.

4.3. Overreliance on Technical Solutions and Narrow Success Metrics

Analysis also revealed out that the Strategy leans heavily on technical fixes and criteria for evaluating outcomes and overlooks the importance of participation and inclusion as equally essential components of the Strategy’s success. Firstly, it was revealed that the Strategy indicates a clear "hard-issue" bias, giving technical, budgetary, and emissions-related criteria precedence above inclusiveness, community involvement, and trust-building:

“At the core of Energy Evolution is a comprehensive, custom-built energy, emissions and finance model. The model incorporates growth, land use, buildings, transportation, and waste data with energy conservation, efficiency, and renewable energy pathway studies...” (the *Energy Evolution Strategy_en* document, p. 13).

As it is shown in this statement, there is heavy emphasis on technical modeling and quantitative forecasting. This reflects a “hard-issue” bias described in the integrated framework, emphasizing technology, emissions, and finance, while neglecting or not acknowledging softer, process-oriented elements, like co-design with locals, participatory governance, or equity-focused outcomes.

Analysis of Energy Evolution under the *Policy Development* category shows policies focus on technical standards and regulations, neglecting equity safeguards like renter protections, affordability programs, or supports for low-income and Indigenous communities. This indeed creates a technocratic model that prioritizes emissions targets over equity.

The study also uncovered that the progress report from the city demonstrates a clear trend of overstating success stories while ignoring risks, failures, and exclusions, which is one of the plagues in the integrated framework:

“Management has indicated that they believe they are currently on track for their 2025 corporate emission reduction targets but “given the current level of action and investment to date [...] it is not expected that Ottawa will achieve its short-term target to reduce community emissions by 43 per cent by 2025” (the *Audit of the Climate Change Master Plan* document, p. 8, June 2024).

This quotation indicates strong confidence in the project’s success. However, it does not acknowledge the fact that despite the success, potential challenges, such as delays, disproportionate impacts on marginalized groups, and other unintended consequences exist. It is important to note that the report assesses its achievements through financial and technological progress but needs to develop methods to measure its success in treating disadvantaged groups and addressing structural inequities.

The analysis shows that the Strategy includes accessibility principles when it is analyzed through the Planning dimension of the integrated framework. For instance, the Strategy notes on page 35 of the CCMP Annual Status Update that “*Each individual project will have direct consideration on its impact to people with disabilities.*” Therefore, we can say that accessibility concerns were at least acknowledged on the level of stated intentions.

However, despite these examples, the Strategy fails to give proper attention to vulnerable groups which include renters and low-income residents and social housing residents, according to the analysis. In fact, there is limited support for enabling their meaningful participation, for example through affordable retrofit options, tailored training programs, or targeted outreach efforts. As a result, many of the programs appear to benefit homeowners and technically engaged participants more than those who lack the resources or opportunities to participate. The planning process reveals a significant gap because it fails to address the essential issues, such as affordability, accountability and the need for careful prioritization while excluding communities who are likely to face the highest energy transition costs.

The analysis demonstrates that the Strategy relies mainly on technical and quantitative research methods while it gives less value to qualitative and participatory research methods, which the integrated framework identifies as essential for Gathering Information and Research. The evaluation of policy impacts between different demographic groups requires essential demographic data which includes income and race data as well as housing status data. The absence of this type of data makes it challenging to develop evidence-based decisions and leads to the possibility that existing inequalities will remain undetected.

Finally, the study finds that the monitoring and evaluation framework for the Strategy depends primarily on technical and numerical performance indicators which include emissions reductions and energy targets. As noted in the *Monitoring and Evaluation* dimension of the integrated framework, the social impacts on vulnerable groups are very important to consider; however, the Strategy does not pay proper attention to that. The documents contain structured reporting requirements and performance indicators, but they lack metrics to measure distributional fairness and inclusion and participation of marginalized groups, and they do not provide disaggregated data that would show which groups receive benefits and which groups remain unrecognized. Therefore, the Strategy needs equity assessment because it currently promotes a net-zero-at-all-costs approach that fails to recognize the difficulties and possibilities that vulnerable communities experience.

4.4. Weak Institutional Capacity and Resource Limitations

The study also revealed that there are institutional capacity limitations and resource constraints that hinder community participation and inclusion in Ottawa’s CETS. Firstly, the study demonstrated that one aspect of these weak institutional capacities and resource limitations is reflected in shortcomings related to communication and accessibility does incorporate several key guidelines outlined in the *Communications and Accessibility* category of the integrated framework. For example, on page 30 of the *CCMP Annual Status Update* document, on page 71 of the *Energy Evolution Strategy_en* document, and on page 5 of the *Audit of the Climate Change Master Plan* document, it is indicated that the City is committed to provide an annual status update on their progress towards their climate and energy transition targets.

Although structured reporting and public dashboards enhance transparency, the study also found out that their language, format, and intended audience seem to cater mostly to technical and policy experts rather than the wider community. In the absence of easily understandable summaries, multilingual translations, and formats that are accessible, underserved residents, such as those with limited proficiency in English or French, lower literacy levels, or without digital access might find it difficult to fully comprehend or participate in the City's climate and energy updates.

Secondly, applying the guidelines of the integrated framework revealed that the approach to workforce and hiring does not necessarily incorporate an equity framework. For example, on page 84 of the *Energy Evolution technical_en* document, the Strategy brings attention to socio-economic impacts of the transition: *“Transitioning to a low- or zero-carbon economy will have four categories of impacts on labour markets: additional jobs will be created in emerging sectors, some employment will be shifted (e.g. from fossil fuels to renewables) between sectors, certain jobs will be reduced or eliminated (e.g. combustion engine vehicle mechanics), and many existing jobs will be transformed and redefined.”*

In the above statement, while the Strategy highlights green job growth and economic opportunities, it does not explain how to support workers facing job loss or how new roles target equity-seeking groups. In addition, the Strategy does not make explicit reference to inclusive recruitment or outreach. As emphasized in the *Recruiting and Hiring* component of the integrated framework, these hiring practices are considered as ones that overlook equity considerations, which reveals a gap between projected benefits and building a fair, inclusive workforce. Additionally, references to training are only briefly mentioned, and the existing training approaches indicated in the Strategy mainly focuses on technical skills and capacities while neglecting equity-related considerations. For example, on page 22 of the *Energy Evolution Strategy_en* document, the Strategy mentions:

“The pathway studies were developed with technical experts from the municipality, senior levels of government, utilities, developers, consultants (Leidos, Sustainability Solutions Group, and whatIf? Technologies Inc.) and subject matter experts through a series of technical workshops. The workshops were critical to better understanding the barriers, opportunities, and options for advancing specific energy technologies in Ottawa.”

Current programs, such as the workshops mentioned above emphasize technical skills trainings for industries and homeowners, which is important to accelerate energy transition processes. However, these programs do not necessarily put heavy emphasis on awareness of equity, diversity, and inclusion or also provide training programs designed to prepare staff and contractors for working with diverse populations. In the absence of dedicated training on how to apply both climate and equity perspectives, marginalized groups may miss out on opportunities, while staff may lack the ability to incorporate inclusive practices into planning and execution, which is strongly advised through the *Training* aspect of the integrated framework.

5. Discussion

There are clear participation and inclusion challenges with Ottawa's CETS. This study has used an integrated analytical framework to assess energy justice, notably procedural and recognition justice by synthesizing two analytical tools, including the Equity & Inclusion Lens developed by the City of Ottawa & City for All Women Initiative (City of Ottawa and City for All Women Initiative, 2018) and Botes & van Rensburg's (Botes & van Rensburg, 2000) Nine Plagues of Community Participation. Together, these tools enabled both a systematic assessment of how equity-deserving groups are recognized across institutional functions and a critical examination of structural and procedural barriers that may undermine meaningful community engagement.

Using the integrated framework, firstly, revealed the dominance of top-down, expert-driven governance in Ottawa's energy transition documents. The results of this case study echo a recurring critique identified in procedural energy justice and energy democracy scholarship. Procedural justice and energy scholarship require democratic procedures so that all stakeholders are given equal considerations as well as meaningful participation and inclusion in influencing decision-making related to the ways in which they produce or consume energy, rendering the public active energy citizens (Walker, 2009), (Bullard, 2005), (McCauley, et al., 2013), (Burke & Stephens, 2018). However, similar to the concerns of Lieu et al. (2020), Radtke (2025), and Buechler et al. (Buechler, et al., 2020), Ottawa's transition planning tends to indicate patterns of technocratic policy pathways and prioritize technical expertise. By doing so, the planning makes lived experience and community-based knowledge and governance secondary or a lot less significant. This supports broader critiques that energy transition pathways remain largely shaped by administrative and technical elites, perpetuating already established power hierarchies rather than democratizing energy governance. As a result, these governance arrangements do not place enough emphasis on the recognition dimension, as it fails to acknowledge and appreciate the perspectives of marginalized communities (Shejale, et al., 2025), (Jenkins, et al., 2016), (Sovacool, et al., 2019). This also shows that Ottawa's CETS also possesses a pattern of tokenistic participation and power disparities persistent in dominant energy pathways highlighted by Arnstein (1969) and Radtke (2025), respectively. These findings also reflect existing challenges in Canadian national energy policymaking in the case of the federal government's Just Transition Task Force investigated by Balkissoon (Balkissoon, 2018), Marotta (Marotta, 2018), and Meyer (Meyer, 2018). Thus, by using Ottawa as a case study to examine governance dynamics at the municipal level and address the corresponding empirical gaps in the literature, this study aligns with wider evidence that technocratic and centralized transition planning mirrors broader patterns of exclusion rather than fostering energy democracy.

Secondly, patterns of uneven and selective participation observed in Ottawa's engagement mechanisms for a just transition are consistent with empirical evidenced found in the energy justice literature. Even with official commitments to inclusivity and public participation in place, engagement mechanisms appear to favor actors who already possess resources and institutional connections and access, while equity-deserving groups struggle with structural and practical barriers to get involved in the energy transition process. The study shows that participation of communities in energy policymaking often simply means consultation of communities. In other words, the participation mechanisms in Ottawa's CETS do not necessarily mean genuine community empowerment, reproducing already existing social inequalities. This reflects concerns of many scholars in the literature about procedural justice in broader-scale energy transitions (Arnstein, 1969), (Radtke, 2025), (Končalović, et al., 2023), (Buechler, et al., 2020), (Radtke & Ohlhorst, 2021). Similar to Arnstein's (Arnstein, 1969) ladder of participation discussed earlier, the study also cautions that if communities are not properly empowered and have not been provided necessary decision-making power, engagement would just simply create the illusion of inclusivity while elites maintain their control over decisions. This also resembles dynamics in European and North American energy transitions, where engagement mechanisms are constrained as they do not translate into engagement of communities from the early stages, do not provide communities with sufficient access to necessary information and lack institutional trust (Radtke, 2025), (Končalović, et al., 2023). Moreover, using a comprehensive integrated analytical framework, this study was able to uncover the important elements of unequal and selective participation dynamics in the policy design of Energy Evolution, contributing to addressing a key methodological gap in the literature. More specifically, this research demonstrates a transferable analytical process through which policymakers and policy analysts can effectively design equitable energy policies or evaluate policy designs and processes, moving beyond abstract and often difficult-to-apply notions of participation toward concrete and operationalizable criteria for assessing inclusivity and participation

in energy policy-making. Additionally, alongside policy evaluations, it is also important to mention that these criteria can simultaneously be applied during policy design stages of future energy transition planning as well.

Thirdly, the fact that Ottawa's CETTS puts more emphasis on technical metrics and emission-based indicators for their energy transition targets while giving insufficient attention to justice dimensions reflects a broader trend in energy policymaking that favors technical indicators over societal outcomes. As illustrated in the literature, many broader-scale energy transition policies prioritize targets on building effective infrastructure deployment and achieving efficiency targets and emissions reductions while sidelining the questions of who gains or loses from a particular energy policy, whose voices are heard, and who is included in decision-making and under what conditions (Finley-Brook & Holloman, 2016), (Sovacool, et al., 2019). Therefore, by analyzing energy policymaking at the lower (municipal) level, the study strengthens the existing scholarship criticizing the assumption that technical metrics are enough on its own to lead to a just transition. Furthermore, as mentioned earlier, the current literature highlighted an important challenge that while it is easier to acknowledge justice approaches, specifically the three-tenet framework in principle, they are a lot more difficult to be transferred into specific, detailed, and measurable criteria, especially when it comes to the issues of participation and inclusivity (Laes, et al., 2023), (Bombaerts, et al., 2023), (Van Uffelen, et al., 2024), (Wood, 2023), (Wood & Roelich, 2020), (Wood, et al., 2024), (Baker, et al., 2023), (Rios-Ocampo, et al., 2025). Thus, the finding that Ottawa's CETTS was also unable to incorporate specific criteria for ensuring participation and inclusion reinforces the existing gap. Nonetheless, on a positive note, the study develops and applies analytical framework to measure participation and inclusion, the process of which creates transferable lessons for other municipalities that want to make sure that technical metrics are accompanied by concrete justice metrics, supporting more participatory and inclusive energy transitions.

Finally, another important aspect of this study is that it further demonstrated the gap between how policies can make commitments to justice principles and how they are actually put into practice by revealing constraints in institutional capacity and resources. As highlighted in earlier in both energy justice theory and practice, even well-designed participatory and inclusivity frameworks depend on ongoing institutional capacity and resources to turn these justice principles into meaningful practice, as without those institutional support and arrangements, these frameworks risk remaining symbolic rather than substantive (Sovacool & Dworkin, 2015), (Radtke, 2025). Thus, Ottawa's experience empirically reinforces the current literature by confirming that similar challenges in integrating justice principles into energy governance also persist at a municipal level. Methodologically, the study demonstrates a structured analytical framework that would help policymakers in making sure that these justice principles are embedded in their engagement mechanisms for a just energy transition.

6. Limitations

A key limitation in the study is its focus on the Community Energy Transition Strategy and other municipal documents associated with the city of Ottawa. Due to the fact that different municipalities have different governance structures, institutional arrangements, and priorities, results achieved in Ottawa might not be generalizable elsewhere in Canada or internationally. The goal of the study, in contrast to other types of research, was therefore analytical depth and lessons transfer rather than broad generalizations.

A limitation related to the document analysis approach used is that the analysis focused on municipal strategies, reports, and policies issued by official channels. Accordingly, this paper analyzed how participation, inclusion, procedural justice, and recognition justice were defined and addressed through policy language and institutional planning processes. However, it is critical to note that policies might not accurately reflect what happens during

governance practices in terms of informal decision-making processes or participation experiences of community actors.

Limited public accessibility of certain information about a specific community can also limit an analysis. Discussions within government institutions, negotiations, budgeting issues, or other aspects of governance that might not be reflected in official documents would prevent researchers from analyzing these factors as part of participation.

Furthermore, the framework itself has its advantages and disadvantages. Indeed, as discussed earlier, the interdisciplinary approach, context sensitivity and flexibility allowed overcoming several limitations inherent to operationalizing procedural and recognition justice evaluation frameworks, however, at the same time, the framework has some significant limitations. First, the combined nature of the framework implies combining the concepts developed within different epistemologies and approaches to governance. The Equity and Inclusion Lens framework was specifically created to address municipal issues related to equity, while the Nine Plagues framework was born out of participatory development studies and was applied in criticizing development practices in the Global South.

Second, compared to earlier frameworks, this framework puts more focus on procedural and recognition justice rather than distributive justice. As explained above, such an approach was necessary for achieving specific objectives of the project, yet such a choice also means that the framework is less effective for evaluating material outcomes such as affordability, energy burden distribution, spatial inequalities, or measurable socio-economic impacts of energy transitions.

Finally, although the framework improves operationalization, it cannot fully capture informal political dynamics, hidden power relations, or behind-the-scenes negotiations that shape governance processes but may not appear clearly in policy documents. Like most governance frameworks, it is stronger at analyzing visible institutional processes than hidden or informal forms of influence, which future research can attempt to address.

7. Conclusion

Taking an energy justice lens, this research investigates whether inclusivity and community participation are incorporated in municipal energy transition planning, using Ottawa's Community Energy Transition Strategy as a case study. These findings reinforce and further extend existing energy justice scholarship empirically and methodologically. Empirically, what makes this study important is that it demonstrated the fact that engagement mechanisms formally exist does not guarantee that communities are going to be meaningfully participated and included. In fact, participation mechanisms can still remain unequal and selective, co-exist with top-down and expert-driven governance structures, predominantly rely on narrow technical metrics, and lack necessary institutional and resource capacity. Also, equity-deserving groups can be acknowledged in principle, but if there are structural, procedural, and resource constraints that exist, they might often prevent these groups from taking important roles in making decisions and influencing social outcomes. As a result, participation may remain largely procedural instead of substantive, echoing concerns raised in the literature in terms of tokenism and elite-driven decision-making processes (Arnstein, 1969), (Radtke, 2025).

Another main contribution is related to its methodological approach. By integrating an equity-focused policy lens with a critical participation framework, the study demonstrates an example of a comprehensive analytical tool that could move beyond abstract or often difficult-to-apply notions of procedural and recognition energy justice. In doing so, the study develops and applies clear and operational metrics capable of designing and

evaluating participatory and inclusive energy policies and decisions, which constructs lessons for policymakers, planners, community stakeholders, and researchers working to embed specific criteria of procedural and recognition justice into designing or assessing municipal energy policies.

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Chapter 4

Who Has a Voice in Municipal Climate and Energy Governance: A Justice Perspective

Abstract

This study explores how community participation and inclusion, as central components of climate and energy justice, are understood and put into practice within a concrete urban climate and energy transition governance, and what factors enable or constrain meaningful engagement. Although the existing literature shows that participation is often shaped by socio-economic marginalization, technocratic decision-making, and institutional barriers, there remains limited research examining how these dynamics play out within specific municipal settings. Conducting a qualitative case study of the city of Ottawa, this research is based on 16 semi-structured interviews with government officials, community members, and intermediary actors. The interview data were analyzed using qualitative thematic analysis in NVivo, guided by an integrated analytical framework. Findings reveal a persistent gap between formal participatory claims and the realities of engagement in practice, shaped by structural barriers (political reluctance, infrastructure path dependency, and centralized authority) and power asymmetries due to the presence of top-down engagement approaches and privileged well-resourced actors, marginalizing specific groups of people. Building on these findings, the study proposes a set of empirically grounded “commandments” to guide decision-makers in strengthening participation and inclusion. These include institutionalizing engagement, redesigning processes for co-creation, leveling unequal capacities to participate, and decentralizing energy governance to expand municipal authority and community ownership.

Keywords

Municipal governance; climate justice; energy justice; community participation; inclusion; power asymmetries; institutional barriers

1. Introduction

Participation and inclusion are widely recognized as essential elements in achieving just climate and energy transitions at the municipal level. However, meaningful engagement is often difficult to achieve in practice, as it can be shaped and constrained by socio-economic inequalities, institutional marginalization, and uneven access to time, knowledge, and resources (Kaandorp, et al., 2024; Park, 2012; Shejale, et al., 2025; Tarhan, 2022). At the same time, governance structures, leadership styles, and the broader institutional and historical context play a major role in determining whether participatory mechanisms genuinely empower communities or remain symbolic and technocratic (Camponeschi, 2021; Gurčínaitė & Barbrook-Johnson, 2026; Lemon, et al., 2015; North, et al., 2017).

Supportive policy frameworks and coordinated action across municipal and national levels can also strengthen locally driven energy initiatives and reduce participation barriers (Capellán-Pérez, et al., 2020; Kim, 2017; Palm, et al., 2025; Rogge & Reichardt, 2016). However, while many scholarly works highlight key barriers and enablers of participatory governance, further research is needed in specific urban contexts to better understand

which institutional, socio-economic, and political conditions shape participation in practice and what opportunities exist for more inclusive, locally driven climate and energy transitions.

Through a case study of the city of Ottawa, in this paper we examine how community participation and inclusion are reflected and practiced within municipal-level climate and energy transition initiatives, including but not limited to Energy Evolution (City of Ottawa climate/energy transition strategy), Better Homes Ottawa Loan Program (municipal retrofit loan program), Climate Resiliency Strategy, Engage Ottawa (official engagement/consultation platform), and City of Ottawa Climate and Resiliency Unit newsletter and conversely, by what factors they are hindered or enabled. We use a comprehensive analytical framework to systematically assess inclusive practices across various institutional functions and to identify any potential barriers to community participation and patterns of exclusion. We applied this measurement tool to an analysis of 16 in-depth qualitative interviews with government actors, community members and leads of non-profit climate justice organizations. Ultimately, our analysis reveals a consistent gap between how participatory mechanisms are formally presented and how engagement and inclusion occur in practice. The study found two key dynamics that shape this gap, such as institutional and structural barriers and power asymmetries in engagement. Our analysis also proposed empirically grounded “commandments” or guidelines to strengthen participatory and inclusive municipal governance.

2. Literature Review

The main bodies of literature that inform this study are energy justice and climate justice. In terms of energy justice, it is widely understood as a framework for conceptualizing, analyzing, and guiding decision-making (Sovacool & Dworkin, 2015). Energy justice is closely connected to broader environmental justice scholarship which emerged in the 1980s and 1990s, and more narrowly to the subsequent climate justice scholarship. Energy justice only emerged as a distinct academic field more recently (McCauley, et al., 2013) and places strong emphasis on energy systems and policies.

Similar to most environmental justice work, energy justice scholarship is commonly conceptualized through the tenets approach. Reviewing 179 peer-reviewed articles using tenet-based frameworks, van Uffelen et al. (2024) found that the “three-tenet” (or “triumvirate of tenets”) approach dominates energy justice research. In this sense, energy justice is generally framed around three core pillars: distributional, procedural, and recognition justice (McCauley, et al., 2013). First, distributional justice focuses on unequal allocation of energy-related benefits and burdens, as well as the uneven sharing of responsibilities tied to them (Walker, 2009). This includes debates around the value and desirability of energy technologies and how they relate to local contexts (Owens & Driffill, 2008, p. 4414). Ultimately, it highlights that marginalized and less influential groups often face disproportionate burdens of negative impacts, making equitable distribution central to energy justice (Todd & Zografos, 2005).

Second, procedural justice emphasizes democratic and non-discriminatory decision-making processes (Bullard, 2005; Walker, 2009). This tenet stresses that stakeholders should be meaningfully involved in decisions about energy production and consumption. McCauley et al. (2013) argue that strong legal and regulatory frameworks are needed to require inclusivity, impartiality, meaningful participation, and transparent communication by government and industry. Shejale et al. (2025) add nuance to this tenet by identifying three participation pathways: demand-side actions (e.g., information campaigns and energy efficiency), supply-side involvement (e.g., leadership or membership in RECs), and participation in energy politics through citizen assemblies and social movements advocating for a just transition (ibid). Procedural justice also aligns with the idea of energy democracy, which aims to address climate and energy issues at the community level in ways that meet local

needs and generate multiple benefits (Giancattarino, 2012). It also involves resisting dominant energy agendas while restructuring energy regimes more democratically and decentralized and positions citizens as active energy agents rather than passive consumers (Burke & Stephens, 2018).

However, case studies show that decision-making has historically often prioritized government and industrial elites, excluding communities outside dominant fossil fuel networks or policy arenas (Buechler, et al., 2020). Even Renewable Energy Communities (RECs) often reflect existing inequalities, as they remain dominated by well-educated, high-income men, with women, youth, and minority groups underrepresented in governance and membership (Radtke & Ohlhorst, 2021; Yildiz & Radtke, 2015). Scholars also raise concerns about the quality of participation and its real impact. Arnstein's now dated but still used (1969) "ladder" of citizen participation warns that involvement may become "manipulation" or "tokenism," where participation exists in form but not in power.

Finally, recognition justice focuses on identifying and addressing the needs of social groups historically denied equal respect and opportunities (Shejale, et al., 2025). In energy transitions, this involves ensuring that groups such as the elderly, people with chronic illnesses, ethnic minorities, women, and sexual or gender minorities are properly recognized and represented in energy policies (Jenkins, et al., 2016). This also includes identifying groups whose vulnerabilities may worsen under current energy policies or the status quo (Sovacool, et al., 2019). For instance, gender inequality intersects with climate change as women across Europe, especially elderly women living alone, are more likely to struggle with rising energy costs from increasing average temperatures and weather extremes (Pandey & Sharma, 2021).

The onset of the broad frame of climate justice aligns centrally with this tenet as climate justice seeks to shift policy attention toward the poorest and most marginalized – those who carry disproportionate burdens of climate change (Tagg & Jafry, 2018). Yet climate justice is not only about distributive outcomes. It also highlights how marginalized populations remain excluded from mitigation, adaptation, and resilience debates (Atela, et al., 2017; Gereke & Brühl, 2019; Roger & Belliethathan, 2016). Marginalized groups thus remain underrepresented and under-supported in dominant social, economic, and political structures (Tagg & Jafry, 2018), reinforcing procedural and recognition-based injustices.

All three tenets of climate and energy justice have not been equally emphasized in literature and practice (Baker, et al., 2023; Chan, et al., 2024; Eikeland, et al., 2023; Martin, 2026; Rios-Ocampo, et al., 2025). Many scholars argue that research has historically focused more on distributive justice, while overlooking procedural and recognition dimensions. Using urban heat as an example, Martin (2026), highlights that it is not enough to simply climate distribute solutions evenly in a population, since effective planning requires understanding who faces unequal burdens and why (ibid). This argument emphasizes the importance of recognition justice in identifying vulnerable groups and ensuring their needs are addressed. Similarly, Eikeland et al. (2023), examining Norwegian municipalities' wind power stances, found distributive justice to be emphasized far more than other dimensions. They argue that in 2019 municipal responses to consultations on the national wind power framework, over 80 percent of municipalities aligned their statements with distributive concerns, while other justice dimensions were less prominent.

Despite this bias in the literature, there is scholarship on participation and inclusion in climate policy. This literature helps us identify several overall barriers and enablers that appear to shape participatory and inclusive governance in climate and energy transitions. First, socio-economic, ethnic, and institutional marginalization remain major barriers (Kaandorp, et al., 2024; Park, 2012; Shejale, et al., 2025; Tarhan, 2022). Based on ethnographic fieldwork on Amsterdam's heat transition, Kaandorp et al. (2024) show that socio-economic status

strongly shapes who engages in community-based energy initiatives, reproducing inequalities in access to decision-making. Residents with more time, money, and skills, such as fundraising capacity or ability to navigate legal frameworks, are far more likely to participate. Similarly, Tarhan (2022) finds that renewable energy co-operatives in Ontario largely consist of “wealthy, middle class, and typically White” members, reflecting unequal access to financial resources, expertise, and time. This makes marginalized groups more likely to be excluded from ownership, control, and influence in energy decisions (ibid). Shejale et al. (2025), based on analysis of 378 energy initiatives and 81 interviews across eight European countries, argue that participation processes themselves may reproduce exclusion of non-white, female, and lower-income groups. For example, a Bulgarian interviewee described how Roma communities face barriers due to economic disadvantage, limited education access, and institutional marginalization, while a participant from Türkiye highlighted challenges faced by women and younger people in male-dominated transition spaces (ibid).

Second, the literature highlights the role of authorities and leadership in ongoing marginalization in energy policy. Some scholars argue that decision-makers tend to depoliticize climate action and energy transitions, turning them into credential expert-driven and thus technocratic processes that close off to public scrutiny and participation. North et al. (2017), examining Liverpool, argue that “post-political” transition plans often prioritize competition, business interests, and economic growth, silencing contested ideas from activists and community members through technocratic consensus-building. They argue that such approaches underestimate political contestation and overlook citizen-based pathways for sustainable local transitions. Camponeschi (2021), in studies of New York City and Copenhagen, similarly finds that urban resilience planning often reflects powerful technical elites’ interests, such as economists, planners, and developers; these authors suggest that exclusion itself has triggered growing local resistance to the perceived “infrastructure-first” governance approach. Lemon et al. (2015), studying Leicester, further argue that even where national policies support renewable energy and engagement, more local (such as municipal) authorities may still struggle due to limited financial capacity and limited influence over energy production and consumption, restricting their ability to make meaningful transition impacts.

At the same time, other scholars emphasize the importance of local leadership for building accountability, inclusion, and social acceptance. Takao (2020), drawing on three Japanese municipalities, argues that mayors are strategically positioned to connect otherwise disconnected actors, including experts and less-resourced communities. This is because mayors not only possess technical and scientific knowledge but may also be motivated to integrate local experience and place-based knowledge into transition processes. Such leadership can reduce conflicts and increase cooperation, ultimately strengthening problem-solving across actors (ibid).

Third, the literature overall confirms that national and local energy policy institutions are one of the key factors shaping community participation in urban transitions sometimes in non-obvious ways. For instance, Lee and Kim (2016) found that centralized top-down national approaches may accelerate the spread of green strategies while also reducing community involvement. Gurčínaitė and Barbrook-Johnson (2026) show that in Vilnius, technocratic top-down governance limits meaningful participation and reinforces unequal power, while historical and institutional legacies shape trust and ultimately just transition outcomes. In Vilnius, low institutional trust linked to “the legacy of historic Soviet trauma” creates additional barriers, emphasizing the importance of historical and socio-political factors in designing participatory and justice-oriented energy policies (ibid).

Somewhat in contrast, Kim (2017), analyzing Seoul’s Energy Self-Reliant Village Program (ESV), shows that a stronger government involvement can promote engagement through incentives, awareness-building, and seemingly heavier regulatory frameworks that shape market actor behavior. Comparing South Korea to the UK,

Denmark, and Germany, Kim (2017) argues that Korean initiatives face financial hardship and lack expertise partly due to weak municipal support. In such contexts, national and local governments could play stronger coordinating roles, provide incentives and subsidies, and establish stable budgets for community-based projects. As Kim (2017) notes, “In addition to municipal level support, national policies and systems need to be reframed to stimulate community-driven energy transition.” Still other scholars emphasize the value of a balanced approach in their cases, those which integrate representative democracy with direct participation. Palm et al. (2025) argue that municipalities and municipal energy utilities (MEUs) can strengthen engagement by offering technical expertise, financial capacity, and organizational support while also making participation more accessible through energy community membership and share-based investment. This can reduce barriers related to time, knowledge, and finances without undermining long-term infrastructure objectives.

This paper adds to the case study work on climate transition policy which focuses on procedural recognitional justice. Specifically, this case study explores the extent to which historically marginalized and diverse community group members are meaningfully included and able to participate in Ottawa’s municipal climate and energy policy initiatives, such as but not limited to, Energy Evolution, Better Homes Ottawa Loan Program, Climate Resiliency Strategy, Engage Ottawa, and City of Ottawa Climate and Resiliency Unit newsletter.

3. Methodology

3.1. Case Study Design and Methodological Approach

This study adopts an instrumental qualitative case study design informed by Stake’s conceptualization of case study research and Merriam’s emphasis on bounded, context-sensitive inquiry (Stake, 1995; Mishra, 2021; Merriam, 2009). The study is grounded in an interpretivist–constructivist epistemology, which assumes that knowledge is not externally given but co-constructed through the interaction between the researcher, the empirical case, and its embedded social, institutional, and political context (Mishra, 2021). From this perspective a case study approach does not seek to isolate variables or explain causality but provide a thorough contextual understanding of a particular bounded system.

Following Stake (1995), this research prioritizes the particularity of the case rather than its representativeness. Similarly, Merriam (2009) defines case study research as an intensive, holistic description and analysis of a bounded phenomenon, emphasizing that the key strength of case study lies in clearly defining and delimiting the case. Following this rationale, the bounded system studied here is municipal climate and energy governance in Ottawa, with particular attention paid to issues of participation and inclusion.

The selection of Ottawa is not based on its statistical representativeness, but on its analytical relevance for examining how procedural and recognition dimensions of climate and energy justice are operationalized in municipal governance. In Stake’s terms, Ottawa is treated as a “particular case of interest” that allows for deeper insight into a broader phenomenon rather than a case from which generalizations are drawn (Stake, 1995; Mishra, 2021). The value of the case therefore lies in its capacity to illuminate governance dynamics as they are experienced and interpreted by actors involved in them.

3.2. Instrumental Case Study Approach and Case Selection Rationale

For the purposes of this study, an instrumental case study approach is applied, as described by Stake (1995). According to him, an instrumental case study differs from others in that the case itself is not a subject of

analysis but serves as a means of understanding a broader theoretical concern. For this research, Ottawa's municipal climate and energy governance serves as such a case study subject.

More specifically, the case serves as a lens through which to analyze how governance arrangements, institutional structures, and participatory mechanisms shape access to decision-making and influence within municipal climate and energy transitions. This aligns with Stake's idea of studying a case in order to understand "something else" beyond the case itself (Stake, 1995, p. 3; Mishra, 2021).

Ottawa is selected for two interrelated reasons in this study.

The first is that the study aims to create and implement an advanced integrated framework for evaluating procedural and recognition justice in municipal energy governance. In this regard, Ottawa is a crucial example due to the scale and intricacy of challenges involved in its climate and energy transition efforts. The city has adopted long-term decarbonization targets, including a commitment to achieving net-zero community-wide emissions by 2050, positioning it among Canadian municipalities engaging in relatively advanced climate planning and governance experimentation (City of Ottawa, 2020a; City of Ottawa, 2020b; Federation of Canadian Municipalities, 2022).

One of the central rationales behind Ottawa being selected as a case study is the fact that the governance processes and actor networks in its climate and energy transition are extremely diverse. They range from the level of multi-stakeholder policy coordination between various city departments, and interaction with diverse local groups and community actors, to formal participation processes associated with initiatives like Energy Evolution. From a research methodology point of view, this provides a very productive context for a qualitative study of governance based on interviews, since it enables examination of different ways that governance structures are understood, engaged with and experienced by various actors.

Importantly, unlike the third chapter, this study does not rely on documentary analysis of policy texts as its primary empirical foundation; instead, the case is used to access and interpret governance dynamics through the perspectives of actors directly involved in or affected by municipal climate and energy decision-making, as captured through semi-structured interviews. Thus Ottawa can be said to constitute a bounded, empirical context in which lived experiences of participation, inclusion and governance can be observed empirically.

Second, the case was chosen in order to examine if the governance processes themselves might produce or reproduce inequalities in the climate and energy transitions. Continuing the discussion on differential climate vulnerability, the Ottawa case provides an opportunity to explore if and how municipality-specific governance processes, modes of participation, institutional priorities and policy development may either reproduce or compound inequalities. This also highlights Stake's focus on "particularity and complexity" of empirical social phenomenon as it is lived in context (Stake, 1995; Mishra, 2021).

In this sense, Ottawa is not treated as a model or an outlier, but instead, it serves as an analytically relevant setting where justice tensions are derived not just from climate change itself but also from the practices and dynamics of governance.

Last, the use of the single-case design is justified due to the in-depth, interpretive nature of the research. As Stake (1995) and Merriam (2009) emphasize, qualitative case study research prioritizes thick description, contextual understanding, and analytical depth rather than cross-case comparison or statistical generalization. Thus, the aim is to see how procedural and recognition justice occur within a single, real-life situation

(municipal government) and what institution and relationships mold these understandings of and experiences with participation and inclusion.

Although a comparative case design could yield more generalizable results, it would necessarily limit the depth of engagement with governance experiences and actor perspectives that is central to this study. A single-case approach allows for sustained attention to how participants interpret and navigate participation processes, institutional constraints, and power relations within Ottawa's climate and energy governance system, consistent with Merriam's emphasis on producing rich, contextually grounded "thick description" (Merriam, 2009; Mishra, 2021).

3.3. Population

The population of this study includes three key groups: Government officials involved in Ottawa's climate and energy transition initiatives; Community members who have participated in community-led climate or renewable energy projects; Intermediary actors, such as professionals working in non-profit climate or energy justice organizations in Ottawa.

3.4. Sample

A sample of 16 participants was recruited from the three relevant stakeholder groups for this study. The recruitment strategy combined purposive and snowball sampling in order to ensure both targeted inclusion of key informants and broader network-based identification of relevant experts. Firstly, the first 8 participants were recruited through the use of purposive sampling. These participants were selected based on their profession and involvement with energy or climate policy, municipal planning or similar sectors and were contacted directly by the researcher using their publicly available e-mail addresses or LinkedIn profiles. Using purposive sampling helped the researcher target key participants with direct knowledge or involvement in Ottawa's energy transition and climate governance. This included City staff, local environmental and climate action organizations' employees, and community members who have been actively involved in Ottawa's Community Energy Transition Strategy, the Climate Change Master Plan as well as climate resilience and adaptation initiatives. The sample also incorporated independent researchers and representatives of renewable energy co-operatives who have conducted research on the role of communities, or directly engaged with communities in local energy projects, governance processes, and stakeholder collaborations related to energy transition and community-led sustainability initiatives.

Second, additional 8 participants were recruited through the use of snowball sampling. In several cases, initial interviewees forwarded the study invitation to their colleagues or professional contacts within their networks who met the inclusion criteria. In other instances, organizations approached as part of the initial recruitment phase sent the invitation internally or to their extended networks which resulted in interested individuals contacting the researcher directly. This approach helped identify additional participants who were well-positioned to contribute relevant insights but were not initially visible through publicly available contact channels.

All recruitment procedures were conducted in accordance with research ethics requirements. To protect privacy, no personal contact information of the potential participants that the interviewees or organizations wanted to suggest was requested or shared by participants; instead, individuals who were interested in participating initiated contact with the researcher after receiving the study invitation. Along with the recruitment via email

and LinkedIn, one participant was recruited through attending an in-person community meeting, which increased the range of recruitment channels.

3.5. Data Collection

Data were collected through one-on-one semi-structured interviews conducted either in person or online (Zoom or Teams) between September and December 2025. Interviews were guided by a questionnaire consisting of pre-determined questions, while allowing flexibility for follow-up and probing questions depending on participant responses.

As part of the research ethics protocol, all participants reviewed and signed an informed consent form confirming that participation was voluntary, withdrawal was possible at any time without consequence, and confidentiality and anonymization were ensured. With participant consent, interviews were audio-recorded to accurately capture responses and support transcription.

Semi-structured interviews were selected for the study because the study aimed to understand how participation, inclusion, and governance processes are experienced, interpreted, and practiced by actors directly involved in municipal climate and energy governance.

While document analysis, which was conducted earlier by one of the researchers of this study, helped to analyze the language of the policies and what is being promised and stated in the institutional setting, the use of interviews helped to gain an understanding of those aspects of governance which could not be described in documents. The policies could describe participation in formal terms, however, they do not always reveal how decision-making processes function in practice, how actors perceive inclusion, where participation barriers emerge, or how institutional dynamics shape engagement experiences. The interview method therefore allowed the research to move beyond formal governance structures and explore the lived realities of participation within Ottawa's climate and energy transition processes.

In particular, semi-structured interviews were chosen due to their structured nature as well as flexibility in terms of the issues raised by the interviewees. The use of the interview guide enabled researchers to ensure that the data was collected in a structured and consistent way and relevant to the research objectives; at the same time, participants could develop answers and expand on the issues they felt necessary and not previously covered. This aspect is important due to the fact that participation and inclusion can be viewed as complicated processes, which can differ across various institutional actors, community organizations, intermediary actors, as well as municipal staff involved.

Moreover, the use of interviews made it possible to identify whether the patterns in terms of governance dynamics revealed during the document analysis carried out by one of the authors as well as previously discussed through interviews in connection with the Community Energy Transition Strategy (Daniel Atlas' work) were unique to the Energy Evolution Strategy alone or represented a more general climate and energy governance pattern in Ottawa. In other words, the interviews helped move the analysis beyond a single strategy document and allowed participants to reflect on wider institutional practices, participation cultures, governance relationships, and systemic barriers shaping municipal climate and energy governance in Ottawa. This was important because it helped contextualize whether issues such as technocratic governance, selective participation, or limited inclusion were isolated to one planning process or indicative of broader institutional patterns.

3.6. Data Analysis

The researchers chose the qualitative thematic analysis approach to analyze interview data. For this research project, we specifically used the Framework approach to thematic analysis which has been developed at the National Centre for Social Research in the UK, a method for organizing data and constructing central themes and sub-themes through a matrix or a table (Gale, et al., 2013). To ensure systematic analysis, NVivo 14 software was used to organize and code interview data. NVivo supported hierarchical coding structures based on the framework categories and enabled cross-interview comparisons, thematic pattern identification, and retrieval of coded excerpts.

This study applied a comprehensive analytical framework to our analysis of interview transcripts which guided the construction of thematic codes. The framework was developed by us in previous research, and synthesizes the Equity & Inclusion Lens (developed by the City of Ottawa & City for All Women Initiative (2018)) and Botes & van Rensburg's (2000) "Nine Plagues of Community Participation" (see Table 1). While the former criteria provide a structured approach to assess whether equity-deserving groups are recognized and meaningfully engaged across institutional functions, the latter offers a tool for identifying structural, institutional, and procedural barriers that limit meaningful participation in policy. By using a synthesized framework, this study moves beyond identifying whether participatory mechanisms exist and instead examines how participation is shaped in practice and whether inclusion is substantive or merely procedural (see the Appendix for further details).

3.6.1. From Analytical Framework to Primary Coding

The coding process occurred in several stages. Firstly, all interviews were transcribed and imported into NVivo 14 for analysis. The first author then read each transcript line-by-line using the integrated analytical framework (presented above) as a guide for initial coding. As a first phase of analysis, interview extracts were grouped under the general analytical categories from the integrated framework table (Table 1). Within the Equity and Inclusion Lens part of the framework, interview extracts were first grouped under institutional or governance issues such as: "Communications," "Engaging community and staff," "Gathering information / research," "Monitoring and Evaluation," "Policy Development," "Strategic Planning," and "Working with people." Simultaneously, interview extracts highlighting problems with participation or inclusive governance were grouped under categories based on the Nine Plagues of Community Participation framework: "Selective Participation," "Gate-keeping by local elites," "Inhibiting and prescriptive role of the state," "Hard-issue bias," and "The lack of public interest in becoming involved."

Under these overall framework categories, the initial coding cycle entailed applying more descriptive or "raw" codes to particular interview segments reflecting specific experiences, practice, views, or institutional operations mentioned by respondents. As an example, we would have coded quotes related to accessibility of information, clarity of communication, transparency, availability in multiple languages, or whether the information provided contributed to significant community participation under 'Communications'. Statements describing one-way information flows, inaccessible technical language, short consultation timelines, or limited public awareness were interpreted as indicators of weak inclusivity within this category. Similarly, 'Engaging Community and Staff' was applied to discussion of opportunities for participation in decision-making, consultation, co-creation or collaboration between municipalities and their communities. We would determine the level of meaningfulness and ongoing nature of participation and whether consultation processes seemed more tokenistic or superficial, based on the way it was described in the text. The presence of discussion about decision-making agenda-setting by authorities, set consultation boundaries, or a lack of actual decision-making power by participants would be indicative of low procedural justice.

The other 'Equity & Inclusion Lens' categories were examined with similar interpretive logic. 'Working with People', for instance, captured discussion about the consideration, inclusion, accommodation or targeted engagement of vulnerable groups or equity-deserving people. 'Training' and 'Recruiting and Hiring' identified the use of discussion of internal capacity, staff skills, diversity or inclusion practices within the municipality. 'Monitoring and Evaluation' covered discussion of the social equity impacts, accountability structures, or ways in which participation or inclusion were measured beyond technical performance indicators.

We also coded quotes related to the nine plagues of community participation according to patterns in governance processes that seemed to create barriers and exclusions to participation. For instance, we would have coded passages that describe expert-led processes with decision-making power retained by authorities or experts, and where community participants were passive information-recipients, under 'Paternalistic Role of Development Professionals'. We would apply 'Selective Participation' where the analysis suggests the participation process was not open to all participants equally; for instance if there was concentration of participation among influential institutions, well resourced community groups or individuals with financial or technical leverage. Similarly, we would identify quotes concerning the capture of influence by decision-making elites, be they political, institutional or organizational insiders as 'Gate-Keeping by Local Elites'. Under "Inhibiting and Prescriptive Role of the State," interview data referring to provincial restrictions, centralized authority, or constrained municipal autonomy were coded using labels such as "provincial legislative constraints," "centralized governance structures," and "risk-averse institutional culture."

3.6.2. From Descriptive Coding to Global Themes

As analysis progressed, these smaller descriptive codes were systematically compared across interviews to identify recurring patterns, relationships, and broader governance dynamics. Through this iterative process, related raw codes were grouped into more interpretive thematic categories. For example, descriptive codes concerning lack of responsiveness, "exclusion from participatory process" and "closed consultation procedures" were subsumed into the themes such as "top-down participation strategies." Similarly, "provincial constraints on policy autonomy," "institutional risk aversion" and "centralized decision-making apparatus" were merged under the overarching themes such as governance constraints and institutional limits. After extensive dialogue, constant comparison and refinement between both researchers, these smaller, interpretive, thematic categories began to consolidate into larger, "global," themes presented in the Results section. In total, all the coded material was reduced to two global themes: "structural and institutional barriers" and "power asymmetries in engagement," to represent the broader institutional and socio-political processes operating in Ottawa's climate and energy governance which were both affecting and affected by how inclusion and participation occurred.

The textual nature of the interviews formed the primary basis of the analysis; however, the first author consulted the field notes to complement the interview data with contextual observations and prevent the neglect of key non-verbal elements of communication. Special note was taken of points that the participants particularly emphasized through tone, pausing, hand gestures and emotion. Such observations were included in the coding process when deemed relevant to the perception of frustration, exclusion or institutional mistrust.

While an analytic framework initially guided the coding process, the analysis itself was not rigidly bound; the first author remained open to the emergent inductive themes that may not have been anticipated within the existing framework categories. After the first round of coding, both authors reviewed the coded material together, refined the coding structure through discussion, and conducted a second round of coding collaboratively to strengthen

consistency and thematic interpretation. Finally, related categories and recurring patterns were synthesized into the broader themes discussed in the Results section.

Analytical Framework	Codes Applied in NVivo Analysis
Equity & Inclusion Lens	Communications; Engaging Community and Staff; Gathering Information / Research; Leading and Supervising; Monitoring and Evaluation; Planning: Services, Projects, Events; Policy Development; Recruiting and Hiring; Strategic Planning; Training; Working with People
Nine Plagues of Community Participation	Paternalistic role of development professionals; Inhibiting and prescriptive role of the state; Over-reporting of development successes; Selective participation; Hard-issue bias; Conflicting interest groups within end-beneficiary communities; Gate-keeping by local elites; Excessive pressures for immediate results;; The lack of public interest in becoming involved

Table 1. Analytical Frameworks Used to Guide the Thematic Coding

4. Results

This study aimed to assess the extent of participation and inclusion in Ottawa’s climate and energy transition initiatives. The primary theme emerged across the full set of interviews conducted, which also guided the selection of passages for the detailed content analysis after examining the interviews using the integrated analytical framework: barriers to participatory and inclusive governance. Therefore, a detailed discussion of this theme is presented in this Results section below, wherein we unpack these themes and contextualize them through excerpts from the interview data. After presenting the primary findings of this study, the Discussion section is going to discuss the findings and how they contribute to the existing literature. Later, building upon these barriers, the Discussion section suggests “commandments” – emergent guidelines for promoting community participation and inclusion.

4.1 Barriers to Participatory and Inclusive Governance

The barriers to community participation in Ottawa’s climate and energy transition initiatives identified were classified into two overarching categories: (1) structural and institutional barriers, and (2) power asymmetries in engagement. While the former refers to governance arrangements, infrastructure systems, and jurisdictional divisions that constrain participation, the latter captures uneven capacities among stakeholders to engage. Together, these categories show how both institutional design and unequal social positioning shape participation and inclusion.

4.1.1 Structural and Institutional Barriers

Structural and institutional barriers refer to formal rules, governance arrangements, policy legacies, and organizational practices that constrain meaningful community participation in climate and energy decision-making. The interview data suggest these barriers are rooted in regulatory processes, infrastructure systems, and jurisdictional authority divisions that limit local agency and responsiveness.

One form of such a barrier which emerged from the interviews was a reluctance on the part of official to meaningfully engage communities. Across the interviews, decision makers in Ottawa's climate and energy policymaking demonstrated hesitation toward involving community members in ways that could meaningfully influence policy outcomes or introduce controversy.

A sustainability consultant, with experience spanning community advocacy, technical consultation, and public engagement in municipal climate and energy transition planning — and with prior professional experience working directly for the City of Ottawa, mentioned the following about the Ontario Energy Board:

I would say the Ontario Energy Board is trying to streamline hearings, and they're limiting interveners at hearings... there was a hearing into the replacement of the Saint Laurent gas pipeline... and they put some fairly strong limits on interveners...

When I was at the city... I had a freer hand to write letters of comment to the Ontario Energy Board, and as time went on, that seemed to get constrained...

I think it's management... not wanting anything that comes close to being controversial... and I think it's cowardly (Interview Participant).

This excerpt demonstrates organizational procedures and risk-averse internal cultures can restrict opportunities for meaningful participation in energy governance. The interviewee suggests that efforts to “streamline” hearings by restricting interveners effectively limit the range and the diversity of voices that can shape regulatory decisions. Their observation that they once had greater freedom to submit municipal comment letters, followed by recently growing internal constraints and reluctance to engage people points to an increasingly constrained political and managerial environment that discourages proactive engagement. The fact that the current management is characterized by avoiding controversy shows that beyond formal procedural limitations, participation is also being informally restricted through organizational culture and risk avoidance.

Additionally, interview data suggest engagement is often treated as a means to an end rather than an end itself. A founding executive of a local environmental non-governmental organization, with more than ten years of experience in climate policy advocacy, community outreach, and participation in public consultations related to Ottawa's climate and energy transition, described:

... said that there would be a mayoral environmental roundtable. So, we had a meeting of that with CAFES, Ecology Ottawa and Ottawa Riverkeeper, in February 2023, and then there were two years where we said, so when's the next session? What's going on? And they refuse to answer the mail in the mayor's office. They were just like that, and then, now that the election is coming, we've recently had two meetings with the mayor in 2025 of the environmental roundtable (Interview Participant).

This excerpt serves as evidence that community engagement is often deployed instrumentally rather than constructed as a meaningful governance practice. The interviewee highlights how the mayoral environmental roundtable was initially organized by the decision makers but then left inactive for an extended period, despite

multiple attempts by community organizations to follow up, showing a low institutional commitment to continuous engagement. This has been even further complicated by the sudden reorganization of meetings closer to the date of the upcoming election, suggesting that this form of performative or episodic engagement may be strategically timed to enhance political legitimacy or demonstrate responsiveness, rather than to sustain ongoing collaborative dialogue and foster genuine community influence.

Another type of structural barrier was a kind of infrastructural path dependency which refers to both how energy systems and also policy/regulatory structures have been built over time and shape what is possible today, often limiting participation and innovation. Across interviews, participants emphasized that Ontario's electricity system relies on centralized generation and long-distance transmission, restricting opportunities for local generation and community involvement.

A senior board member of a local renewable energy cooperative in Ottawa, bringing more than a decade of hands-on experience in community outreach, technical consultation, public engagement, and implementation support within Ottawa's climate and energy transition governance, explained:

If you're familiar with Ottawa... you'll see the Hawthorne transmission station. That's where 80% of the electricity coming into Ottawa goes through... there's two points where the power from Ontario comes into Ottawa, Hawthorne Transmission Station (TS) and Merivale TS. After that... it's all distribution.

...I know that my house is at the very end of the last line and the last transformer... and I've been out of power four times for more than five days... the ice storm in 1998, the trees in Ohio that shut down North America in 2003, the great outage, the Derecho storm in 2022 and the tornado that hit Ottawa south in 2023...

So, we need to build generation on the distribution lines... and we need to give communities and independent non-utility players a little bit of preference in building it (Interview Participant).

This passage highlights how centralized infrastructure creates vulnerabilities and limits community-based energy futures. The participant connects long outages to dependence on a small number of transmission entry points and argues for decentralization that enables independent and community actors to participate.

A senior director at a climate and energy organization, with more than seven years of experience and a background working for a renewable energy cooperative operating in the Ottawa area, framed this issue as a broader Canadian problem:

I think it's a legacy issue. I wouldn't pick on Ontario necessarily... I think this is a problem across Canada... We see some changes, like Nova Scotia is kind of moving ahead...

...the way that our electricity systems have been set up has been traditionally driven by experts and major infrastructure...

...it's a combination of the way that our electricity system has been built over time... the legacy utility companies... and the way that the government has controlled it... with this rate based regulatory system that's very tightly controlled (Interview Participant).

This excerpt reinforces that centralized electricity systems emerged through long-term institutional and regulatory development, not simply current policy choices and highlights how historical, socio-political, and institutional legacies matter for justice-oriented energy policy design.

An additional form of institutional force in shaping participation was the role played by jurisdictional issues in climate policy and the heavy influence of central (federal) authority in dictating what can be done at other levels of climate authority and governance. Interviews indicated that federal and provincial governments hold dominant decision-making authority compared to cities. Participants described delays and policy uncertainty caused by provincial control over enabling legislation. A City of Ottawa employee with more than a decade of experience, who has directly involved in policy development, technical consultation, community outreach, and public engagement related to Ottawa's climate and energy transition, stated:

We're trying to advance a green development standard, but it's been held up... by provincial changes to provincial legislation.

Toronto has a green development standard... called the Toronto green standard... We developed our own... called the High-Performance Development Standard... but it's not in effect because of the enabling legislation has changed, and we are no longer allowed to put in energy specific metrics...

...we're waiting, essentially, for more news from the province on that (Interview Participant).

In this passage, the interviewee reflects on provincial control over energy decisions and building regulations that places tight boundaries and limits on municipalities' energy transition and climate action. The participant highlights their challenge of not being able to implement a locally developed green development standard due to recent changes to provincial legislation that removed the city's power to incorporate energy-specific provisions into its framework. Thus, although municipal authorities came up with a local policy specifically tailored to new construction buildings, it can only take effect if the provincial authorities provide approval and updated guidelines and deem local policies consistent with the provincial building code.

Moreover, the fact that the interviewee emphasized "waiting" a few times throughout the interview draws attention to how the jurisdiction of energy and climate governance is mostly centralized and concentrated within the boundaries of provincial authorities. Unlike what was argued earlier in terms of political reluctance of even the municipal government, this shows that in some instances, municipalities might be in fact proactive and come up with progressive standards; however, whether they move forward is determined by higher-level legislative decisions. This ultimately limits local autonomy and hinders policy innovation, making local authorities become passive and reactive actors with limited authority in energy and climate governance and less ambitious to bring about new local energy and climate solutions.

4.1.2 Power Asymmetries in Engagement

The second category of barriers concerns power asymmetries in engagement, meaning unequal access to resources and influence within participatory spaces. Interview data suggest these asymmetries appear through both facilitator-led, top-down engagement structures and unequal capacities among different socio-economic groups to participate effectively.

First, our study interview data suggest that participatory processes often appear consultative, but agendas and boundaries are typically predetermined by authorities or consultants, limiting co-production. A founding

executive of a local environmental organization, with over a decade of experience spanning climate policy advocacy, community outreach, and direct engagement in Ottawa's climate and energy transition processes, described:

They have communication products at the city, so they have the climate and resiliency unit that has a newsletter that they send out, which is, I guess, if you have a one-way information flow, that's not exactly participation and consultation...

...a big structural example is this seven to ten days... making the documents public that will be debated at the City Committee...

...you're supposed to be able to have public input... If you register yourself to make a public delegation... you will have your five minutes time, and after five minutes, they cut you off...

...you only have this seven to ten-day window... most of the time, we do not have a clear idea of the agenda... and then if they want even less public scrutiny, then they'll close that window even more...

...in the Lansdowne... the documents were only released... on the weekend... and then people had the weekend to read things that were being discussed the week after (Interview Participant).

The passage above demonstrates the existence of top-down control over participatory processes and how it limits genuine participation and engagement. The interviewee firstly highlights the fact that despite the attempts of the City's climate and resiliency unit to raise awareness among residents through its communication mechanisms, such as newsletters, most of the time, this type of information flow is one way. To put it differently, information dissemination alone is not necessarily considered meaningful engagement, as citizens are not able to contribute to discussions through this type of communication.

This participant also draws attention to formal mechanisms for public input, where there is in fact two-way communication between residents and the City. However, the interviewee notes that while these engagement mechanisms, such as committee meetings and public delegations, may appear participatory, they are often tightly controlled through strict time limits, short notice periods, and limited transparency around agenda-setting. In particular, the seven- to ten-day timeframe to review extensive documents, combined with uncertainty about when issues will appear on committee agendas, makes it difficult for community members to prepare meaningful input. Moreover, the participant suggests that strategically releasing documents shortly before meetings may be used to reduce public scrutiny and reinforce technocratic decision-making.

Other participants noted that top-down renewable energy policies can undermine participation and generate opposition. As an interdisciplinary environmental social scientist, with extensive experience spanning policy development, technical consultation, community outreach, public engagement, implementation support, and monitoring and evaluation across climate and energy transition initiatives, pointed out:

...tariff program brought in in 2009... removed community voices, removed community benefit... made things a lot less inclusive and a lot less equitable... Community benefits were quite small...

The upside... is that these projects move oftentimes faster. They get approved faster... there's less community and local level authority... But as a result, communities and people living near them hate these projects...

...we surveyed around almost 80% opposed their local wind farm...

...Nova Scotia developed a community feed in tariff program... under the requirement that projects had to be owned by a community... the people in Nova Scotia supported and felt like it was a much more just transition...

Ontario did it this way, led to a lot of opposition... partly responsible... the election of Doug Ford in 2018, who canceled 758 clean energy projects...

...those are two tangible examples... of two different ways to build renewables... there's lessons there for federal government and provincial governments (Interview Participant).

In this excerpt, the interviewee argues that Ontario's feed-in tariff program significantly reduced opportunities in terms of how communities meaningfully get involved and benefit from engagement. While this centralized approach was helpful in accelerating project approvals and speeding up implementation by lowering administrative barriers, in fact, it minimized local decision-making roles and public engagement. The research that the participant conducted suggests that this approach created public backlash against renewable energy developments. This was because public input and opinion were not necessarily taken into account when the program was developed, which reflects a disconnect between administrative efficiency and community acceptance. The participant also showed that when the action plans do not represent community voices, local tensions are inescapable.

In contrast, Nova Scotia's community-based feed-in tariff model was a more successful in terms of community participation and inclusivity as it required some form of community ownership. Thus, the comparison that the participant made shows that when renewable energy projects are implemented through facilitator-led, top-down processes, they may advance quickly but lack social legitimacy. On the other hand, when communities get involved in ownership and decision-making, projects can be more sustainable and be socially acceptable, thus creating trust and a collaborative engagement environment.

Some interviewees suggested that special demographic and interest groups have greater capacity to engage than the average citizen or citizen group. Across the interviews participants highlight the unequal ability and capacity of certain actors in energy governance processes. For example, participants highlighted how individuals who have more financial means, professional knowledge, social networks, or flexible time, such as developers or retired, wealthier residents are better able to attend and contribute to consultations and impact policy outcomes. On the other hand, as a founding executive of a local environmental organization, bringing over a decade of hands-on experience in climate policy advocacy, community outreach, technical consultation, and public engagement within Ottawa's climate and energy transition governance, highlighted, those with fewer resources face practical challenges that restrict ongoing engagement:

... these documents are hundreds and hundreds of pages. The only people that that really read hundreds of pages are people that somehow have a special interest. And I'm saying special interest, it can be in a positive sense, or it can be in a negative sense. So if you're a developer, and you don't want to pay development charges when you do your urban sprawl thing, then it would be an advantage (Interview Participant).

This excerpt highlights how because of the complexity and length of policy documents, only certain people are better able or have time to read and understand them to be prepared for deliberative processes. In other words, those actors have strong incentives, professional expertise, or financial resources to invest the time required to comprehend and analyze regulatory materials spanning hundreds of pages and thereby, influence the

deliberative processes. On the other hand, certain groups, such as newcomers, immigrants, people of low socioeconomic status, the ones with a disability or taking care of their children or their disabled family members often lack what one participant, who happens to be an executive director of a local environmental organization in Ottawa, describes as the “luxury” of time to be able to get involved in participatory processes, reinforcing existing socio-economic and demographic inequalities:

...it's a luxury to be able to participate in governmental programs or policy developments because you need a lot of time for it, time that you're not working, say, surplus jobs to make ends meet or taking care of kids or taking care of a loved one with a disability or oneself with a disability. So time is not just showing up, it's also doing the work in advanced, researching or even being able to keep up with issues, keeping up with the news, or keeping up with reading city newsletters. So time is a major barrier that folks who are struggling to get by just don't have that luxury (Interview Participant).

Additionally, the segments of the population who are more likely to attend deliberative processes can also become the ones that financially invest in community-based energy sources and are able to devote their time to volunteer for community-based organizations, thus having more impacts on energy transition decisions not only at the municipal level but also within their communities. Thus, this study shows that while engagement processes are necessary to address procedural injustices in energy policies, these processes can simultaneously marginalize non-white, female, and lower-income populations. A sustainability leader and project manager at a national community energy organization in Canada, with experience in community outreach, public engagement, and implementation support across climate and energy transition initiatives, observed:

...the number of volunteers that do work for these organizations are generally retired. They're generally wealthier. They generally fall into that bracket, because they've got the time and the experience (Interview Participant)

In this passage, what the participant highlights is that existing social and economic inequalities dictate who can have a say and impact on community energy initiatives. The interviewee observes that participation tends to be concentrated among White, retired and more affluent individuals. This is because engaging in community energy may require sufficient financial investment, discretionary income, and long-term volunteer commitment, and those with financial resources, greater economic security, and available time are better positioned to benefit from and contribute to such engagement opportunities.

Moreover, in addition to time, financial, language and life constraints, across the interviews, it was also determined that those lacking important social connections within their communities might be left behind, which can reproduce broader social and economic inequalities within climate and energy policymaking processes. In other words, as a researcher working across multiple disciplines at the intersection of environment and social science, with broad involvement in climate and energy transition policy development, technical consultation, community outreach, and program evaluation, mentioned in an interview, social capital, in this case, knowing the right people, having access to networks, and being informed about opportunities can play a critical role in shaping engagement processes:

I have a study right now with some students. We're looking at solar energy transitions at the local level, and we're finding that very much it's about finances but it's also about social capital, so who you know and who can point you in the right direction, for investment opportunities, for participatory opportunities (Interview Participant).

5. Discussion

5.1 Situating the Findings in the Literature

The findings align with broader concerns in the climate and energy governance literature that participation is often limited by technocratic and risk-averse decision-making environments. In Ottawa's case, hesitation from decision makers to meaningfully engage communities reflects what has been described as a "post-political" approach to climate governance, where contested ideas are minimized through an emphasis on managerial consensus and controlled engagement (North, et al., 2017). This suggests that participation can exist formally but still remain constrained in practice through institutional cultures that avoid controversy and restrict community influence.

Similarly, the results reflect Botes and van Rensburg's (2000) argument about the "inhibiting and prescriptive role of the state," where participation becomes less about genuine inclusion and more about political legitimization. The episodic nature of engagement described by participants, including the timing of mayoral roundtable meetings closer to elections, reinforces the idea that consultation can be strategically deployed rather than sustained as a meaningful governance practice. This also challenges more optimistic views of mayoral leadership, such as Takao (2020), by showing that leadership structures do not necessarily guarantee consistent or community-driven participation.

The study also supports literature emphasizing the role of infrastructural and institutional path dependency in shaping energy transitions. Centralized electricity systems and legacy utility arrangements were repeatedly described as limiting local generation and community involvement. While this resembles Botes and van Rensburg's (2000) "paternalism pitfall," the findings suggest that paternalism is not only produced by individual decision makers but also embedded in infrastructure itself, which privileges expert-driven planning and large utility actors. These findings are consistent with Gurčínaitė and Barbrook-Johnson (2026), who show how historical and institutional legacies shape trust and governance outcomes, demonstrating that transition pathways are often shaped by long-term socio-political and institutional histories rather than current policy choices alone.

The results also speak to debates on multi-level governance and municipal autonomy. Contrary to Kim (2017), the Ottawa case shows that even when municipalities attempt to develop progressive climate policies, provincial enabling legislation and regulatory frameworks can significantly limit local authority. This supports Lemon et al. (2015), who highlight how higher-level jurisdictions often maintain decisive control over local climate governance, leaving municipalities dependent on provincial decisions and forcing them into reactive roles.

In terms of participatory processes, the findings strongly reflect Arnstein's (1969) critique that participation without empowerment can become tokenistic. Participants described consultation mechanisms that appear inclusive but are shaped by predetermined agendas, short notice periods, and strict time constraints, suggesting that deliberation is often tightly managed rather than co-produced. These findings are consistent with North et al. (2017), who argue that technocratic climate governance can restrict public scrutiny and reinforce expert dominance. The Ontario feed-in tariff example further illustrates how top-down policy design may accelerate implementation but undermine legitimacy and create backlash when communities are excluded from ownership and decision-making. This echoes Camponeschi's (2021) argument that urban energy transitions often remain dominated by technical elites through an "infrastructure-first" governance approach.

Finally, the study supports existing scholarship showing that participatory governance is shaped by unequal capacities across socio-economic and demographic groups. The findings resemble Shejale et al. (2025) in demonstrating that engagement processes, while intended to address procedural injustice, can reproduce exclusion by privileging those with time, wealth, and professional expertise. The demographic patterns described in the interviews also closely reflect Tarhan's (2022) analysis of renewable energy co-operatives in Ontario, where participation tends to be concentrated among wealthier, middle-class, and typically White populations. More broadly, these findings align with existing work emphasizing how marginalization based on income, ethnicity, gender, and institutional access continues to shape who participates in climate governance (Kaandorp et al., 2024; Park, 2012; Tarhan, 2022).

5.2. Emergent guidelines for promoting community participation and inclusion

Drawing from our results, we have built a list of concrete actions that can be taken in municipal energy policy and construct them as a set of commandments, a term inspired by Botes & van Rensburg (2000) in their study on participatory development in South African local governance, focusing on how community involvement can be structured to improve decision-making and implementation. Rather than abstract principles, the below are intended to serve as grounded, actionable guidelines for policymakers and practitioners seeking to design more equitable and participatory climate and energy policymaking processes at the municipal level.

- 1. Create visible avenues for citizens to meet with officials and decision-makers, thus making community engagement a visible priority.** As one participant highlighted, “Having mechanisms...where councilors...are required to have regular meetings with community groups...so that councilors actually meet their citizens in a way that they don't control...It's not a panacea, but you do get a sense that most councilors are not routinely sitting there talking to citizens, except the ones that already agree with them. Stronger democratic oversight mechanisms for councils, I guess.” This suggests that engagement should shift from being optional to being required, so that it does not depend on political convenience. For example, instead of engagement being revived mainly near elections, institutional requirements can make community input routine. This commandment also addresses procedural justice concerns and confronts the “post-political” silencing of contested ideas discussed by North et al. (2017).
- 2. Design engagement practices where community members are active co-creators, not just responders.** This commandment emphasizes that many of aspects of the structure of engagement should be developed with diverse community members rather than predetermined by authorities, allowing community members to shape priorities, guide the scope of projects, and share power in decision-making. One participant showed two initiatives as strong examples following this guideline, such as Indigenous Off-Diesel Initiative & Wah-ila-toos Indigenous Council (federal initiatives run by Natural Resources Canada the Government of Canada, respectively). The reason is that they go beyond simply consulting communities and involve Indigenous actors directly in designing, decision-making, and implementing projects. In other words, community members aren't just providing input; they actively shape the goals, strategies, and outcomes, making them co-creators rather than passive participants. More than anything, this guideline also requires facilitators to understand community needs and vulnerabilities. One participant noted, “I think, for example, when we are talking about who's going to facilitate those conversations and who's going to guide the conversation, you have to be culturally aware, gender aware, and understand what is the context that you're having the conversation in... use participatory methods that could give equal voices to different members... maybe we do like breakup groups... or... visual mapping or maybe storytelling... to improve their participation and create a space

where everyone can feel included.” Without such awareness, facilitators risk reproducing top-down engagement structures that silence voices. This approach goes beyond symbolic involvement and aligns with Arnstein’s (1969) concerns about tokenism, while also building legitimacy and preventing backlash like that seen in Ontario’s wind projects.

3. **Actively level the playing field by redistributing resources, access, and decision-making power so that participation is not dominated by those with greater financial, social, or institutional capacity.** This commandment recognizes that participation is shaped by unequal capacities, reflecting marginalization issues highlighted in the literature (Kaandorp, et al., 2024; Park, 2012; Shejale, et al., 2025; Tarhan, 2022). Without intentional intervention, engagement reproduces existing inequalities and amplifies already powerful voices. Therefore, participation requires design strategies that reduce barriers and expand access. One participant mentioned, “...providing childcare at engagement opportunities, or subsidizing... bus passes... or even providing a stipend for participation... have all been shown to be helpful.” This highlights that participation gaps can be mitigated through practical solutions. Ultimately, equity is not just about inviting everyone, but about ensuring people can realistically show up and shape outcomes.
4. **Decentralize energy and climate authority by empowering municipalities and communities with decision-making power, ownership opportunities, and equitable participation mechanisms, rather than reinforcing centralized, top-down systems.** This commandment calls for moving away from centralized governance where authority and benefits remain concentrated in large-scale systems. While local actors are already advancing equity-focused transition initiatives, these efforts are constrained by provincial systems that limit local agency and community ownership. Decentralization does not mean abandoning coordination, but rebalancing power so communities can shape decisions and benefit materially. One participant argued, “We need to build generation on the distribution lines... and we need to give communities and independent non-utility players a little bit of preference in building it.” Another participant added, “If I can own part of a wind turbine... it looks a lot different... I will be more interested... ownership... is more important than inclusivity, presentations, green washing...” These excerpts emphasize that participation without ownership is insufficient, meaning procedural justice also requires addressing distributional justice. This commandment aligns with Lemon et al. (2015), showing that local governments cannot meaningfully engage communities without authority. It also resonates with Gurčínaitė and Barbrook-Johnson (2026), reinforcing the importance of considering historical, socio-political, and institutional legacies when designing justice-oriented energy policies.

6. Limitations

In its approach to the research problem, the study employs a qualitative case study approach that concentrates on climate and energy governance in Ottawa. As with most qualitative case studies, the findings of the study are meant to offer insight and transferable knowledge from an in-depth perspective rather than generalize results to other cases or achieve statistical representativeness. However, one of the weaknesses of the study involves participant selection. While the research did involve a variety of stakeholders, including municipal staff, civic organizations, academics, and intermediaries, some marginalized groups might still lack representation among the participants. Interviews conducted among those who consented to take part were usually people who were already involved in, familiar with, or interested in the topic of climate and energy governance or had time to participate in the interviews. This may mean that the research reflects the perspectives of more civically active or institutionally connected actors rather than residents entirely disconnected from participatory processes.

People who face the highest challenges to participation due to homelessness, lack of language skills, institutional mistrust, precarious working conditions, caretaking duties, and civic isolation are usually also the hardest people to recruit for governance research studies. As a result, the perspectives of the most excluded populations may not have been fully captured, which can be addressed further in future research.

7. Conclusion and Policy Implications

This study has examined how community participation and inclusion, as central elements of climate and energy justice, are reflected and practiced within Ottawa's climate and energy transition initiatives, such as but not limited to, Energy Evolution, Better Homes Ottawa Loan Program, Climate Resiliency Strategy, Engage Ottawa, and City of Ottawa Climate and Resiliency Unit newsletter, and what lessons can be drawn for municipal-level energy and climate policymaking. By analysing qualitative interviews using an integrated analytical framework, the findings revealed a consistent gap between how participatory mechanisms are formally presented and how engagement and inclusion occur in practice.

The study found two key dynamics that shape this gap. First there are existing barriers that limit community engagement. These barriers include factors, such as decision-makers who are not willing to listen to communities, existing infrastructure that is difficult to change, and decision-making power controlled by a central authority. In other words, the way communities can participate is strongly affected by larger systems of governance and historical legacies behind the structures and institutions. In this study, it is noticed how they weaken local decision-making power and restrict locally led initiatives. Second the study found that there is not a level playing field when it comes to community engagement. To put it differently, even when there are some participatory mechanisms available, only privileged people that have the time, financial resources, knowledge and social capital often get involved. In turn, these people dominate engagement, while marginalizing communities that have been historically disadvantaged and left behind, reproducing existing inequalities. Also, research shows that participatory processes are often designed in a top-down way, are constrained by time, and have a limited scope. This, in turn, creates situations wherein participation is often instrumental or symbolic, and it is often used to legitimize decisions that have already been taken, rather than being used for co-production. In this regard, it is argued in the study that the problem is not simply the absence of participation but rather how participation is structured and practiced and whether it leads to meaningful influence on decisions.

At the same time, based on the interview participants' experiences, the study suggests a set of empirically grounded guidelines. These insights suggest several key policy implications for attaining more inclusive and participatory energy and climate governance. First, participation must be institutionalized. More specifically, it should be turned into a continuous and mandatory component of governance, rather than merely remaining as an optional approach depending on political will or timing. Second, engagement processes should be redesigned in way that enables co-creation and provides spaces for communities not just to formally participate and merely respond to predefined proposals but also meaningfully shape agendas, priorities, and outcomes. Third, achieving inclusion also requires actively acknowledging and addressing unequal capacities of individuals to participate. Here, the study suggests measures such as financial support, accessible communication, and reduced logistical barriers.

Finally, the study decentralization of energy governance to achieve meaningful engagement. This requires granting municipalities greater authority as well as supporting distributed, community-based energy systems. It also includes ensuring community ownership and material participation. In other words, engagement should not only be tied to voice but also to owning an energy source and having corresponding tangible benefits, indicating

how procedural justice is also closely aligned with distributional justice at times. Finally, policymakers must recognize that participation is shaped by historical, institutional, and socio-technical legacies, consistent with studies showing that these long-term structures influence governance capacity, trust, and the possibilities for local innovation. Therefore, they need to adopt context-sensitive approaches that gradually transform existing systems, as participatory reforms cannot be implemented in isolation.

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Appendix A: Integrated Analytical Framework

This study applied an integrated analytical framework as a lens to analyze transcripts and construct themes, which was developed in previous research, combining the Equity & Inclusion Lens developed by the City of Ottawa & City for All Women Initiative (2018) and Botes & van Rensburg's (2000) Nine Plagues of Community Participation

- 1) Firstly, the City of Ottawa and the City for All Women Initiative (2018) outlines eleven domains of inclusive practice. Each domain was operationalized as an analytical category to examine how equity considerations are embedded across institutional processes
 - Communications – this dimension evaluates whether public information is shared in ways that reach diverse audiences, particularly those vulnerable to exclusion. It considers the use of clear language, accessible formats, multilingual materials, and varied communication channels. In this research, it is used to assess whether Ottawa's energy transition and climate initiatives employ inclusive communication strategies that minimize linguistic and cultural barriers and ensure that equity-deserving communities are not inadvertently excluded from awareness or engagement.
 - Community and Staff Engagement – this area examines whether participation processes actively incorporate diverse perspectives—especially those that are often marginalized by reducing barriers to involvement, diversifying outreach strategies, and fostering culturally respectful engagement spaces. In this study, it assesses whether Ottawa's policies meaningfully involve equity-deserving groups, reflect their contributions in decision-making, and structure participation in ways that build empowerment rather than reinforce exclusion.
 - Information Gathering and Research – this component focuses on whether research and data collection methods adequately represent diverse populations, including through disaggregated data and culturally appropriate methodologies. Here, it is applied to evaluate whether Ottawa's climate and energy documents rely on equity-sensitive evidence that captures impacts on marginalized communities, rather than depending solely on technical or aggregate data.
 - Leadership and Supervision – this category considers whether leaders embed equity into governance structures, decision-making processes, accountability mechanisms, and staff development. In this analysis, it examines whether Ottawa's institutional leadership integrates inclusion into oversight practices or whether governance remains largely technocratic and detached from equity objectives.
 - Monitoring and Evaluation – this lens assesses whether evaluation frameworks account for varied community experiences, incorporate inclusive metrics, and communicate results accessibly. In this study, it explores whether Ottawa's monitoring systems track distributional impacts, such as effects

on low-income or marginalized groups or focus primarily on technical indicators like emissions reductions.

- Planning (Services, Projects, and Events) – this dimension evaluates whether programs and initiatives are designed to reduce access barriers, anticipate the needs of diverse populations, and incorporate input from affected groups. The analysis examines whether Ottawa’s climate and energy planning proactively addresses affordability, accessibility, and vulnerability, or whether it remains generalized and technically oriented.
- Policy Development – this component investigates whether equity is integrated at the outset of policy design, including through inclusive consultation, equitable resource allocation, and consideration of accessibility and affordability. In this study, it assesses whether Ottawa’s policies incorporate equity considerations from early framing stages or remain primarily technical in scope.
- Recruitment and Hiring – this area examines whether employment practices broaden representation, reduce systemic bias, and cultivate a workforce reflective of community diversity. Applied here, it explores whether climate- and energy-related institutions in Ottawa create pathways for underrepresented populations to participate in and influence the transition.
- Strategic Planning – this lens evaluates whether long-term strategies incorporate demographic realities, address equity concerns raised by communities, and set measurable inclusion objectives. The analysis considers whether Ottawa’s overarching climate and energy strategies integrate equity into long-range priorities or prioritize technical goals over social inclusion.
- Training – this component assesses whether training initiatives build staff awareness, reduce bias, and develop competencies for inclusive engagement. In this research, it evaluates whether institutional capacity-building ensures that those implementing climate policies understand equity implications and can engage respectfully with diverse communities.
- Working with People – this dimension focuses on everyday interactions, emphasizing respectful communication, bias awareness, and efforts to ensure all voices are heard. Within this study, it helps determine whether Ottawa’s documents acknowledge lived experiences of marginalized groups and recognize barriers affecting interactions between staff and residents.

Collectively, these eleven domains were coded as subcategories under a broader Equity and Inclusion node in NVivo to examine how inclusivity is reflected across governance, planning, implementation, and evaluation processes.

2) Secondly, this study applies Botes & van Rensburg’s (2000) framework called “Nine Plagues of Community Participation” in its analysis as it highlights how participation can be co-opted, manipulated, or constrained in community-based initiatives. The nine challenges, referred to as the “nine plagues,” are outlined as follows:

- Paternalistic role of development professionals – This refers to externally driven, top-down approaches led by outside experts that limit community agency and fail to prioritize local perspectives.
- Inhibiting and prescriptive role of the state – Situations in which government policies or actions unintentionally or deliberately inhibit genuine community involvement.
- Over-reporting of development successes – the tendency to emphasize positive outcomes while minimizing or ignoring shortcomings.
- Selective participation – this occurs when socially advantaged individuals dominate engagement processes, marginalizing less privileged community members.
- Hard-issue bias – a preference for tangible, measurable outputs, such as infrastructure or financial metrics over relational and process-oriented aspects like inclusion and democratic engagement.
- Conflicting interest groups within end-beneficiary communities – tensions among subgroups within communities that may arise when certain interests feel neglected.

- Gate-keeping by local elites – circumstances in which local leaders or influential actors control access to participation and shape outcomes according to their own interests.
- Excessive pressures for immediate results: the accentuation of product at the expense of process – the prioritization of immediate outputs over inclusive and deliberative processes.
- The lack of public interest in becoming involved – low levels of engagement stemming from apathy, distrust, or prior negative experiences with participation (Botes & van Rensburg, 2000).

During the Nvivo analysis, these nine plagues were applied as thematic child codes, highlighting barriers to participation embedded in the documents under the Community Participation Challenges parent node.

Appendix B: Interview Guide

Introduction: Thank you for participating in this interview. This study aims to understand your experiences and perspectives on community participation and inclusivity in Ottawa’s climate and energy transition initiatives. Your insights are valuable and will help identify the challenges and opportunities in promoting community engagement. Feel free to share your honest views. This interview will last approximately 45 minutes to 1 hour. With your consent, I will record the conversation for accuracy. You may decline to answer any question or withdraw at any time.

Section 1: Understanding of Community Participation

- 1) Can you describe your role and involvement in Ottawa’s climate or energy transition initiatives?
 - a. Ask them about the awareness of Ottawa’s Community Energy Transition Strategy
- 2) What motivated you or your organization to engage in this work?
- 3) How would you define community participation and inclusivity in climate or energy policy?
- 4) How would you describe the importance of community participation and inclusivity in climate or energy transition policies or strategies?

Section 2: Challenges

Do you believe that marginalized or underrepresented groups (e.g., low-income residents, newcomers, people with disabilities, or those with mental health challenges) face specific barriers to participation?

Follow-ups:

- a. If yes, what barriers do you think they face?
 - i. Government: How does the City currently address or monitor participation from equity-deserving groups?
 - ii. NGO/cooperative: What obstacles do you encounter when trying to engage vulnerable populations?
 - iii. Community: What prevents residents from getting involved or feeling that their voices matter?
- b. How can these barriers or challenges be mitigated?
- c. Have you encountered any specific climate or energy policies or regulations that either encourage or hinder community involvement? Can you provide examples?
- d. Do you think technology and innovation play in limiting community participation?

- i. If yes, what technological barriers?
- e. Do you believe that a certain leadership style can hinder community participation in climate and energy transition initiatives?
 - i. If yes, what kind of leadership style and how does it impact?
- f. Have you observed any conflicts or internal challenges within communities that affect their participation?
 - i. If so, what challenges
 - ii. How should these challenges be addressed?

Section 3: Opportunities

- 1) Have you seen any examples where marginalized or underrepresented groups were successfully included? What made those efforts work?
- 2) What could make participation in climate and energy decision-making more accessible and equitable?

Follow-ups:

- a. In what ways do you think national and local governments could better support community engagement in the energy transition?
- b. Have you observed any successful technological initiatives that have improved public involvement? If so, could you describe them?
- c. What leadership qualities do you think are most important for encouraging inclusive participation?
 - i. Can you describe any examples where effective leadership has successfully facilitated community involvement?

Follow-ups for communities or NGO/co-operatives

- d. What factors influence community members' motivation to participate in climate or energy-related decision-making?

Section 4: Final Reflections and Recommendations

- 3) If you could recommend one change to improve community participation, what would it be?
- 4) Is there anything else you would like to add that you feel is important to this study?

Conclusion: Thank you for sharing your insights. Your contribution is valuable and will play an important role in shaping a better understanding of community participation in urban energy transitions. If you have any further questions or would like to review your transcript, please let me know.

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Chapter 5

General Discussion and Conclusion

To address the overarching *Research Aim* mentioned on Chapter 1, this thesis examined how poverty, inclusion, and community participation shape climate- and energy-related vulnerability and governance in Canada, with a particular focus on municipal climate and energy transition policymaking. Across three articles, the thesis addressed both the *impacts* of climate change on disadvantaged populations and the *governance processes* through which climate and energy transitions are planned and implemented. In other words, my aim was first to examine whether certain groups are disproportionately disadvantaged by the impacts of climate change, and if so, to also find out if there are marginalized groups through the governance processes that shape climate and energy policymaking. This includes examining whether they are meaningfully recognized, included, and able to influence decision-making, or whether existing governance approaches reproduce unequal participation and reinforce structural inequities.

Poverty, Climate Change, and Health: Evidence of Threat-Multiplying Effects

Addressing the *Research Objective 1* identified on Chapter 1, which was *to review and synthesize peer-reviewed academic literature on the impacts and implications of climate change and weather extremes on the physical and mental health of those experiencing poverty in Canada*, the first article demonstrated that climate change is affecting certain populations' health unevenly in Canada and has specifically threat-multiplying effects for people experiencing poverty. As a result of conducting a systematic scoping review within four databases, including Scopus, PubMed, PsycINFO, and Google Scholar, 28 peer-reviewed articles met the criteria for inclusion (23 primary research studies and five reviews), published from 2000 to 2022, focusing on national, provincial, city, and small regional/rural contexts. Six major thematic areas emerged: heat, air pollution, food security, pollen, wildfire evacuation, and health systems.

Heat studies showed vulnerability associated with low-income populations, poorer housing conditions, and disparities in health outcomes. Vulnerability risks included physical inactivity, pre-existing physical and mental health issues, and older age, with higher perceived risk among women and very low income. Older adults with low household income faced increased emergency department risk and heat-stress mortality. Socioeconomically disadvantaged pregnant women were at increased vulnerability, and a Heat Action Plan reduced mortality, including in low SES neighborhoods.

Most air pollution studies suggested links between air quality, vulnerability, and health outcomes, including greater respiratory risks for lower income groups. Food security studies highlighted climate change impacts on First Nations and Inuit communities, traditional environmental knowledge, and disproportionate health effects in Arctic communities. One pollen study found higher medical consultation among low-income residents. One wildfire evacuation study found poverty created challenges with basic needs and financial strain. Health systems studies found more attention is needed to vulnerable groups and identified poverty as a significant vulnerability risk for First Nations, Inuit, and Metis people.

Thus, addressing poverty reduction is a critical lever for reducing climate risks on disadvantaged communities. However, the study also mentioned that the current Canadian state of evidence is not adequate to inform equitable adaptation and mitigation responses that account for people experiencing poverty.

From Vulnerability to Governance: Participation and Inclusion as Justice Challenges

While with the scoping review, the thesis was able to demonstrate how poverty and marginalization can shape exposure to climate risks, it also moved beyond merely highlighting the uneven effects of climate change to also showing how vulnerability can also be produced through governance processes with the second and third papers. The Ottawa case studies revealed that participation and inclusion, which are key elements of climate and energy justice, remain limited in practice even when they are acknowledged rhetorically in climate and energy transition planning.

More specifically, the second paper addressed the overarching *Research Objective 2* mentioned on Chapter 1, which was *to develop and apply an operationalized integrated analytical framework that translates procedural and recognition justice into concrete and measurable criteria, and to use it to assess the extent to which Ottawa's Community Energy Transition Strategy (Energy Evolution) incorporates inclusion and community participation*. This article showed that although the Ottawa's Community Energy Transition Strategy formally recognizes equity and engagement rights, it has established a governance framework that is dominated by top-down, expert-driven approaches, incorporates patterns of uneven and selective participation, puts more emphasis on technical metrics and emission-based indicators than justice dimensions and does not provide institutional support. The analysis further demonstrated that equity and inclusion remain weakly operationalized.

The third article, on the other hand, addressed the *Research Objective 3* identified on Chapter 1, which was *to examine how participation and inclusion are practiced in Ottawa's municipal climate and energy transition governance, and to identify insights for improving a justice-oriented municipal transition agenda*. To do so, this article expanded the analysis of the second article by not only examining energy strategy but also drawing attention to climate policymaking. By applying an integrated analytical framework developed in the second article, this study analyzed qualitative interviews conducted with officials, practitioners, and stakeholders involved in climate and energy governance.

For both the second and third studies, a qualitative case study methodology was adopted, drawing particularly on Sharan Merriam's approach to case study research. Merriam describes case studies as especially useful for exploring complex, context-dependent social processes in depth, particularly when the boundaries between the phenomenon and its context are not clearly separable. That was important for this thesis because participation, inclusion, and energy governance are deeply shaped by local institutional structures, political dynamics, and community relationships.

In this research, Ottawa served as a bounded case through which the researchers could test the developed integrated framework and examine how procedural and recognition justice are operationalized within municipal climate and energy governance using the framework. In other words, rather than aiming for broad statistical generalization across multiple municipalities, the goal was to apply and test the framework within the Ottawa case study in order to develop a deeper, context-sensitive understanding of governance processes, participation barriers, and institutional dynamics in a real-world municipal policy setting.

The case study approach was particularly appropriate because climate and energy transitions are not only technical or environmental issues; they are also governance processes involving power relations, institutional cultures, participation structures, and social inequalities. These kinds of questions are often difficult to capture through purely quantitative approaches.

This approach was also more suitable compared to other forms of qualitative research due to the following reasons. For instance, ethnographic research involves a prolonged period of engagement within a certain society

or organization with the aim of studying its culture and practices. Although the cultural dimensions of governance were significant in this case, the research aimed to analyze the governance structure, procedures, policy documents, and experience of various stakeholders and not a particular social group over time.

Similarly, phenomenological studies involve analyzing people's lived experiences and meaning-making. While the experiences of respondents were important for this interview-based research, there was much more involved beyond that, including governance structures, participation mechanisms, policy-making, and dynamics.

Furthermore, grounded theory was also not well-suited for this research since there was no intention of creating a completely novel theory based on the research data. Rather, the research had already relied on established theoretical ideas about energy justice, participation theory, and equity governance, which could be operationalized in the particular municipal setting.

On the other hand, qualitative case study method offered the advantage of integrating the elements of document analysis, interviewing, and governance theory analysis into a unified research design framework. Thus, a more contextual approach was possible for understanding procedural and recognition justice in municipal climate and energy governance.

Moreover, it is vitally important to note that using different types of data gathering techniques enabled the thesis to employ methodological triangulation for the purpose of enhancing the rigor of research through comparison and cross-validation of findings generated via one technique with those gathered using another form of data. In simpler terms, semi-structured interviews conducted in the third study were also supposed to validate findings derived from document analysis used in the second study. As far as the second study is concerned, the document analysis technique made it possible to explore how participation, inclusion, procedural justice, and recognition justice were defined within municipal policy documents, strategies, reports, and governance systems. Using this methodology, the researchers were able to highlight official institutional priorities, formal mechanisms of participatory governance, equity language used in policies, underlying governance assumptions, as well as performance indicators/objectives.

However, policy documents represent official institutional narratives only. In general, such forms of documentation tend to emphasize structural, formal, and idealized nature of governance processes and do not cover how participation actually occurs on the ground.

For this reason, interviews were essential for adding another layer of analysis. They allowed the study to explore how municipal staff, community organizations, and intermediary actors themselves interpreted these formal commitments and whether they believed participation and inclusion were meaningfully operationalized in practice. Therefore, the interviews helped bridge the gap between what policies formally say, and how governance processes are experienced and perceived by actors involved in them.

The findings revealed a consistent gap between how participatory mechanisms are formally presented and how engagement and inclusion occur in practice. The study found two key dynamics that shape this gap. First there are existing barriers that limit community engagement. These barriers include factors, such as decision-makers who are not willing to listen to communities, existing infrastructure that is difficult to change, and decision-making power controlled by a central authority. In other words, the way communities can participate is strongly affected by larger systems of governance and historical legacies behind the structures and institutions. Second, the study found that even when there are some participatory mechanisms available, only privileged people that have the time, financial resources, knowledge and social capital often get involved. In turn, these people

dominate engagement, while marginalizing communities that have been historically disadvantaged and left behind, reproducing existing inequalities. The article also proposed empirically grounded “commandments” or guidelines to strengthen participatory and inclusive municipal governance.

Main Contributions of the Thesis

What is unique about this thesis is that the findings of my research articles reinforce and further extend existing scholarship empirically and methodologically. From the empirical perspective, it provides a multi-level understanding of climate justice in Canada: it connects evidence on vulnerability (health impacts) with evidence on governance (policy design and implementation). By contributing to broader climate justice and energy justice scholarship, the thesis makes an overarching argument that climate change and energy transitions in Canada cannot be understood only as technical challenges; they are deeply shaped by social inequality, institutional design, and uneven political power. Also, the existence of formal engagement mechanisms does not always translate into meaningful community participation and inclusion, as participation remains unequal and selective, coexisting with top-down and expert-driven governance structures, overreliance on narrow technical metrics, and limited institutional and resource capacity. Equity-deserving groups are acknowledged in principle, yet their participation in decision-making and thereby, ability to influence social outcomes are undermined by structural, procedural, and resource-based constraints. Thus, without making justice-oriented governance and institutional reforms, climate action risks reproducing and reinforcing the same inequities that drive climate vulnerability.

Another main contribution of this study lies in its methodological approach. While literature on community participation and inclusion in urban climate and energy transitions is growing, less attention has been given to developing a clear process that can assess participation and inclusion of marginalized groups in climate and energy policymaking. By integrating an equity-focused policy lens with a critical participation framework, the study addresses the gaps in the literature, as it demonstrates how a comprehensive analytical framework can be constructed to move beyond abstract or often difficult-to-apply notions of procedural and recognition justice. In doing so, the study developed clear operational metrics capable of designing and evaluating participatory and inclusive climate and energy policies and decisions. The study also applied the framework in the second and third articles. Thus, the usefulness of the integrated framework was demonstrated through its application, as in both cases, the framework effectively identified key barriers to participatory and inclusive climate and energy governance, while also highlighting concrete areas where governance practices and policy design could be improved.

Recommendations

My research also provided a list of guidelines for addressing vulnerabilities of populations unevenly affected by climate change and for ensuring participatory and inclusive climate and energy governance. Firstly, the first paper highlighted that heat-related response domains should include urban development, emergency planning, healthcare systems, and identification of at-risk populations, with attention to disadvantaged areas, using indicators such as indoor air temperature and chronic multimorbidity, and ensuring air conditioning and hydration for pregnant women. For older adults, recommendations include urban planning with increased greenery, age-friendly cities, peer support programs, accessible air-conditioned spaces, water fountains and public washrooms, and heat alerts with strength-based language. Food security recommendations emphasize growing food locally, addressing food insecurity through poverty-reduction strategies, developing social institutions, and supporting self-determination and land connection of First Nations, Inuit, and Metis Peoples.

When it comes to wildfire evacuation, the study recommends community-specific plans, a full-time emergency manager, local leadership, and sufficient financial support. Finally, health systems recommendations include vulnerability assessments and long-term structural changes such as health care access, education, and economic development.

When it comes to climate and energy policymaking, the thesis suggests that firstly, participation must be institutionalized. More specifically, it should be turned into a continuous and mandatory component of governance, rather than merely remaining as an optional approach depending on political will or timing. Second, engagement processes should be redesigned in way that enables co-creation and provides spaces for communities not just to formally participate and merely respond to predefined proposals but also meaningfully shape agendas, priorities, and outcomes. Third, achieving inclusion also requires actively acknowledging and addressing unequal capacities of individuals to participate. Here, the study suggests measures such as financial support, accessible communication, and reduced logistical barriers.

Finally, the study suggests decentralization of energy governance to achieve meaningful engagement. This requires granting municipalities greater authority as well as supporting distributed, community-based energy systems. It also includes ensuring community ownership and material participation. In other words, engagement should not only be tied to voice but also to owning an energy source and having corresponding tangible benefits, indicating how procedural justice is also closely aligned with distributional justice at times. Finally, policymakers must recognize that participation is shaped by historical, institutional, and socio-technical legacies. Therefore, they need to adopt context-sensitive approaches that gradually transform existing systems, as participatory reforms cannot be implemented in isolation.

Reflexivity and Positionality

Before moving onto the reflexivity and positionality specifically associated with this study, which is an important tool to establish rigor and trustworthiness of any qualitative research project as Kresting (1991) pointed out, it is important to mention that the functions of reflexivity should not be seen as an end itself. In other words, reflexivity is not only a tool to offer an account of the research but rather a way to situate the researcher and the researched on broader political dimensions and power relationships in understanding positionalities and personal biases and figuring out the ways through which their influence on data and data analysis can be minimized (Funder, 2005 & Finlay, 2002). In terms of the positionality of the researcher, since it is defined as the place where one stands in relation to others, I looked at different factors, such as gender, race, age, education and others simultaneously in order to understand what makes me aligned with or set apart me from my participants.

However, unlike traditional perspectives on insider/outsider status, the researcher of this study took into consideration the fact that sometimes not only would the researcher feel in the position of both insider and outsider but also these positions should be understood based on the researcher's and each participant's values, norms and positionalities separately as Merriam et al. (2001) pointed out. This is also because, as Banks (1998) mentioned, in a pluralistic society the presence of micro-cultures and individuals with differing positionalities within their ethnic, racial and cultural communities is very likely to be encountered. While analyzing the positionalities of myself as a researcher and my participants, not only did I take into account the varieties of multiple forms of identities but also historicity and inequities of power relations associated with research processes, since the researcher should explore and expose himself to the power-based dynamics that would be inherent in a research process (Merriam et al., 2001). Consequently, varying and unequal power dynamics between the researcher and the researched should be open to scrutiny by the researcher in order to mitigate,

minimize and limit any exploitative manner in the research process (Lewis, 1973). In other words, as Kobayashi (1994) argued, the fieldwork itself would be a place for power struggles and negotiation involving well-constructed political action.

Keeping these important dynamics in mind during the data collection phase of my research, I realized that my position as a Ph.D. student at a privileged Canadian university facilitated my access to and rapport-building process with my participants, most of whom were also holding at least a tertiary (higher) education degree from Canada. Nevertheless, in terms of their attitudes towards me as a researcher and my research, I noticed that sometimes they were either not too sure or not much confident in the way they were responding to some of my questions because they were repeatedly asking for confirmation during this process if their responses were really addressing what I wanted to accomplish for this study. In some instances, when I sent my questionnaire in advance for their review, some of the respondents were even directly pointing out that they may have less or limited knowledge on these issues that I am researching on because they had never or rarely done systemic research on this matter as I do. However, in order to manage, mitigate and limit the negative consequences of my positionality, I tried to assure them that all the questions that were on the list were going to be tailored to the experiences and knowledge of my participants as well as the flow of our conversation. On the other hand, my detailed observation of my participants' attitudes, behaviors and emotions confirmed Merriam and others' (2001) claim that power does not always flow one way, and my participants can also exercise power in a subtle or direct way as well as verbally or non-verbally. This was especially obvious when I felt dependent too much on my participants' choice of when the interviews should be conducted, what and how much information they felt comfortable sharing with me and how long these interviews should last. Finally, the exercise of power by my respondents were noted when they were expressing their excitement, dislike or disinterest through their verbal and non-verbal cues. For example, when I especially talked about the objectives of my research, one interview participant showed amusement and pleasure through positive emotions and body language (a slight raise of the eyebrows and smile as well as choosing an upright and open posture) and verbal communication by stating, "This is a great initiative. I am really happy to participate".

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